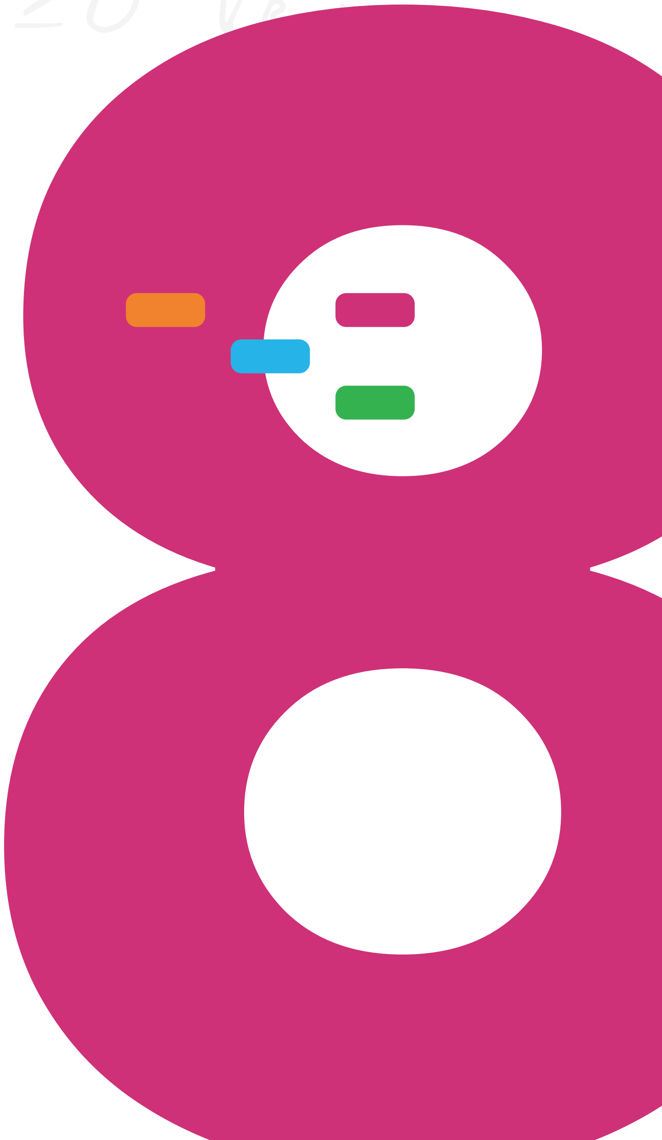
PROS

Annual Report



ANNUAL REPORT

FOR YEAR-END 2018

Dear Shareholders, Customers, Partners, and Employees:

I've had the privilege to be part of many incredible times in our company history. 2018 was one of the most exciting years we've had, as we reached the culmination of our journey to the cloud.

I am so proud of the tremendous leap forward we made as a company. We've reimagined our solutions and now we're powering eCommerce and processing massive data volumes faster than the blink of the eye. We've transformed our delivery process and we're delivering our next-generation B2B solutions in half the time. We've also accelerated market adoption, growing our B2B deal volume by more than 40% last year and welcoming five new airlines as customers.

These incredible accomplishments led us to deliver exceptional financial results in 2018. We grew our subscription revenue by 57% and delivered on our commitment to return to near free cash flow breakeven, driving a $29 million improvement year-over-year. In the fourth quarter, subscription revenue was more than half of total revenue for the first time in our history.

Thanks to our team's commitment and tenacity in transforming our business, we're now fully a SaaS company and stronger than ever because of our journey. While our business has changed significantly over the past few years, our mission has not. We remain committed to helping people and companies outperform, and we're doing this by powering our customers' digital transformations with AI and helping them to lead their markets.

Our business thrives because of the strength of our people. We believe that true innovation is only accomplished with diversity and inclusion, and we strive to attract top talent from every background. Last year women represented 34.5% of our team, up 7.5% over two years ago, and underrepresented minorities represented 25% of our team. Our incredible culture fosters diversity and inclusion through employee resource groups, mentoring programs, and leadership training, and we're committed to continuing to lead in this area.

As we enter this year, we are excited by the opportunity in front of us. The market is embracing our AI and digital selling solutions faster than ever before, and we are confident we have the right combination of top talent, industry-leading customers and innovations to make 2019 another incredible year.

Thank you for supporting us on our journey.

Andres

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

SCHEDULE 14A

Proxy Statement Pursuant to Section 14(a) of the Securities Exchange Act of 1934

Filed by the Registrant ☑ Filed by a Party other than the Registrant ☐

Check the appropriate box:

☐ Preliminary Proxy Statement
☐ **Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))**
☑ Definitive Proxy Statement
☐ Definitive Additional Materials
☐ Soliciting Material Pursuant to §240.14a-12

PROS HOLDINGS, INC.

(Name of Registrant as Specified In Its Charter)

Payment of Filing Fee (Check the appropriate box):

☑ No fee required.

☐ Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.
(1) Title of each class of securities to which transaction applies:
(2) Aggregate number of securities to which transaction applies:
(3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):
(4) Proposed maximum aggregate value of transaction:
(5) Total fee paid:

☐ Fee paid previously with preliminary materials.

☐ Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.
(1) Amount Previously Paid:
(2) Form, Schedule or Registration Statement No.:
(3) Filing Party:
(4) Date Filed:

NOTICE OF 2019 ANNUAL MEETING OF STOCKHOLDERS

DATE	**Tuesday, May 7, 2019**
TIME	**8:00 a.m., Central Daylight Time**
PLACE	**3100 Main Street, 9th Floor, Houston, Texas 77002, +1 (713) 335-5151**

AGENDA

1. Elect two Class III directors named in the Proxy Statement to the board of directors of PROS Holdings, Inc. (Board of Directors or Board) each to serve a three-year term until our annual meeting of our stockholders to be held in the year 2022 (2022 Annual Meeting);
2. Advisory vote on named executive officer compensation;
3. Approve proposed amendments to 2017 Equity Incentive Plan;
4. Ratification of appointment of PricewaterhouseCoopers LLP as our independent registered public accounting firm for 2019; and
5. Transaction of other business that may properly come before the Annual Meeting.

RECORD DATE

Only stockholders of record at the close of business on March 15, 2019 (Record Date) will be entitled to receive notice of, and to vote at, the 2019 annual meeting of our stockholders (Annual Meeting).

MATERIALS TO REVIEW

We are mailing to our stockholders a Notice of Internet Availability of Proxy Materials (Notice), instead of a paper copy of this proxy statement (Proxy Statement) and our Annual Report to Stockholders for the Year Ended December 31, 2018 (2018 Annual Report). The Notice contains instructions on how to access those documents over the Internet. The Notice also contains instructions on how to request a paper copy of our proxy materials, including this Proxy Statement, our 2018 Annual Report and a form of proxy card or voting instruction card.

PROXY VOTING

Please vote your shares promptly to ensure the presence of a quorum at the meeting. Voting your shares now via the Internet, by telephone, or by signing, dating, and returning the accompanying proxy card or voting instruction form will save the expenses and extra work of additional solicitation. If you wish to vote by mail, we have enclosed an addressed envelope, postage prepaid if mailed in the United States. Submitting your proxy now will not prevent you from voting your shares at the meeting, as your proxy is revocable at your option.

By Order of the Board of Directors,

/s/ Damian Olthoff
Damian Olthoff
Secretary

Houston, Texas
March 25, 2019

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EXECUTIVE SUMMARY

This summary highlights selected information for PROS Holdings, Inc. (together with its consolidated subsidiaries, PROS, the Company, we, us or our) in this Proxy Statement. You should read this entire Proxy Statement carefully before voting.

Voting Matters

Proposal	Board Vote Recommendation	Page #
Elect two Class III directors	**FOR** each director nominee	21
Advisory vote on executive compensation	**FOR**	44
Approve proposed amendments to 2017 Equity Incentive Plan	**FOR**	45
Ratification of appointment of PricewaterhouseCoopers LLP for fiscal year 2019	**FOR**	59

Business Highlights

In 2018, PROS reached new milestones in our cloud transformation efforts, while continuing to enable our customers to leverage our AI-powered solutions that optimize selling in the digital economy. The following highlights some of our accomplishments in 2018:

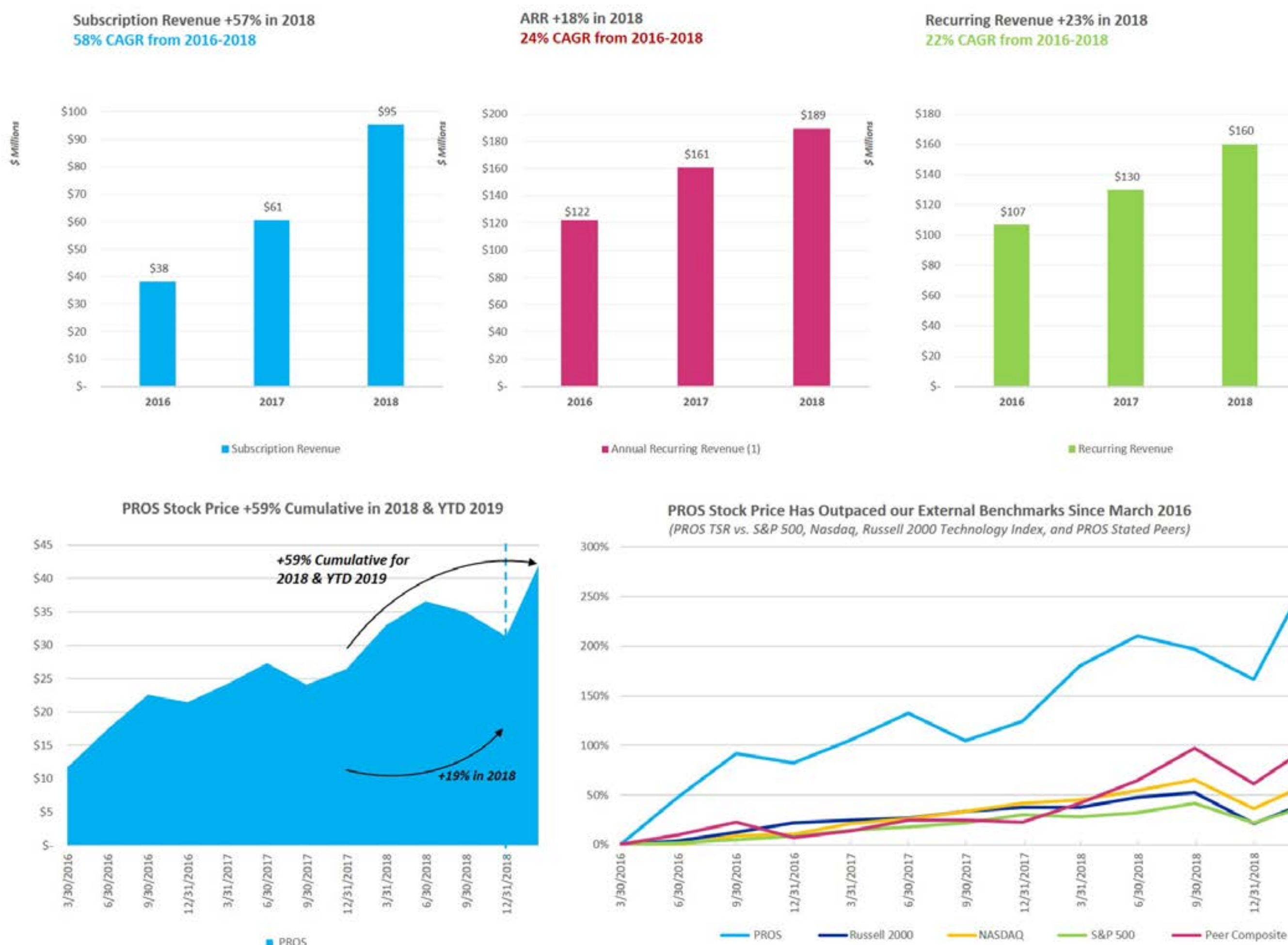
- Continued substantial growth:
  - Subscription revenue increased 57% year-over-year, Recurring Revenue (Subscription + Maintenance Revenue) grew 23% year-over-year, Annual Recurring Revenue (ARR) [(1)] grew 18% year-over-year, and total revenue grew 17% year-over-year and surpassed pre-cloud transition total revenue in less than four years;
  - Cash flow provided by operating activities improved over $30.0 million year-over-year, and Free Cash Flow[(2)] improved $29.0 million year-over-year;
  - Total shareholder return grew 19% during 2018, and cumulatively grew 59% from the end of 2017 through March 15, 2019.
- Continued to innovate to deliver our solutions faster and with higher gross margins, which in turn drove higher accessibility and faster sales cycles for new customers;
- Successfully maintained ISO27001, SOC2 and CSA security certifications, underscoring our commitment to customers by achieving the industry's most rigorous requirements for cloud security and data privacy, governance, and compliance;
- Enhanced capital structure and strengthened our balance sheet by completing a follow-on public offering of 4,370,000 primary shares of common stock generating $142 million in net proceeds; and
- Further strengthened our executive team to help us continue scaling our business.

(1) Annual Recurring Revenue ("ARR") is used to assess the trajectory of our cloud business. ARR means, as of a specified date, the contracted recurring revenue, including contracts with a future start date, together with annualized overage fees incurred above contracted minimum transactions, and excluding perpetual and term license agreements recognized as license revenue in accordance with GAAP. ARR should be viewed independently of revenue and any other GAAP measure.

(2) Free cash flow is a non-GAAP financial measure which is defined as net cash provided by (used in) operating activities, less capital expenditures (excluding expenditures for PROS new headquarters), purchases of other (non-acquisition-related) intangible assets and capitalized internal-use software development costs.

CEO Pay and Company Performance

In 2018, we continued to successfully execute our multi-year cloud transition, delivering subscription revenue growth of over 50% for the second consecutive fiscal year. Our performance (based on our subscription revenue, ARR, recurring revenue, and stock price) was as follows:

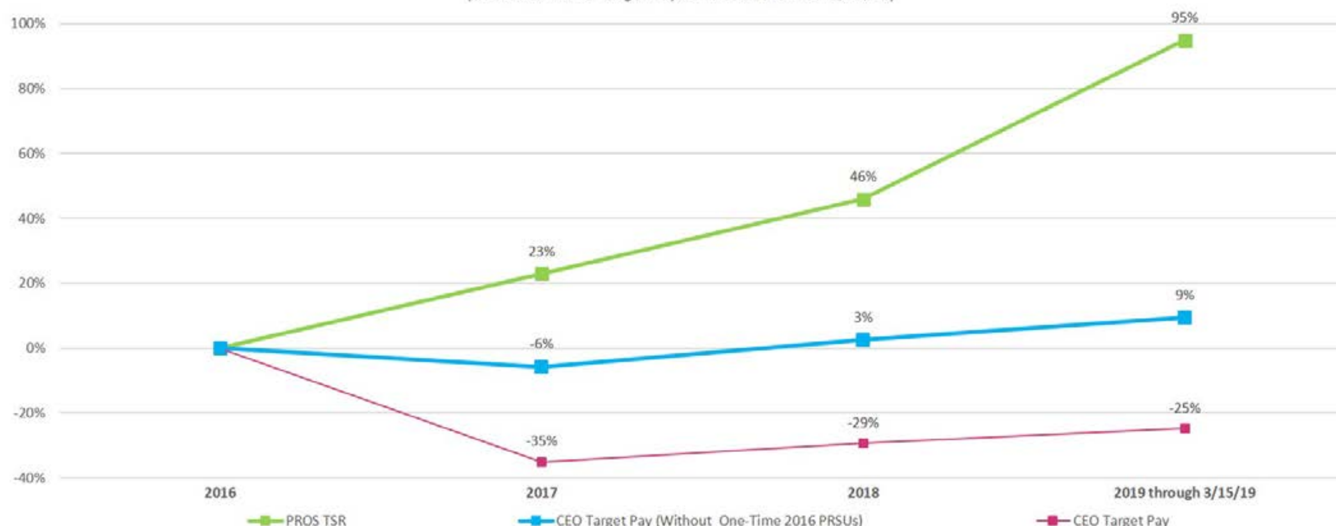


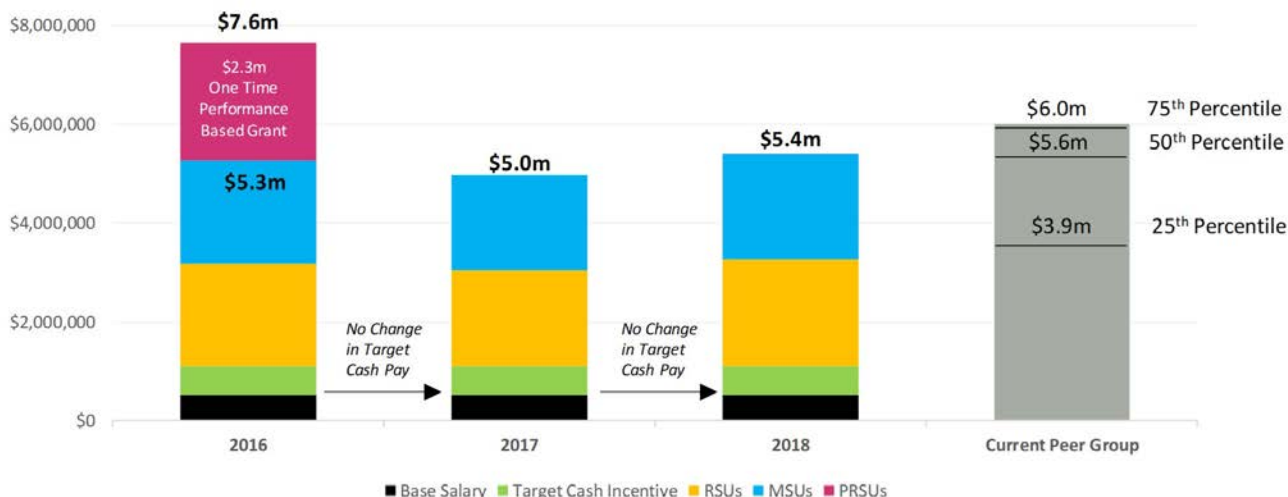
(1) Annual Recurring Revenue ("ARR") is used to assess the trajectory of our cloud business. ARR means, as of a specified date, the contracted recurring revenue, including contracts with a future start date, together with annualized overage fees incurred above contracted minimum transactions, and excluding perpetual and term license agreements recognized as license revenue in accordance with GAAP. ARR should be viewed independently of revenue and any other GAAP measure.

CEO pay was set conservatively, just slightly above expected peer CEO median target compensation levels. This was despite the Company's strong financial performance and 23% total shareholder return in 2017.

- The Compensation & Leadership Development (CLD) Committee is pleased with the Company's performance and set target pay in line with competitive market practice of similar peer companies to ensure we retain and reward our CEO for continued strong performance going forward.

- *Growth in shareholder return has outpaced growth in our CEO's target pay.* Our CEO's 2018 base salary and target cash incentive remained unchanged from 2017 levels, which is the fourth year in a row with no CEO salary or target cash incentive increase. Our CEO's total target compensation, including base salary, target cash incentive and target value of long-term equity compensation, was set near the median pay level of our peer CEOs that was expected for 2018, which proved true when reviewing peer CEO compensation levels later in 2018.





(1) Target equity compensation (a) for RSUs and MSUs represents total target equity compensation determined by the Compensation and Leadership Development Committee divided by the closing price of the Company's Common Stock reported by the NYSE on the grant date, and differs from the accounting grant date fair value included in the "*Grants of Plan Based Awards*" table on page 39 of this Proxy Statement; and (b) for PRSUs represents the accounting grant date fair value.

- Our CEO’s pay continues to be >50% directly “performance-based” (including annual cash incentive and performance-based equity) and >90% at risk (including time-based RSUs).

- We set aggressive performance-based goals, with higher target top line growth required to achieve target payout and significantly higher minimum top line growth required to achieve any payout when compared to our peers’ historical averages.

- The 2018 annual cash incentive plan resulted in our CEO attaining 138.5% of his annual cash incentive target based strictly on formulaic results vs. predefined targets, with no discretion applied to the outcome.

CEO 2018 Target Compensation

2018 CEO Compensation Program Overview

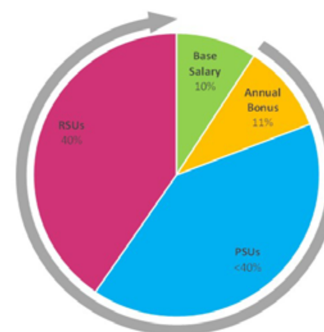
The Company's 2018 CEO compensation program reflects shareholder feedback received throughout 2017 and was designed to reward achievement of aggressive performance goals that align with our long term cloud business strategy.

Pay Component	Link to Performance	Key Characteristics in 2018 & Changes from 2017
Base Salary	• Supports attraction and retention of talent	• No change in base salary from 2017 • Continued alignment with competitive market practice

Annual Cash Incentive (Bonus)	• Focused on overall revenue growth and profitability of our recurring business, both key drivers of shareholder value	• No change in target value from 2018
		• Attainment is formulaic:
		  • ARR (Annual Recurring Revenue)
		  • Total Revenue
		  • Free Cash Flow

Long Term Equity Incentive	• Focused on growth of our recurring business, the key driver of shareholder value	• Set target value near the median of our peer CEOs • No change in basis for attainment (Market Performance Units, which align directly with shareholder value creation) • 3 year performance period (2018-2020)

2018 Total Target Compensation Mix [(1)]



>90% At-Risk

>50% Performance-Based

(1) Target equity compensation for RSUs and MSUs represents target equity compensation determined by the Compensation and Leadership Development Committee divided by the closing price of the Company's Common Stock reported by the NYSE on the grant date, and differs from the accounting grant date fair value included in the "Grants of Plan Based Awards" table on page [41] of this Proxy Statement.

For 2018, our CLD Committee decided to leave Mr. Reiner's base salary and cash incentive target unchanged from 2017, the third year in a row without an increase in target cash compensation. Consistent with the median of our peer group compensation, the CLD Committee decided to increase Mr. Reiner's performance-based pay in the form of equity-based compensation due to Mr. Reiner's impact on the Company's successful operational and financial progress on our cloud transition. As a result, Mr. Reiner's total target compensation increased 9% in 2018-- less than our total shareholder return of 19% in 2018 and 59% cumulative total shareholder return for 2018 through March 15, 2019.

CEO Year-End Compensation Decisions 2019 v. 2018

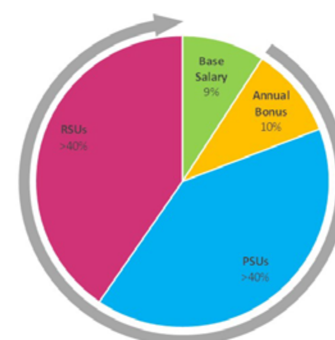
2019 CEO Compensation Program Overview

The Company's 2019 CEO compensation program reflects shareholder feedback received throughout 2018 and is designed to reward achievement of aggressive performance goals that align with our long term cloud business strategy.

Pay Component	Link to Performance	Key Characteristics in 2019 & Changes from 2018
Base Salary	• Supports attraction and retention of talent	• No change in base salary from 2018 • Continued alignment with competitive market practice

Annual Cash Incentive (Bonus)	• Focused on overall revenue growth and profitability of our recurring business, both key drivers of shareholder value	• No change in target value from 2018
		• Attainment is formulaic:
		  • Total Revenue
		  • Recurring Revenue Gross Margin %

Long Term Equity Incentive	• Focused on growth of our recurring business, the key driver of shareholder value	• Set target value near the median of our peer CEOs • Changed basis for attainment from MSUs comparing PROS TSR to Russell 2000 index TSR to PRSUs tied to attainment of certain long term Company performance goals aligned with shareholder value creation • 2019 PRSU attainment is formulaic based 100% on Recurring Revenue growth over a 2 year performance period (2019-2020), with an additional year of vesting (vests 12/31/2021)



>90% At-Risk

>50% Performance-Based

(1) Target equity compensation for RSUs and MSUs represents target equity compensation determined by the Compensation and Leadership Development Committee divided by the closing price of the Company's Common Stock reported by the NYSE on the grant date, and differs from the accounting grant date fair value included in the "Grants of Plan Based Awards" table on page [41] of this Proxy Statement.

For 2019, the CLD Committee decided to leave Mr. Reiner's base salary and cash incentive target unchanged from 2018, the fourth year in a row without an increase in target cash compensation. Consistent with the median of our peer group, the CLD Committee decided to increase Mr. Reiner's performance-based pay in the form of equity-based compensation due to Mr. Reiner's continued impact on the Company's successful operational and financial progress on our cloud transition and the 19% growth in shareholder return in 2018.

Governance Highlights

Board Practices	Shareholder Matters
✓ All non-employee directors independent	✓ Active shareholder outreach program
✓ Independent non-executive chairman ✓ Independent Audit, Compensation and Leadership Development, and Nominating and Corporate Governance Committees of the Board (Committees)	✓ Engage with shareholders throughout each year, including at earnings conference calls, investor road shows, investor days, as well as at individual shareholder meetings. We also welcome shareholders to attend our annual OutPerform event for customers and prospects.
✓ Regular executive sessions of non-employee and independent directors. Our non-executive chairman of the Board presides at executive sessions.	✓ Annual "Say-on-Pay" advisory vote
✓ Annual Board and Committee evaluations	✓ Anti-hedging, anti-short and anti-pledging policies
✓ Regularly attend continuing education related to board governance best practices.	✓ Stock ownership guidelines for named executive officers (NEOs)
✓ 25% women ✓ 50% under age 60	✓ "Clawback" policy to recover, under applicable law, incentive bonuses awarded to any NEO as a result of that NEO's fraud or intentional misconduct.
✓ Risk oversight by full Board and Committees	✓ Director resignation policy requires director nominees who do not receive at least 50% of the stockholder votes "for" re-election to tender their resignation.

Director Nominees

Name	Age	Director Since	Class	Independent	Other Current Public Company Boards
Andres D. Reiner	48	2010	III	No	Paylocity Holding Corporation
Ronald F. Woestemeyer	73	1985	III	Yes	-

Continuing Directors

Name	Age	Director Since	Class	Independent	AC	CC	NC	Other Current Public Company Boards
Penelope Herscher	58	2018	II	Yes		M	M	Faurecia SA; Lumentum Holdings, Inc.; Verint Systems, Inc.
Greg B. Petersen	56	2007	I	Yes	M	C		-
Leslie Rechan	57	2015	II	Yes	M		M	MicroStrategy Incorporated; Solace Corp.
William Russell	67	2008	II	Yes		M	C	Accesso Technology Group PLC
Timothy V. Williams	69	2007	I	Yes	C		M	ChannelAdvisor Corporation
Mariette M. Woestemeyer	67	1985	I	Yes				-

AC Audit Committee **CC** Compensation & Leadership Development Committee **NC** Nominating and Corporate Governance Committee
C Chair **M** Member

2019 ANNUAL MEETING OF STOCKHOLDERS

MAY 7, 2019

General

The enclosed proxy is solicited for use at the Annual Meeting to be held May 7, 2019 at 8:00 a.m., local time, at 3100 Main Street, 9th Floor, Houston, Texas 77002, or at any adjournment or postponement thereof, for the purposes set forth herein and in the accompanying Notice of 2019 Annual Meeting of Stockholders.

The purposes of the Annual Meeting are:

1. To elect two Class III directors to the Board of Directors, each to serve for a three-year term until the 2022 Annual Meeting;
2. To conduct an advisory vote on executive compensation;
3. To approve proposed amendments to 2017 Equity Incentive Plan;
4. To ratify the appointment of PricewaterhouseCoopers LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2019; and
5. To transact such other business as may properly come before the Annual Meeting or any adjournment

Record Date and Shares Outstanding

Only stockholders of record at the close of business on the Record Date are entitled to vote at the Annual Meeting. As of the Record Date, 37,684,301 shares of Common Stock were outstanding. Each stockholder of record as of the Record Date is entitled to one vote for each share of Common Stock held by such stockholder.

Attending the Annual Meeting

The Annual Meeting will be held at 8:00 a.m., local time, on Tuesday, May 7, 2019, at 3100 Main Street, 9th Floor, Houston, Texas 77002. When you arrive, the receptionist will direct you to the meeting room. Please note that the doors to the meeting room will not be open until 7:50 a.m. You do not need to attend the Annual Meeting to vote. Even if you plan to attend the Annual Meeting, please submit your vote in advance as instructed below.

Vote Required

If a quorum is present, a plurality vote of the holders of our Common Stock entitled to vote and present or represented by proxy at the Annual Meeting is required for the election of a director. This "plurality" standard means the nominees who receive the largest number of "for" votes cast are elected as directors. Thus, the number of shares not voted for the election of a nominee (and the number of "withhold" votes cast with respect to that nominee) will not affect the determination of whether that nominee has received the necessary votes for election under Delaware law. However, the number of "withhold" votes with respect to a nominee will affect whether our Director Resignation Policy will apply to that individual. Our Director Resignation Policy provides that any nominee for director who receives a greater number of votes "withheld" from his or her election than votes "for" such election is required to offer his or her resignation following certification of the stockholder vote. The Nominating and Corporate Governance Committee would then consider the offer of resignation and make a recommendation to our independent directors as to the action to be taken with respect to the offer. This policy does not apply in contested elections.

The affirmative vote of the holders of a majority of the shares of Common Stock present or represented by proxy and voting at the Annual Meeting is required to approve the ratification of the selection of our independent auditors and the advisory vote on executive compensation. We will not count abstentions as either for or against a director, so abstentions have no effect on the election of a director. A properly executed proxy marked "abstain" with respect to any matter is considered entitled to vote, and thus, will have the effect of a vote against a matter, except for the election of directors.

Our bylaws provide that a majority of the outstanding shares of our stock entitled to vote, whether present in person or represented by proxy, shall constitute a quorum for the transaction of business at the Annual Meeting. Votes for and against, abstentions and "broker non-votes" (shares held by a broker or nominee that does not have the authority, either express or discretionary, to vote on a particular matter) will each be counted as present for purposes of determining the presence of a quorum.

Voting Instructions

Stockholders have four ways to votes:

- *Online.* You may vote online by visiting www.proxyvote.com, and entering the control number found in your proxy card. You can vote via the Internet up until 11:59 P.M. Eastern Time on May 6, 2019.
- *Telephone.* You may vote by calling the toll-free number provided on your proxy card, and following the instructions found on your proxy card. You can vote via the telephone up until 11:59 P.M. Eastern Time on May 6, 2019.
- *Mail.* If you received a printed copy of the proxy card, you may vote by filling out the card and returning it in the postage-paid envelope provided. Please promptly mail your proxy card to ensure that it is received prior to the closing of the polls at the Annual Meeting.
- *In Person.* You may vote in person at the Annual Meeting, and any previous votes that you submitted, whether by Internet, telephone or mail, will be superseded by the vote that you cast at the Annual Meeting.

If you are a beneficial owner, or you hold your shares in "street name," please check your voting instruction card or contact your bank, broker or nominee to determine whether you will be able to vote by Internet or telephone. Even if you plan on attending the Annual Meeting in person, **we encourage you to vote in advance via the Internet**, by phone, or by mail to ensure that your vote will be represented at the Annual Meeting.

Changing your Vote

You may revoke your proxy and change your vote at any time before the taking of the vote at the Annual Meeting:

- *Online*. Using the online voting method described above, in which case only your latest internet proxy submitted prior to the Annual Meeting will be counted.
- *By Phone*. Using the telephone voting method described above, in which case only your latest telephone proxy submitted prior to the Annual Meeting will be counted.
- *In Person*. By attending the Annual Meeting and voting in person. However, attendance at the Annual Meeting will not in and of itself revoke your proxy unless you properly vote at the Annual Meeting or specifically request that your prior proxy be revoked by delivering a written notice of revocation prior to the Annual Meeting to our Corporate Secretary at or before the taking of the vote at the Annual Meeting.
- *Mail*. By signing and returning a new proxy card dated as of a later date, in which case only your latest proxy card or voting instruction form received prior to the Annual Meeting will be counted.

Any written notice of revocation or subsequent proxy should be delivered to PROS Holdings, Inc. at 3100 Main Street, Suite 900, Houston, Texas 77002, Attention: Corporate Secretary, or hand-delivered to our Corporate Secretary before the taking of the vote at the Annual Meeting.

Effect of Not Casting Your Vote

Banks, brokers and other intermediaries may not vote shares held in their clients' accounts on elections of directors and other "non-routine" matters unless the client has provided voting instructions. If you hold your shares in street name, you must cast your vote if you want it to count for purposes of Proposals One, Two, and Three.

Proxy Materials are Available on the Internet

We use the internet as the primary means of furnishing proxy materials to our stockholders. We are mailing to our stockholders a Notice of Internet Availability of Proxy Materials (Notice) that contains instructions on how to access our proxy materials over the Internet, as well as how to request a paper copy of our proxy materials, including this Proxy Statement, our 2018 Annual Report and a form of proxy card or voting instruction card. The Notice was first mailed and those documents were first made available on or about March 25, 2019 to stockholders entitled to vote at the Annual Meeting. We encourage stockholders to take advantage of the availability of the proxy materials on the internet.

Eliminating Duplicate Mailings

Some banks, brokers and other nominee record holders participate in the practice of "householding", which helps reduces the environmental impact of our annual meetings and reduces our printing and mailing costs, by sending only one copy of the Notice and Proxy Statement to multiple stockholders sharing the same address. If you would prefer to receive separate copies of a proxy statement, please contact our Corporate Secretary by calling 713-335-5151 or by writing to us at 3100 Main Street, Suite 900, Houston, Texas 77002. In addition, stockholders sharing an address and receiving multiple copies can request delivery of a single copy of proxy statements upon written request to our Corporate Secretary at the address stated above.

CORPORATE GOVERNANCE

Role of the Board of Directors

Our Board of Directors (Board) oversees our CEO and other senior management on a day-to-day basis to assure that the long-term interests of shareholders are being served. Our Board currently consists of eight members, divided into three classes, with each class serving for a staggered three-year term. The term of office of one class of directors expires each year in rotation so that one class is elected at each annual meeting for a full three-year term.

Our Board has adopted formal Corporate Governance Guidelines to ensure that it has the necessary authority and practices in place to review and evaluate our business operations as needed, to make decisions that are independent of our management, and to align the interests of directors and management with the interests of our stockholders. Our key governance documents, including our Corporate Governance Guidelines, are available under the Investor Relations section of our website at ir.pros.com.

Our Board met four times and acted via unanimous written consent three times, the Audit Committee met ten times, the CLD Committee met six times and acted via unanimous written consent three times, and the NCG Committee met three times. Each current director who served as a director in 2018 attended each meeting of our Board and the Committees on which he or she served during 2018. The Board encourages all directors to attend annual meetings of the stockholders. All incumbent directors attended the 2018 meeting of the stockholders.

Board Committees

The Board has standing Audit, Compensation and Leadership Development (CLD) and Nominating and Corporate Governance (NCG) Committees. Each Committee has a written charter, which can be found under the *Investor Relations* section of our website at ir.pros.com. Our Board has determined that each member of the Audit Committee qualifies as an Audit Committee financial expert within the meaning of the SEC regulations and the rules of the NYSE. Each member of our CLD Committee is a non-employee director, as defined in Rule 16b-3 promulgated under the Securities Exchange Act of 1934 (Exchange Act), and an outside director, as defined pursuant to Section 162(m) of the Internal Revenue Code (Code).

Audit Committee. The Audit Committee assist the Board in oversight and monitoring of:

- our accounting and financial reporting processes and the audits of our financial statements:
- our independent auditors, including their qualifications, engagement, performance and independence;
- the results of the annual audit and the independent auditor's review of our annual and quarterly financial statements and reports, including discussions with independent auditors without management present;
- press releases regarding our financial results and any other financial information and earnings guidance provided;
- matters that have a significant impact on our financial statements;
- the scope, adequacy and effectiveness of our internal control over financial reporting;
- procedures for complaints for employees to submit concerns anonymously about questionable accounting, internal control or auditing matters; and
- all material related party transactions that require disclosure.

Compensation and Leadership Development Committee. The CLD Committee discharges the responsibilities of our Board relating to the compensation and benefits for our executive officers and directors, including:

- reviewing and approving the compensation arrangements for our executive officers and directors;

- reviewing and approving corporate performance goals and objectives relevant to such compensation;
- administering our equity incentive plans;
- reviewing our compensation discussion and analysis and CLD Committee report required by the rules of the SEC;
- engage with a third party independent advisor to assist in evaluating our executive compensation program.
- providing oversight on the overall leadership development program throughout the Company; and
- overseeing succession planning for executive officers jointly with the NCG Committee.

Nominating and Corporate Governance Committee. The NCG Committee assist the Board in:

- identifying qualified candidates to become directors and considering the nomination of our incumbent directors for reelection;
- evaluating stockholder nominations of candidates for election to our Board;
- reviewing our general policy relating to selection of director candidates and members of committees of our Board, including an assessment of the performance of our Board; and
- reviewing and making recommendations to our Board regarding corporate governance principles and policies.

Independence

The Board has determined that the following directors have no relationships with us that would interfere with the exercise of independent judgment in carrying out his or her responsibilities as a director, and as such are "independent" under NYSE listing standards and federal securities laws as of December 31, 2018: Messrs. Petersen, Rechan, Russell, Williams, and Woestemeyer and Mss. Herscher and Woestemeyer. Our Board previously determined that Ellen Keszler was an independent director prior to her retirement from our Board in at our 2018 annual meeting. Our Audit, CLD and NGC Committees are comprised entirely of independent directors.

Independent Non-Executive Chairman

The Board is led by our independent non-executive chairman, Mr. Russell. The Board's current preferred governance structure is to have an independent director serve as chairman. We believe the current structure provides strong leadership for our Board, while also positioning our Chief Executive Officer as the leader of the Company. We believe that our current structure helps ensure independent oversight over the Company, while allowing our Chief Executive Officer to focus on management of the Company. As our non-executive chairman, among other responsibilities, Mr. Russell oversees the planning of the annual Board calendar, and, with the Chief Executive Officer, in consultation with the other directors, schedules and sets the agenda for meetings of the Board and leads the discussion at such meetings, serves as a liaison between the CEO and the independent directors, and performs such additional duties and responsibilities as requested by the Board from time to time.

Executive Sessions

Executive sessions of the independent directors of the Board are scheduled during each regularly scheduled in-person Board meeting. These executive sessions are led by our non-executive chairman of the Board. Our non-executive chairman of the Board provides feedback to our CEO, as needed, promptly after the executive session.

Risk Oversight

The Board oversees our risk management process. Management reviews the process, including identification of key risks and steps taken to address them, with the full Board at least on an annual basis. The Audit Committee, the CLD Committee, and the NGC Committee assist the Board in discharging its oversight duties. The CLD Committee reviews risks related to the subject matters enumerated in its charter, including risks associated with our compensation programs. The NGC Committee considers risks related to the subject matters for which it is responsible as identified in its charter, including risks associated with corporate governance. Similarly, the Audit Committee considers risks related to the subject matters enumerated in its charter, including risks relating to internal controls, disclosure, and financial reporting. Accordingly, while each of the three committees contributes to the risk management oversight function by assisting the Board in the manner outlined above, the Board remains responsible for the oversight of our risk management program.

Director Nomination

The NCG Committee has the responsibility for establishing the criteria for recommending which directors should stand for reelection to our Board and the selection of new directors to serve on our Board. In addition, the NCG Committee is responsible for establishing the procedures for our stockholders to nominate candidates to our Board. Although the NCG Committee has not formulated any specific minimum qualifications for director candidates, it has determined that desirable characteristics include, but are not limited to, business experience, mature judgment, personal and professional ethics, and integrity. The Company does not have a formal policy with respect to consideration of diversity in identifying director nominees; however, in the process of selecting a director nominee, the NCG Committee assesses backgrounds, diversity and expected contributions of the individuals to the Board.

Our bylaws permit any stockholder of record to nominate directors. Stockholders who wish to submit nominees for election at an annual or special meeting of stockholders should follow the procedure described in the "*Stockholder Proposals*" section on page 60 of this Proxy Statement. The NCG Committee applies the same standards in considering candidates submitted by stockholders as it does in evaluating candidates submitted by members of the Board.

Director Resignation Policy

Our Board has adopted a director resignation policy. Under this policy in an uncontested election of directors, any nominee who receives a greater number of votes "withheld" from his or her election than votes "for" such election must promptly tender his or her resignation to the NCG Committee. The NCG Committee will promptly consider all relevant factors including, without limitation, (a) the stated reasons why votes were withheld from such director; (b) any alternatives for curing the underlying cause of the withheld votes; (c) the tenure and qualifications of the director; (d) the director's past and expected future contributions to the Company; (e) our director criteria; (f) our Corporate Governance Guidelines; and (g) the overall composition of the Board, including whether accepting the resignation would cause the Company to fail to meet any applicable SEC or NYSE requirement. The NCG Committee will recommend to the qualified independent directors the action to be taken with respect to such offered resignation, and the qualified independent directors will act on the NCG Committee's recommendation no later than 90 days following the date of the stockholders' meeting in which the election occurred. If a majority of the members of the NCG Committee received a greater number of votes "withheld" from their election than votes "for" their election at the same election, then the remaining qualified independent directors on the Board will consider the matter directly or may appoint a committee of the Board amongst themselves solely for the purpose of considering the tendered resignations that will make the recommendation to the Board whether to accept or reject them.

Stock Ownership Guidelines

Our Board has adopted stock ownership guidelines for our NEOs and directors that are designed to align our NEOs' and directors' interests with our stockholders' interests by promoting long-term share ownership, which reduces the incentive for excessive short-term risk taking and further increase our NEOs' and directors' alignment with stockholder interests. These guidelines require our Chief Executive Officer to hold shares of our stock worth six times his annual salary, other NEOs to hold shares of our stock worth two times their annual salary, and each non-employee director to hold shares of our stock worth five times the director's annual retainer. Our NEOs and directors are expected to achieve their ownership thresholds within five years after joining our Board and/or being appointed as a NEO. As of December 31, 2018, each of our NEOs and directors were in compliance with the applicable guidelines.

Prohibition Against Hedging, Short-Sale, Pledging, and Repricing Underwater Stock Options

We have implemented both anti-hedging and anti-pledging policies, as well as a prohibition on participating in short sales of our stock, to ensure that our executives' stock remains at-risk. Our 2017 Equity Incentive Plan (2017 Plan) also prohibits repricing, repurchase or exchange of underwater stock options without stockholder approval.

Compensation and Leadership Development Committee Interlocks and Insider Participation

No member of our Compensation and Leadership Development Committee and none of our executive officers has any relationships that would constitute an interlocking relationship with executive officers and directors of any other entity.

Code of Business Conduct and Ethics

Our Board has adopted a Code of Business Conduct and Ethics that applies to all of our directors and employees. Our Code of Business Conduct and Ethics is available under Investor Relations section of our website at ir.pros.com.

Communication with Our Board

Stockholders or interested parties who wish to communicate with members of our Board may send correspondence to them in care of our Corporate Secretary at 3100 Main Street, Suite 900, Houston, TX 77002. Such communication will be forwarded to the intended recipient(s). We currently do not intend to have our Corporate Secretary screen this correspondence, but we may change this policy if directed by our Board due to the nature or volume of the correspondence. Communications that are intended specifically for the non-executive chairman of the Board may also be sent to the street address noted above, to the attention of the non-executive chairman of the Board.

OUR BOARD OF DIRECTORS

The table below provides ages, positions, current membership, term of office, and other relevant information for each of our directors:

Name	Age	Position(s) with the Company	Director Since	Current Term Expires	Current Class of Directo	Audit	Compensation and Leadership Development	Nominating and Corporate
Penelope Herscher	58	Director	2018	2021	II		Member[1]	Member[1]
Ellen Keszler[2]	56	Director	-	-	-	Member[2]		Member[2]
Greg B. Petersen	56	Director	2007	2020	I	Member	Chair	
Leslie Rechan	57	Director	2015	2021	II	Member[3]	Member[3]	Member
Andres D. Reiner	48	President, CEO and Director (Nominee)	2010	2019	III			
William Russell	67	Non-Executive Chairman	2008	2018	II		Member	Chair
Timothy V. Williams	69	Director	2007	2020	I	Chair		Member
Mariette M. Woestemeyer	67	Director	1985	2020	I			
Ronald F. Woestemeyer	73	Director (Nominee)	1985	2019	III			
Number of meetings in 2018						10	6	3

(1) Ms. Herscher was appointed to the Compensation and Leadership Development and Nominating and Corporate Governance Committees in May 2018.
(2) Ms. Keszler retired from our Board in May 2018.
(3) Mr. Rechan was appointed to the Audit Committee and discontinued serving on the Compensation and Leadership Development Committee in May 2018.

Directors and Director Nominees

Penelope Herscher

Ms. Herscher is a seasoned technology public company board director, executive and entrepreneur, with more than 15 years of experience as a high-tech CEO in Silicon Valley and more than 10 years of experience serving on public company boards of directors. Ms. Herscher currently serves on the boards of Faurecia SA (EPA:EO), Verint (NASD:VRNT), and Lumentum Holdings, Inc. (NASD:LITE).

Ms. Herscher previously served as CEO for FirstRain, a privately held company in the unstructured data analytics space, from December 2004 to November 2015. Prior to leading FirstRain, she was CEO of Simplex Solutions and served in C-level and senior executive positions for a number of software and technology firms, including Cadence Design Systems, Inc.

Ms. Herscher has extensive business and leadership experience in software companies, including experience in software sales, marketing, strategy, governance, compensation planning and mergers and acquisitions.

Greg B. Petersen

Mr. Petersen serves as the chairman of the Compensation and Leadership Development Committee of the Board. Mr. Petersen has served as president of Brookview Capital Advisors since 2016.

Mr. Petersen also served on the board of directors of Diligent Corporation (2013 to 2016), Piksel, Inc. (2012 to 2017), and Synthesio. Mr. Petersen served as the chairman of the audit committee at Diligent and Piksel, and as an advisory board member at Synthesio. From 2014 to 2015, he served as Executive Vice Chairman at Diligent Corporation. Mr. Petersen previously served as Chief Financial Officer for CBG Holdings, Lombardi Software, Inc. (which was sold to IBM in 2010), and Activant Solutions, Inc. Mr. Petersen previously served in executive roles with Trilogy Software and RailTex. Mr. Petersen began his career with American Airlines, Inc. (NASD:AAL), including serving as managing director of corporate development where he led a project to create Sabre Holdings, Inc. (NASD:SABR) and complete its IPO. Mr. Petersen holds a Bachelor of Arts in Economics from Boston College and a Master of Business Administration from the Fuqua School of Business at Duke University.

Mr. Petersen has business and leadership experience in software companies, merger and acquisition experience, and extensive financial planning, accounting, governance, compensation planning and risk management knowledge.

Leslie Rechan

Mr. Rechan serves as President and Chief Executive Officer and a director of Solace Corp., a cloud-based smart data movement solutions company, a position he has held since September 2017.

Prior to Solace, Mr. Rechan served as President and Chief Executive Officer and a director of Halogen Software (TSX:HGN), a cloud-based talent management software provider (2015 to 2017). Mr. Rechan previously served as General Manager, IBM Business Analytics Division (2011 to 2014), and Vice President, Sales, Solutions and Services, IBM Business Analytics Division (2008 to 2011). Mr. Rechan held several leadership positions at IBM Corp. across field sales, systems engineering, services, solutions, development, and general management in North America, Europe and Asia Pacific. Mr. Rechan has also served in executive roles at Cognos Inc., Oracle Corporation, Seibel Systems, Inc., Cadence Design Systems Inc. and Onyx Software Corp. Mr. Rechan received his B.S. in Electrical Engineering and his B.A. in organizational behavior from Brown University and his M.A. in management from Northwestern University.

Mr. Rechan has extensive business and leadership experience in software companies, including experience in software sales and operations management.

Andres D. Reiner

Mr. Reiner serves as our President and Chief Executive Officer, a position he has held since November 2010. Mr. Reiner has also served on the board of directors of Paylocity Holding Corporation (NASD:PCTY) since September 2014, and serves on the compensation and nominating and governance committees for Paylocity.

Mr. Reiner holds a Bachelor of Science in Computer Science with a minor in Mathematics from the University of Houston.

As a result of his 19+ years of experience with the Company, Mr. Reiner has familiarity with all of the Company's key day to day operations, in-depth experience in and knowledge of the development of our products, services and the markets in which we compete, and has leadership, management and operating experience.

For more information on Mr. Reiner, see "Executive Officers" on page 23 of this Proxy Statement.

William Russell

Mr. Russell serves as our non-executive chairman of the Board and as chairman of the Nominating and Corporate Governance Committee of the Board. Mr. Russell also serves on the board of directors at Accesso Technology Group PLC (OTCMKTS:LOQPF).

Mr. Russell previously served in a variety of roles in both public and private technology company boards and previously served on the boards of SABA Software, Inc. (from January 2010 to March 2015), webMethods and Cognos. Mr. Russell has held a number of senior-level roles in his more than 20 years at Hewlett-Packard, including Vice President and General Manager of the multi-billion-dollar Enterprise Systems Group. Mr. Russell holds a Bachelor of Science in Computer Science from Edinburgh University and has completed several executive development programs from institutions including Harvard Business School and INSEAD.

Mr. Russell is a National Association of Corporate Directors (NACD) Board Leadership Fellow, demonstrating his commitment to the highest standards of boardroom excellence. NACD Fellowship is a comprehensive and continuous program of study that empowers directors with the latest insights, intelligence, and leading boardroom practices. As a result of leading Hewlett-Packard's substantial software business, Mr. Russell has broad knowledge of large-scale software operations, including sales, marketing, development, finance, strategic planning and leadership.

Timothy V. Williams

Mr. Williams serves as the chairman of the Audit Committee of the Board. Mr. Williams has also served on the board of directors and as chairman of the audit committee of ChannelAdvisor Corporation (NYSE:ECOM) since 2012.

Mr. Williams previously served on the board of directors and as chairman of the audit committee of Halogen Software, Inc. (TSE:HGN) (April 2011 to May 2017). Mr. Williams served as Senior Vice President and Chief Financial Officer of Blackbaud, Inc. (NASD:BLKB), a provider of software and services to non-profit organizations, from January 2001 until his retirement in November 2011. Mr. Williams previously served as Executive Vice President and Chief Financial Officer of both Mynd Corporation (now a subsidiary of Computer Sciences Corporation), and Holiday Inn Worldwide, a subsidiary of Bass PLC. Mr. Williams holds a Bachelor of Arts in business from the University of Northern Iowa.

Mr. Williams has extensive financial, business, management and public software company expertise. Through his experience as a chief financial officer, including with three other software and services firms, Mr. Williams' brings to the Board extensive knowledge of accounting, risk management, general management of software companies, and public company reporting requirements and processes.

Mariette M. Woestemeyer

Mrs. Woestemeyer co-founded the Company in 1985 with her husband, Ronald F. Woestemeyer.

Mrs. Woestemeyer was previously the Chief Financial Officer of Metro Networks, a broadcasting company, from 1983 to 1985 and held various financial roles with Continental Airlines and its predecessor, Texas International Airlines, prior to 1983. Mrs. Woestemeyer holds a Bachelor of Business Administration and a Master of Business Administration from the University of Houston.

As co-founder of the Company, Mrs. Woestemeyer brings continuity and history of current and past management and direct relevant industry experience. Mrs. Woestemeyer also has familiarity with all of the Company's key operations as a result of serving as our director since 1985. Mrs. Woestemeyer also has experience as our Chief Financial Officer for many years and related operational expertise.

Ronald F. Woestemeyer

Mr. Woestemeyer co-founded the Company in 1985 with his wife, Mariette Woestemeyer.

Mr. Woestemeyer previously served as our Executive Vice President, Strategic Business Planning from 1997 until his retirement in July 2015. From 1985 to 1997, Mr. Woestemeyer served as our Chief Executive Officer. Prior to founding the Company, Mr. Woestemeyer spent 14 years at Texas International Airlines in various management and executive positions with responsibility over sales and marketing. Mr. Woestemeyer holds a Bachelor of Business Administration degree from the University of Houston.

Mr. Woestemeyer brings continuity and direct relevant industry experience to the Board as well as his unique familiarity with the business, structure, culture, history and deep knowledge of our markets.

The following table provides a summary view of the experience, expertise and other attributes of our directors and director nominees:

Board Experience, Expertise or Attribute	Penelope Herscher	Greg B. Petersen	Leslie Rechan	Andres D. Reiner	William Russell	Timothy V. Williams	Mariette M. Woestemeye	Ronald F. Woestemeyer
				(Nominee)				(Nominee)
Accounting		x				x	x	
Business Operations	x	x	x	x	x	x	x	x
Finance		x	x	x		x	x	
International	x		x	x	x		x	x
Leadership	x	x	x	x	x	x	x	x
M&A	x	x	x	x	x	x		
Public Company/Governance	x	x	x	x	x	x		
Risk Management	x	x	x			x		
Sales & Marketing	x		x	x	x			x
Software Industry	x	x	x	x	x	x	x	x
Travel Industry		x	x	x			x	x
Cloud Software	x	x	x	x	x	x		

Director Continuing Education

Our directors regularly attend continuing education events related to board governance best practices, including conferences and webinars provided by the NYSE, NACD and Equilar, among others. For example, many of our independent directors have attended the NACD Global Board Leaders' Summit in recent years. In addition, Mr. Russell, our Non-Executive Chairman, has been recognized as an NACD Board Leadership Fellow, the highest credential for corporate directors offered by the NACD.

DIRECTOR COMPENSATION

The Board has approved a compensation structure for non-employee directors consisting of an equity award, annual cash retainer, and for certain positions, a supplemental cash retainer(s). All cash retainers are paid on a quarterly basis. In 2018, each non-employee member of our Board received 5,594 RSUs which vested in full on January 10, 2019, except for 1,875 shares awarded to Ms. Keszler which vested on her retirement from the Board on May 11, 2018 at our 2018 annual meeting. Each non-employee member of our Board received an annual cash retainer of $35,000 in 2018. The non-executive chairman of our Board received a supplemental retainer of $50,000 in 2018. In addition, each non-employee director serving as a chair or member of a standing committee of our Board received the following supplemental cash retainer(s):

Committee Role	Audit Committee	Compensation and Leadership Development Committee	Nominating and Corporate Governance Committee
Member	$ 15,000	$ 15,000	$ 7,500
Chair	$ 30,000	$ 20,000	$ 10,000

We also reimburse our directors for reasonable out-of-pocket expenses incurred in connection with (i) their attendance at our Board, committee meetings, and other Company meetings, and (ii) director continuing education programs, including participation in the National Association of Corporate Directors (NACD), of which the Company is a member.

2018 Director Compensation Table

The following table sets forth the compensation paid to our non-employee directors for service on our Board during 2018. Compensation for Andres D. Reiner our President and Chief Executive Officer is set forth in the "*Summary Compensation*" table on page 38 of this Proxy Statement. Mr. Reiner does not receive any compensation for his services as a director.

Name	Fees Earned or Paid in Cash ($)	Restricted Stock Units ($) (1)	Total ($)
Ellen Keszler[2]	$ 20,844	$ 50,663	$ 71,507
Penelope Herscher	$ 57,500	$ 151,150	$ 208,650
Greg B. Petersen	$ 70,000	$ 151,150	$ 221,150
Leslie Rechan	$ 57,500	$ 151,150	$ 208,650
William Russell	$ 110,000	$ 151,150	$ 261,150
Timothy V. Williams	$ 72,500	$ 151,150	$ 223,650
Mariette M. Woestemeyer	$ 35,000	$ 151,150	$ 186,150
Ronald F. Woestemeyer	$ 35,000	$ 151,150	$ 186,150

(1) Represents the aggregate grant date fair value of equity awards granted for services in 2018 calculated in accordance with GAAP. For additional information about valuation assumptions for equity awards, refer to Note 13 of our financial statements in our Annual Report on Form 10-K for the year ended December 31, 2018. The January 8, 2018 grant of RSUs awarded to all non-employee directors vested in full on January 10, 2019 and had a grant date fair value of $27.02.

(2) Ms. Keszler retired from our Board on May 11, 2018, the date of our 2018 annual meeting.

The following table presents the aggregate number of outstanding RSUs and stock option awards held by our non-employee directors as of December 31, 2018:

Name	Restricted Stock Units (#) (1)
Penelope Herscher	—
Greg B. Petersen	5,594
Leslie Rechan	5,594
William Russell	5,594
Timothy V. Williams	5,594
Mariette M. Woestemeyer	5,594
Ronald F. Woestemeyer	5,594

(1) Represents RSUs granted on January 8, 2018, which fully vested on January 10, 2019, under the 2018 director compensation policy, for all non-employee directors. Each RSU represents the contingent right to receive one share of Common Stock.

PROPOSAL ONE

ELECTION OF DIRECTORS

What am I voting on?

Stockholders are being asked to elect two Class III director nominees to the Board for a three-year term.

Voting Recommendation:

The Board recommends voting "FOR" the election of each of the two Class III director nominees.

Two (2) directors are to be elected at the Annual Meeting. Our Board, upon the recommendation of the Nominating and Corporate Governance Committee, has nominated Andres D. Reiner and Ronald F. Woestemeyer as Class III directors, each to hold office until the 2022 Annual Meeting and until their successor has been duly elected and qualified or until the earlier of their death, resignation or removal.

The Board is also composed of three Class I directors, whose terms expire upon the election and qualification of directors at the annual meeting of our stockholders to be held in 2020, and three Class II directors, whose terms expire upon the election and qualification of directors at the annual meeting of our stockholders to be held in 2021.

The Board knows of no reason why any of the nominees would be unable or unwilling to serve, but if any nominee should for any reason be unable or unwilling to serve, the proxies will be voted for the election of such other person for the office of director as the Board may recommend in the place of such nominee. Unless otherwise instructed, the proxy holders will vote the proxies received by them for the nominees named below.

Vote Required

Directors are elected by a plurality vote of the votes cast by holders of our Common Stock entitled to vote at the Annual Meeting. Abstentions and broker non-votes will not have any effect on this proposal. Accordingly, the two nominees who receive the highest number of properly executed "FOR" votes from the holders of Common Stock will be elected as directors.

In accordance with Delaware law, abstentions will be counted for purposes of determining both whether a quorum is present at the Annual Meeting and the total number of shares represented and voting on this proposal. While broker non-votes will be counted for purposes of determining the presence or absence of a quorum, broker non-votes will not be counted for purposes of determining the number of shares represented and voting with respect to the particular proposal on which the broker has expressly not voted and, accordingly, will not affect the approval of this proposal.

The number of "withhold" votes with respect to a nominee will affect whether our Director Resignation Policy will apply to that individual. In accordance with our Director Resignation Policy, any nominee for director who receives a greater number of votes "withheld" from his or her election than votes "for" such election is required to offer his or her resignation following certification of the stockholder vote. Our Nominating and Corporate Governance Committee of our Board would then consider whether to accept the resignation and make a recommendation to our independent directors as to the action to be taken with respect to the offer. *For more information about this policy, see "Corporate Governance - Director Resignation Policy."*

The NYSE broker discretionary rules prohibit banks, brokers and other intermediaries from voting shares held in their clients' accounts on elections of directors unless the client has provided voting instructions. Therefore, if you hold your shares in street name, it is important that you cast your vote if you want it to count in the election of directors.

THE BOARD UNANIMOUSLY RECOMMENDS VOTING "FOR" THE ELECTION OF EACH OF THE THREE CLASS II DIRECTOR NOMINEES.

EXECUTIVE OFFICERS

The following table sets forth the executive officers and key employees of the Company, their ages, and the positions currently held by each such person with the Company immediately prior to the Annual Meeting:

Name	Age	Position
***Named Executive Officers*:**		
Andres D. Reiner	48	Chief Executive Officer, President and Director
Stefan B. Schulz	52	Executive Vice President and Chief Financial Officer
Thomas F. Dziersk	56	Executive Vice President, Worldwide Sales
***Other Significant Employees*:**		
Celia Fleischaker	49	Chief Marketing Officer
Mike Jahoda	39	Senior Vice President, Professional Services
Damian Olthoff	44	General Counsel and Secretary
Rob Reiner	57	Chief Technology Officer
Jill Sawatsky	49	Vice President, Customer Success
Wagner Williams	40	Chief People Officer
Benson Yuen	58	President, Travel
Craig Zawada	48	Chief Innovation Officer

Andres D. Reiner

Mr. Reiner serves as a director and as our President and Chief Executive Officer.

Mr. Reiner joined the Company in 1999, prior to his appointment as President and Chief Executive Officer in November 2010, held a series of positions with successively increasing responsibility, including Senior Vice President of Product Development and Executive Vice President of Product and Marketing. Prior to becoming our President and Chief Executive Officer, he was responsible for global marketing and alliances, product management, science research, and development of our next generation software products. Mr. Reiner was also instrumental in our European growth, the expansion of the Company's sales and marketing efforts worldwide, and our transition to a cloud business. Prior to joining PROS, Mr. Reiner held technical and management positions in technology companies including Platinum Technology, ADAC Healthcare Information Systems, and Kinesix.

Mr. Reiner holds a Bachelor of Science in Computer Science with a minor in Mathematics from the University of Houston.

Stefan B. Schulz

Mr. Schulz serves as our Executive Vice President and Chief Financial Officer.

Mr. Schulz joined PROS and assumed his current position in March 2015. Prior to joining PROS, Mr. Schulz served as Chief Financial Officer for Digital River, Inc., a global provider of cloud-based commerce, payments and marketing services, from July 2011 to February 2015. Mr. Schulz also previously served in various roles, including as Senior Vice President, Chief Financial Officer and Chief Accounting Officer, with Lawson Software, an enterprise resource planning software company, from October 2005 to July 2011; in various finance and accounting roles at BMC Software, from 1993 to 2005, including as Vice President and Corporate Controller; and as an Audit Manager in the Enterprise Group with Arthur Andersen LLP. Mr. Schulz was instrumental our transition to a cloud business.

Mr. Schulz holds a B.B.A. in Accounting from Lamar University.

Thomas F. Dziersk

Mr. Dziersk serves as our Executive Vice President, Worldwide Sales.

Mr. Dziersk joined PROS and assumed his current position in October 2017. Prior to joining PROS, Mr. Dziersk served as President for NICE Americas, a provider of enterprise software solutions that empower organizations to make smarter decisions based on advanced analytics, from April 2014 to January 2017. Prior to joining NICE, Mr. Dziersk spent eight years with JDA Software Group, Inc. a supply chain software provider, where he served three years as Executive Vice President, Worldwide Sales and five years as Marketing and Senior Vice President Americas.

Mr. Dziersk holds a B.A. in Economics from the University of Michigan.

COMPENSATION DISCUSSION AND ANALYSIS

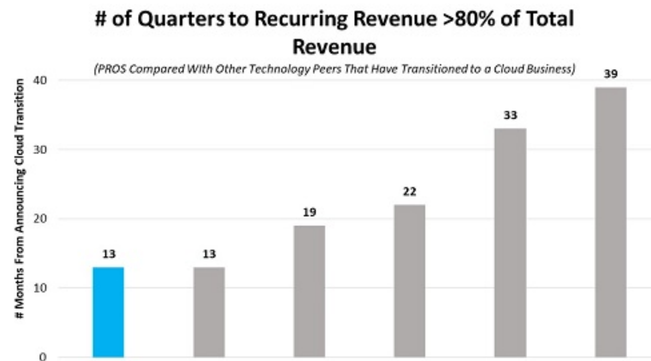
In this section, we describe the executive compensation program for our NEOs. We also explain how our Compensation and Leadership Development (CLD) Committee determined the pay of our NEOs and its rationale for specific decisions in 2018. Our NEOs for 2018 were:

Name	Title
Andres D. Reiner	Chief Executive Officer, President and Director
Stefan B. Schulz	Executive Vice President and Chief Financial Officer
Thomas F. Dziersk	Executive Vice President, Worldwide Sales

2018 Business Highlights

In 2018, we continued to successfully execute on our multi-year cloud transition, growing subscription revenue 57% and total revenue 17%, and driving 59% total shareholder return cumulatively in 2018 and 2019 through March 15, 2019. Despite this strong performance, we set our CEO's target pay only near peer median pay levels while using a highly performance-based compensation program with rigorous goals.

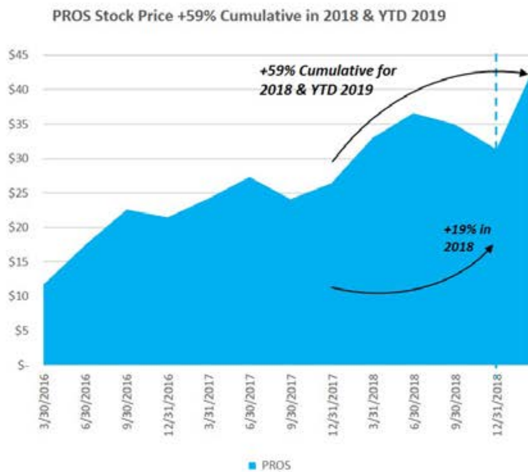
- *Continued to successfully execute on the multi-year strategy we set when announcing our cloud transition in 2015.* To date, the Company has met or exceeded our communicated cloud transition goals, including achieving numerous financial milestones faster than almost every other on-premise software company that has similarly transitioned to a recurring cloud business:

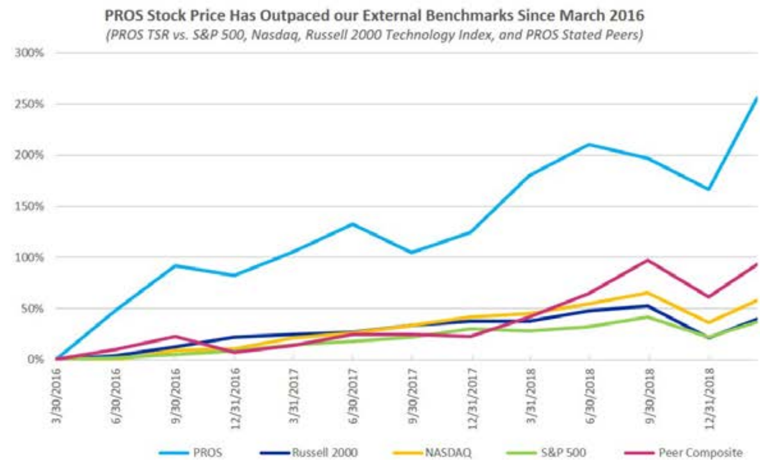


- *Delivered strong growth and rapid transformation of our business to the cloud.* Our results reflected further success in executing on our cloud transition, with year-over-year growth of 57% in subscription revenue, 18% in ARR, and 23% in Recurring Revenue, while also improving Recurring Revenue Gross Margin.

(1) ARR is used to assess the trajectory of our cloud business. ARR means, as of a specified date, the contracted recurring revenue, including contracts with a future start date, together with annualized overage fees incurred above contracted minimum transactions, and excluding perpetual and term license agreements recognized as license revenue in accordance with GAAP. ARR should be viewed independently of revenue and any other GAAP measure.

- *In connection with our cloud transformation our stock price continued to increase in 2018.* Shareholders benefited from a 19% increase in our share price in 2018 and a cumulative 59% increase from the end of 2017 through March 15, 2019.

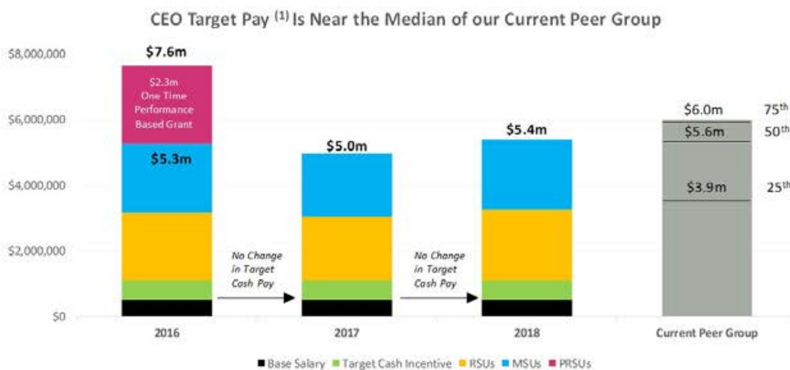




2018 Compensation Highlights

In order to promote retention and properly incentivize our NEOs, the CLD Committee focused on a best practices, competitive compensation program as follows:

- *CEO target pay was set conservatively, increasing 9% for 2018, and remains near peer median pay levels. This was despite the Company's strong financial performance and 23% total shareholder return in 2017 levels.* Despite the Company's successful cloud transition and >20% shareholder return in 2017, for 2018 our CEO's base salary and target cash incentive remained unchanged from 2017, and his target equity compensation[1] increased to $4.3 million in 2018 from $3.9 million in 2017 to increase target total compensation to the expected 2018 peer median and recognize our >20% shareholder return in 2017. Our CEO's total target pay, including base salary and target cash incentive and the target value of long-term equity compensation, was set near the expected median of our 2018 peer group, and this expected median was later confirmed to be an accurate forecast.

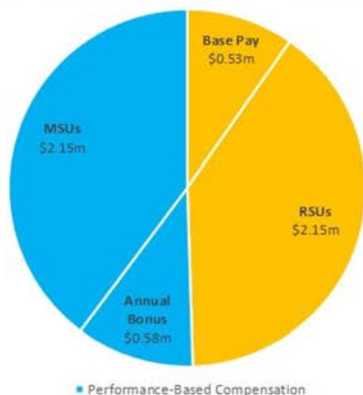


(1) Target equity compensation (a) for RSUs and MSUs represents total target equity compensation determined by the CLD Committee divided by the closing price of the Company's Common Stock reported by the NYSE on the grant date, and differs from the accounting grant date fair value included in the "*Grants of Plan Based Awards*" table on page 39 of this Proxy Statement; and (b) for 2016 Stock Price PRSUs represents the accounting grant date fair value.

- *Continued emphasis on pay-for-performance.* In 2018, our CLD Committee again sought to motivate our NEOs through predominantly "performance-based" cash and equity awards. The majority of our CEO's 2018 target total compensation was directly performance-based, including annual cash incentives tied to pre-established performance targets and MSU equity awards which vary based on the relative performance of our stock compared to the Index over a three-year performance measurement period. Including RSU equity awards, which increase in value based on share price appreciation, >90% of our CEO's 2018 total target compensation is considered at risk.

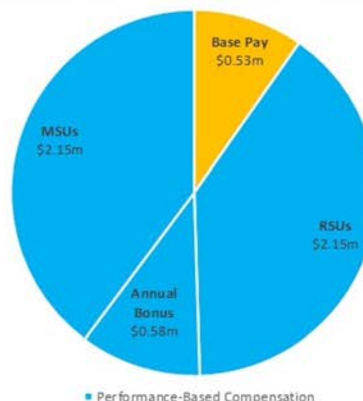
>50% of 2018 CEO Target Pay was Performance-Based

(paid only upon achieving certain business and stock price performance)



>90% of 2018 CEO Pay was At-Risk

(pay level directly tied to the success of our business and stock price)



(1) Target equity compensation for RSUs and MSUs represents total target equity compensation determined by the CLD Committee divided by the closing price of the Company's Common Stock reported by the NYSE on the grant date, and differs from the accounting grant date fair value included in the "*Grants of Plan Based Awards*" table on page 39 of this Proxy Statement.

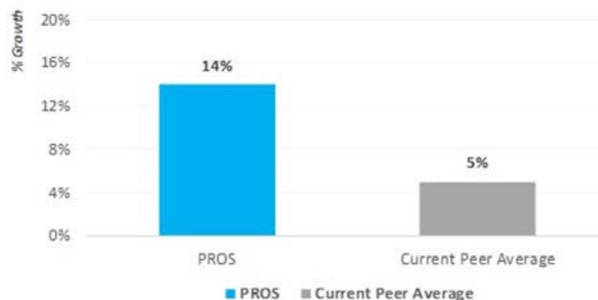
- *We set aggressive, performance-based and formulaic 2018 goals based on predefined targets with no discretion.* Performance goals that determine annual cash incentive attainment were set aggressively in 2018 with above median performance expectations compared to our peer group. For example, in 2018, our primary growth-oriented performance metric was ARR, and the ARR goal required 19% growth over 2017 to earn a target level award. This was higher than the approximately 17% average top line growth required to achieve target level incentive compensation by our peer CEOs for 2017. Additionally, the threshold for any incentive payment to be earned in 2018 required at least 14% growth over 2017, much higher than the peer average minimum threshold 5% growth required for our peer CEOs to earn any incentive in 2017. The 2018 annual results compared to the cash incentive plan goals resulted in our CEO earning 138.5% of his annual cash incentive target based on formulaic results vs. the original rigorous goals, with no discretion applied.

PROS Sets Aggressive Growth Targets For Cash Incentive Attainment

(YoY Growth Goal to Receive Target Level Incentive Payment)

PROS Also Sets Aggressive Minimum Thresholds For Any Cash Incentive Attainment

(Minimum YoY Growth Threshold to Receive Any Incentive Payment)



- *Say-on-Pay Vote*. Each year, our CLD Committee takes into account the result of the say-on-pay vote cast by our stockholders. At our 2018 Annual Meeting of Stockholders, our stockholders had the opportunity to provide an advisory vote on the compensation paid to our NEOs, or a "say-on-pay" vote. More than 85% of the total votes cast were voted in favor of our say-on-pay proposal. As a result, the CLD Committee believes that the results of our say-on-pay vote affirmed stockholder support of our updated approach to executive compensation, following 61% support in the 2017 stockholder vote. While say-on-pay is a key indicator of stockholder sentiment, we also keep an open dialogue with our institutional investors and stockholders throughout the year. We reach out to discuss business topics, seek feedback on our performance and address other matters of importance to our stockholders, such as executive compensation. During 2018, we have actively engaged with a significant majority of our shares outstanding. As a result of this ongoing outreach, the Committee further reevaluated our executive compensation program and made several changes to our pay program for 2019. The following table summarizes our shareholders' feedback and the Committee's resulting decisions:

What We Heard	What We Did
✓ Mixed level of concern on CEO pay levels.	✓ Updated our peer group to ensure an accurate comparison of peer executive compensation practices and pay levels, with CEO 2018 target compensation near the median of the updated peer group.
	✓ Set CEO 2019 target compensation near the expected median of our updated peer group.
	✓ Continued to set pay based on performance through our bonus plan and equity grants tied to our operational performance.
	✓ Continued to set aggressive goals for cash incentive attainment at the beginning of each year tied to our strategic plan. For example, in 2018, our primary growth-oriented performance metric was ARR, and this goal required 12% more growth to earn a target award than the approximate 17% median top line growth required for target level pay by our peers during 2017.
	✓ Increased required CEO stock ownership to 6 times annual salary.
✓ Strong support for linking performance-based equity to internal operating measures.	✓ Revised the structure of our 2019 performance-based equity grants from performance relative to the Russell 2000 Index, to performance relative to preset internal operating measures which reflect the success of our cloud transition, and aligns with shareholder interests.
✓ Desire for our performance-based goals to be tied to a successful cloud transition.	✓ Updated our annual cash incentive performance measures from ARR[1], total revenue, and Free Cash Flow[2] in 2018 to total revenue and Recurring Revenue Gross Margin in 2019 to ensure focus on the primary measures of top line growth and overall health of our cloud business.
	✓ Changed our performance-based equity compensation to incentivize growth in Recurring Revenue, our primary measure of growth for our cloud business.

Key Pay Practices

What We Do	What We Do *Not* Do
✓ Emphasize pay-for-performance where compensation is contingent upon the performance of our business, our stock price and individual performance	✓ No hedging or pledging of Company stock, including short sales
✓ Utilize performance-based pay through equity and cash incentive awards that require achievement of pre-established goals with no discretion	✓ No excessive perquisites
✓ Maintain “double trigger” change in control agreements	✓ No pensions
✓ Maintain a clawback policy	✓ No discount from fair market value in setting exercise price of stock options and stock appreciation rights
✓ CLD Committee oversees risks associated with compensation policies and practices	✓ No repricing underwater stock options or stock appreciation rights without stockholder approval
✓ CLD Committee retains an independent compensation consultant	✓ No equity vesting within less than one year after grant, except for up to 5% of the authorized shares
✓ Expect our CEO to hold stock equal to six times his base salary	
✓ Expect each other NEO to hold stock equal to two times their base salary	

Our Compensation Philosophy

Our executive compensation program is designed to reward achievement of specific corporate goals, align our executives’ interests with those of our stockholders by rewarding performance that meets or exceeds established goals, reward superior performance and to achieve the following overall objectives:

Objective	Rationale
Competitive pay	Enable the Company to attract and retain high-caliber talent by setting compensation competitive with that being offered to individuals holding comparable positions at other public companies with which we compete for business and talent. The Company does not target a specific percentile and reviews market data to check that compensation is generally in a market range and reflects the individual’s experience, performance, and contribution.
Pay for performance	Provide a compensation package that is weighted heavily towards performance-based pay to motivate high performance among our NEOs, with compensation levels reflecting the achievement of short- and long-term performance objectives
Align the interests of our executives with those of our stockholders	Directly link rewards to the achievement of measurable financial objectives that build long-term stockholder value

2019 Compensation Highlights

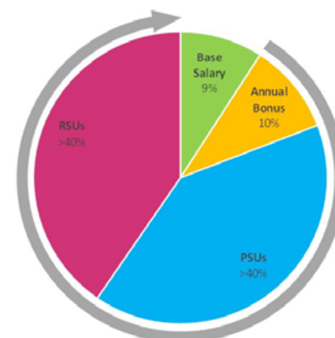
2019 CEO Compensation Program Overview

The Company's 2019 CEO compensation program reflects shareholder feedback received throughout 2018 and is designed to reward achievement of aggressive performance goals that align with our long term cloud business strategy.

Pay Component	Link to Performance	Key Characteristics in 2019 & Changes from 2018
Base Salary	• Supports attraction and retention of talent	• No change in base salary from 2018 • Continued alignment with competitive market practice

Annual Cash Incentive (Bonus)	• Focused on overall revenue growth and profitability of our recurring business, both key drivers of shareholder value	• No change in target value from 2018
		• Attainment is formulaic:
		  • Total Revenue
		  • Recurring Revenue Gross Margin %

Long Term Equity Incentive	• Focused on growth of our recurring business, the key driver of shareholder value	• Set target value near the median of our peer CEOs • Changed basis for attainment from MSUs comparing PROS TSR to Russell 2000 index TSR to PRSUs tied to attainment of certain long term Company performance goals aligned with shareholder value creation • 2019 PRSU attainment is formulaic based 100% on Recurring Revenue growth over a 2 year performance period (2019-2020), with an additional year of vesting (vests 12/31/2021)



>90% At-Risk

>50% Performance-Based

(1) Target equity compensation for RSUs and MSUs represents target equity compensation determined by the Compensation and Leadership Development Committee divided by the closing price of the Company's Common Stock reported by the NYSE on the grant date, and differs from the accounting grant date fair value included in the "Grants of Plan Based Awards" table on page [41] of this Proxy Statement.

Our CLD Committee chose to make the changes set forth below to our NEOs' compensation for 2019 after reviewing each leader's tenure and salary history with us, the Company's and each leader's 2018 performance, the compensation practices from our updated peer group, each leader's compensation relative to our updated peer group, and the feedback from shareholder engagement throughout 2018.

Andres Reiner, President and Chief Executive Officer

Mr. Reiner joined the Company in 1999 and has served as our President and Chief Executive Officer since 2010. Mr. Reiner again successfully steered the Company through an accelerated transition to the cloud in 2018. Based on the Company's strong performance in 2018, and shareholder return of 19% in 2018, the CLD Committee increased Mr. Reiner's target pay by 6% to remain in line with the median of our updated peer group. For the fourth year in a row, the CLD Committee did not change Mr. Reiner's base salary and cash incentive target for 2019. The Committee instead increased Mr. Reiner's performance-based equity compensation, from $4.3 million in 2018 to $4.65 million in 2019, consistent with the median target equity compensation for our peer CEOs. This decision was based on Mr. Reiner's continued impact on the Company's successful operational and financial progress on our cloud transition and the resulting growth in shareholder return since the start of 2016. Together these decisions resulted in Mr. Reiner's total target compensation approximating the median of peer compensation for 2019, although the target incentive and 50% of the equity award will be forfeited if performance at the end of the performance period does not meet the minimum required performance levels.

	Cash Compensation			Target Equity[1]		
	Base Salary	Incentive Target	Incentive Earned	RSUs	MSUs/ PRSUs	Total Target Compensation
2018 (Decided Jan. 2018)	$ 525,000 (+0% vs. 2017)	$ 577,500 (+0% vs. 2017)	$ 799,838 (138.5% of target) (+91% vs. 2017)	$ 2,150,012 (+11% vs.2017)	$ 2,150,012 (+11% vs. 2017)	$ 5,402,524 (9% vs. 2017) (vs. 23% TSR in 2017)
2019 (Decided Jan. 2019)	$ 525,000 (+0% vs. 2018)	$ 577,500 (+0% vs. 2018)	Not Yet Earned	$ 2,325,001 (+8% vs.2018)	$ 2,325,001 (+8% vs.2018)	$ 5,752,502 (+6% vs. 2018) (vs. 19% TSR in 2018)

(1) Target equity reflects target award value approved by the CLD Committee on the date of grant calculated and does not reflect the fair value as reported in the 2018 Summary Compensation Table below in this Proxy Statement.

Stefan Schulz, Executive Vice President and Chief Financial Officer

Mr. Schulz joined the Company in March 2015 as Executive Vice President and Chief Financial Officer. Mr. Schulz's leadership has been integral to the Company's cloud transition and corresponding shift to a cloud-based financial model. For 2019, the CLD Committee decided to increase Mr. Schulz's base salary and cash incentive target by 3% from 2018 to $392,000 and $314,000 at target, respectively. The Committee also decided to increase Mr. Schulz's target equity-based compensation from $1.8 million in 2018 to $2.0 million in 2019 due to Mr. Schulz's impact on the Company's successful operational and financial progress on our cloud transition, and the resulting growth in shareholder return in 2018.

	Cash Compensation			Target Equity[1]		Total Target Compensation
	Base Salary	Incentive Target	Incentive Earned	RSUs	MSUs /PRSUs	
2018 (Decided Jan. 2018)	$ 380,000 (+4% vs. 2017)	$ 304,000 (+4% vs. 2017)	$ 421,040 (138.5% of target) (+98% vs. 2018)	$ 1,080,000 (+20% vs. 2017)	$ 720,000 (+20% vs. 2017)	$ 2,484,000 (+15% vs. 2017) (vs. 23% TSR in 2017)
2019 (Decided Jan. 2019)	$ 392,000 (+3% vs. 2018)	$ 314,000 (+3% vs. 2018)	Not Yet Earned	$ 1,200,000 (+11% vs. 2018)	$ 800,000 (+11% vs. 2018)	$ 2,706,000 (+9% vs. 2018) (vs. 19% TSR in 2018)

(1) Target equity reflects target award value approved by the CLD Committee on the date of grant calculated and does not reflect the fair value as reported in the 2018 Summary Compensation Table below in this Proxy Statement.

Thomas F. Dziersk, Executive Vice President, Worldwide Sales

Mr. Dziersk joined the Company in October 2017 as Executive Vice President, Worldwide Sales. Mr. Dziersk is responsible for the Company's sales results across all geographies and business lines, as well as all sales enablement operations. For 2019, the CLD Committee decided to increase Mr. Dziersk's base salary and cash incentive target by 2% from 2018 to $383,000 and $383,000 at target, respectively. The Committee also decided to set Mr. Dziersk's target equity-based compensation at $1.6 million in 2019, a pay level within the market range offered by the Company's peers for the same type and scope of responsibility.

	Cash Compensation			Target Equity[1]		Total Target Compensation
	Base Salary	Incentive Target	Incentive Earned	RSUs	MSUs /PRSUs	
2018 (Decided Jan. 2018)	$ 375,000 (+0% vs. 2017 annualized)	$ 375,000 (+0% vs. 2017 annualized)	$ 519,375 (138.5% of target)	$ 240,000 (Prorated given Oct 2017 grant)	$ 160,000 (Prorated given Oct 2017 grant)	$ 1,150,000 (Prorated given Oct 2017 grant)
2019 (Decided Jan. 2019)	$ 383,000 (+2% vs. 2018)	$ 383,000 (+2% vs. 2018)	Not Yet Earned	$ 960,000 (+0% vs. annualized 2018)	$ 640,000 (+0% vs. annualized 2018)	$ 2,366,000 (+1% vs. annualized 2018) (vs. 19% TSR in 2018)

(1) Target equity compensation represents total target equity compensation approved by the CLD Committee on the date of grant and does not reflect the fair value as reported in the 2018 Summary Compensation Table below in this Proxy Statement.

Pay Ratio Disclosure

Under Section 953(b) of the Dodd-Frank Wall Street Reform and Consumer Protection Act, and Item 402(u) of Regulation S-K, the Company is required to provide the ratio of the annual total compensation of our Chief Executive Officer to the annual total compensation of the median employee of the Company (Pay Ratio Disclosure). For 2018, the median annual total compensation of all employees of the Company and its subsidiaries other than our CEO, was $91,177. Our CEO's total annual compensation for 2018 for purposes of the Pay Ratio Disclosure was $6,757,227. The ratio of the total annual compensation of our CEO to the median of all other employees was 74:1. As SEC rules permit different methodologies, exemptions, estimates and assumptions for identifying the median employee and calculating pay ratio, our Pay Ratio Disclosure may not be comparable to the pay ratio reported by other companies.

We identified the median employee by examining the 2018 total cash compensation for all individuals, excluding our CEO, who were employed by us during the 2018 calendar year (whether employed on a full-time, part-time, or seasonal basis). For such employees, we did not make any assumptions, adjustments, or estimates with respect to total cash compensation, and we did not annualize the compensation for any full-time employees that were not employed by us for all of 2018. We used the

relevant exchange rate on December 31, 2018. After identifying the median employee criteria, we calculated annual total compensation for such employee using the same methodology we use for our NEOs as set forth in the 2018 Summary Compensation Table below.

Role of Our Compensation and Leadership Development Committee

The responsibility for establishing, administering and interpreting our policies governing the compensation and benefits for our NEOs, as well as granting any share-based awards to our NEOs, lies with our CLD Committee, which consists entirely of non-employee directors. Our CLD Committee has taken the following steps to ensure that our executive compensation and benefit policies are consistent with both our compensation philosophy and our Corporate Governance Guidelines:

- solicited recommendations from an independent executive compensation consultant to evaluate our executive compensation practices and assisted in developing and implementing the executive compensation programs;
- established a practice, in accordance with the rules of the NYSE, of reviewing the performance and determining the compensation earned, paid or awarded to our Chief Executive Officer;
- established a policy, in accordance with the rules of the NYSE, to review on an annual basis the performance of our other executive officers with assistance from our Chief Executive Officer and determined what we believe to be appropriate total compensation for these executive officers; and
- our CLD Committee members attended continuing education related to compensation best practices provided by NYSE, NACD, and Equilar, among others.

Our CLD Committee considers a broad range of facts and circumstances in setting executive compensation. Among the factors considered for our executives generally in 2018, and for the NEOs in particular, are recommendations from our compensation consulting firm, Frederic W. Cook & Co. (FW Cook), advice from our Chief Executive Officer, general economic and market conditions, our financial condition and operating results, our operating plan, our geographic location and the objectives of our executive compensation policies described above. The weight given to each factor differs from year to year and may differ among individual NEOs in any given year.

Our CLD Committee establishes executive compensation programs that the CLD Committee believes, based on the members' experience, is the most appropriate to achieve the goals described above. Our CLD Committee continues to evaluate our executive compensation programs on a quantitative and qualitative basis on at least a yearly basis or more frequently if circumstances dictate. Our CLD Committee expects to make new awards and adjustments to our executive compensation programs as appropriate.

Role of Management

During 2018, Mr. Reiner reviewed the performance and compensation of the NEOs, other than himself, and made recommendations as to their compensation to the CLD Committee. In making its decisions regarding executive compensation, the CLD Committee meets outside the presence of executive officers when making final decisions about each executive officer. The Chief Executive Officer is periodically present during portions of these deliberations that relate to the compensation for other executive officers. In addition, for share-based grants to employees who are not NEOs, the CLD Committee has delegated to the Chief Executive Officer the authority to make share-based awards within certain limitations on aggregate grants and specific award terms.

Role of Our Independent Compensation Consultant

The CLD Committee retained FW Cook to advise the CLD Committee on executive compensation matters for 2018 due to the breadth and depth of FW Cook's experience with executive compensation matters and their particular expertise in the software industry. During 2018, FW Cook advised the CLD Committee on a variety of subjects such as compensation plan design and trends, pay for performance analytics, benchmarking norms, executive compensation best practices, and other related matters. FW Cook reports directly to the Committee, participates in meetings as requested and communicates with the CLD Committee Chair between meetings as necessary. FW Cook has served as our independent compensation consultant since 2017.

Prior to engaging FW Cook, the CLD Committee reviewed FW Cook's qualifications, as well as their independence and any potential conflicts of interest. The CLD Committee has the sole authority to modify or approve the compensation for FW Cook, determine the nature and scope of their services, evaluate their performance, and terminate their engagement and hire replacement or additional consultants at any time. FW Cook did not perform any services for us in 2018 other than as serving as advisors to the CLD Committee.

Peer Group

To assist the CLD Committee in its deliberations on executive compensation, the Committee each year reviews our peer group with our compensation consultant for appropriateness based on a variety of factors including: similarities in market capitalization, revenue, relevant industries, the overlapping labor market for top management talent, our status as a publicly traded, U.S.-based firm, and various other characteristics. Additionally, in late 2017, the Committee specifically began to focus on reconsidering peers with a founder CEO who did not appear to be paid in a manner that reflects the external pay market. As a result of this review, the Committee made the following changes to the peer group:

2017 Peer Group (Count = 17)	2018 Peer Group (Count = 16)	2019 Peer Group (Count = 18)
—	8x8	8x8
Aspen Tech	Aspen Tech	Aspen Tech
Bazaarvoice	—	—
—	Benefitfocus	Benefitfocus
Bottomline Tech	Bottomline Tech	Bottomline Tech
Callidus Software	Callidus Software	Callidus Software
Cornerstone	Cornerstone	Cornerstone
		Coupa Software
		Ellie Mae
		Five9
HubSpot	—	—
Imperva	Imperva	Imperva
LivePerson	—	—
LogMeIn (revenue above range)	—	—
Model N	Model N	Model N
		Monotype Imaging
Paylocity	Paylocity	Paylocity
—	—	—
—	Q2 Holdings	Q2 Holdings
		Quotient Tech
—	RingCentral	RingCentral
SPS Commerce	SPS Commerce	SPS Commerce
Varonis Systems	—	—
VASCO Data	—	—
—	Workiva	Workiva
Removed for 2018 due to acquisition:	Removed for 2019 due to acquisition:	
Apigee	Bazaarvoice	
Jive Software	Broadsoft	
TubeMogul		

With these changes, the CLD Committee examined the compensation practices of these companies, which we believe most closely approximate the size, scope and complexity of our business. The 2018 peer group was set in late 2017 and referenced for setting target compensation for the hiring of Mr. Dziersk, our Executive Vice President, Worldwide Sales, and target compensation levels for NEOs for 2018, among other things. The 2019 peer group was established in late 2018 and referenced for setting target compensation levels for NEOs for 2019, among other things.

FW Cook prepared a compensation analysis using data gathered from publicly available information for these peer groups. The CLD Committee used this data to compare the compensation of our NEOs to similarly positioned persons within the

peer group and to determine the relative compensation for each NEO position, based on direct, quantitative comparisons of pay levels.

Components of Executive Compensation

Base Salaries

We use base salaries primarily to compensate and retain our NEOs for their services. Base salaries for our NEOs are reviewed on an annual basis and represent the minimum payment for a satisfactory level of individual performance as long as the executive remains employed with us. Base salary is set at the CLD Committee's discretion after taking into account the competitive landscape including the compensation practices of the companies in our selected peer groups, our business strategy, our performance goals and certain individual factors, such as position, salary history, individual performance and contribution, length of service with the Company and placement within the general base salary range offered to our NEOs.

Executive compensation activities in 2018. Based on the criteria above, the CLD Committee made no change to the base salaries for Messrs. Reiner, Schulz, or Dziersk.

Cash Incentives

For 2018, we utilized a cash incentive plan for Messrs. Reiner, Schulz, and Dziersk under which cash incentive payments could be made after the end of each year based on our performance against our corporate objectives for each year. The cash incentive program was intended to reward our NEOs upon the achievement of financial performance goals. Each component of the cash incentive plan had minimum threshold target and maximum levels and operated independent of the other components in that the target incentive payment amount for each component was payable if we hit our target level for that component. Actual results between the minimum threshold, target and the maximum goal levels would be pro-rated. We use our cash incentive plan to align our NEOs' performance with our financial results and to motivate our NEOs to successfully implement our cloud strategy and execute our corresponding financial plan by achieving annual goals that were set at the beginning of the year and remained unchanged through the end of the year.

Executive compensation activities in 2018. Our CLD Committee approved our 2018 Named Executive Officer Plan (2018 NEO Plan) for each of our NEOs in March 2018, and many of the changes reflected in the 2018 NEO Plan were in response to feedback received after the 2017 Say-on-Pay vote. The 2018 NEO Plan eliminated the non-GAAP gross profit from the 2017 Named Executive Officer Plan (2017 NEO Plan), retained the ARR and free cash flow elements from the 2017 NEO Plan, and added total revenue as a new element for 2018. Gross profit was eliminated and replaced with total revenue because we believe that total revenue will be an increasingly valuable indication of top line growth. Overall, ARR, total revenue, and free cash flow were the best indicators to measure the health and trajectory of our overall cloud business at this point in our cloud transition. The 2018 NEO Plan also eliminated the quarterly component and utilizes only annual performance periods for all measures in order to eliminate shareholder confusion on how our quarterly goals are defined. The weighting of the 2018 NEO Plan components is set forth in the following table:

Component	Weighting
ARR[1]	50%
Free Cash Flow[2]	25%
Total Revenue	25%
Total Incentive Opportunity	100%

(1) ARR is used to assess the trajectory of our cloud business. ARR means, as of a specified date, the contracted recurring revenue, including contracts with a future start date, together with annualized overage fees incurred above contracted minimum transactions, and excluding perpetual and term license agreements recognized as license revenue in accordance with GAAP. ARR should be viewed independently of revenue and any other GAAP measure.

(2) Free Cash Flow is a non-GAAP financial measure which is defined as net cash provided by (used in) operating activities, less additions to property, plant and equipment, purchases of other (non-acquisition-related) intangible assets and capitalized internal-use software development costs.

Payouts under the 2018 NEO Plan were based on Company performance compared to aggressive goals set for each component's target. Our primary growth-oriented performance metric is ARR and our ARR performance goal required 19% growth at target for 2017, which is 12% more aggressive than the approximately 17% average top line growth required to achieve target level incentive compensation by our peer companies for 2017. The CLD Committee authorized the payments in February 2019 for payment after audited results were determined for 2018. The target, minimum threshold and maximum for each component are set forth in the following table:

Component	Goals ($M)			Performance Achieved
	Threshold	Target	Maximum	
ARR[1]	180.0	190.4	195.7	190.5
Free Cash Flow	(6.0)	(2.0)	1.0	(0.5)
Total Revenue[1]	185.0	192.0	197.0	198.5

(1) Performance achievement shown on a constant currency basis.

For the 2018 NEO Plan, the CLD Committee set the incentive pay as a percentage of the annual base salary of each of Messrs. Reiner, Schulz, and Dziersk, based on achievement of the minimum threshold targets for each component above, as set forth in the following table:

Named Executive Officer	At Target Threshold	At Target	At Target Maximum
Andres D. Reiner	55%	110%	220%
Stefan B. Schulz	40%	80%	160%
Thomas F. Dziersk	50%	100%	200%

The actual payout for 2018 performance as a percentage of the base salary of each 2018 NEO reflects actual performance against the target range as described above, and are set forth in the following table:

Named Executive Officer	Actual Payout	
	As a % of Base	As a % of Target
Andres D. Reiner	152.35%	138.5%
Stefan B. Schulz	110.8%	138.5%
Thomas F. Dziersk	138.5%	138.5%

For 2018, the CLD Committee decided upon the target total cash compensation (base salary plus target cash incentives) for Messrs. Reiner, Schulz, and Dziersk based on each individual's compensation history, recent individual performance and contribution, as well as the competitive landscape including the compensation practices of the companies in our selected peer groups, our business strategy, and placement within the peer group compensation range for each position.

NEO bonuses in 2018 included no adjustment outside of the formulaic outcome driven by performance versus the goals that were set at the start of the year. We believe that the 2018 goals were aggressive based on performance benchmarking of the growth rates compared to our 2018 peer group, which contributed to our 59% stock price increase between December 31, 2017 and March 15, 2019.

Executive compensation activities in 2019. In January 2019, our CLD Committee approved our 2019 Named Executive Officer Plan (2019 NEO Plan) for each of our NEOs. Compared to the 2018 NEO Plan, the 2019 NEO Plan retained the total revenue element, eliminated the ARR and Free Cash Flow metrics, and added a non-GAAP Recurring Revenue Gross Margin metric. The CLD Committee believes that total revenue and Non-GAAP Recurring Revenue Gross Margin are the best indicators to measure the growth and efficiency of our business at this stage of our cloud transition. The weighting of the 2019 NEO Plan components is set forth in the following table:

Component	Threshold	Target	Maximum
Total Revenue	30%	60%	120%
Non-GAAP Recurring Revenue Gross Margin[1]	20%	40%	80%
Total Incentive Opportunity	**50.0%**	**100.0%**	**200.0%**

(1) Non-GAAP Recurring Revenue Gross Margin is used to measure the efficiency of our business, and is defined as (a) total recurring revenue (comprised of subscription and maintenance & support revenue), less recurring cost of revenue excluding share-based compensation, amortization of acquisition-related intangibles, acquisition-related expenses and non-cash rent expense on the preoccupied new PROS headquarters (non-GAAP Recurring Cost of Revenue), divided by (b) total recurring revenue, expressed as a percentage.

In setting the targets for these components, the CLD Committee believed that there was a reasonable likelihood that we could achieve the targets specified if we execute on our business plan. For the 2019 NEO Plan, the incentive payment as a percentage of the base salary for each continuing NEO remains unchanged from 2018.

Equity Awards

The CLD Committee believes that equity compensation plans are an essential tool to link the long-term interests of stockholders and employees, especially the NEOs, and serve to motivate NEOs to make decisions that will, in the long run, deliver the best returns to stockholders.

Executive compensation activities in 2018. In 2018, the CLD Committee considered the equity mix for our NEOs and believed it was in the best interests of our stockholders to grant equity awards in an equal mix of MSUs and RSUs to our Chief Executive Officer and an equity mix for Messrs. Schulz and Dziersk to be 60% RSUs and 40% MSUs to align with our peer group compensation practices. RSUs granted in 2018 (January 2018 RSUs) to our NEOs vest in four equal annual installments on January 10th of each year.

The CLD Committee determines the size of awards following review of competitive market data from our peer group, as well as subjective factors such as relative job scope, individual performance, tenure and experience, expected future contributions to the growth and development of the Company, Company performance, historical equity compensation awarded to a NEO, and the unvested equity position held by each NEO. These factors are reflected in the MSU and RSU grants made in January 2018 to Messrs. Reiner, Schulz, and Dziersk.

For 2018, the value of Mr. Reiner’s target equity award was based on the Company’s positive results against targets in 2017 and the substantial progress made in leading the Company’s cloud transition. The value of Mr. Schulz's target equity grant in 2018 was based on his especially positive performance in 2017 and his direct impact of the performance on the Company’s results. For 2018, the CLD Committee provided a small equity grant to Mr. Dziersk in order to get him on the same annual equity cycle as our other NEOs going forward.

RSUs are intended to assist in retaining our NEOs and to reward them for sustaining and increasing the share price of our Common Stock.

MSUs are performance-vested units under which the actual number of shares of our Common Stock received following vesting is based on the Company's total stockholder return (TSR) in relation to the Index over a specified performance period. The MSUs awarded in January 2018 (January 2018 MSUs) to Messrs. Reiner, Schulz, and Dziersk have a three-year performance period beginning January 2017. If we under-perform the Index, the percentage at which the MSUs convert into shares of our Common Stock will be reduced from 100%, at a rate of 2.5 to 1 (2½-percentage-point reduction in the number of target units for each percentage point of under-performance), with a minimum percentage of 0%. If we outperform the Index, the percentage at which the MSUs convert to shares will be increased from 100%, at a rate of 2.5 to 1 (2½-percentage-point increase in the number of target units for each percentage point of over-performance), with a maximum percentage of 200%.

The CLD Committee believes that MSUs reward for performance and adjust the reward and the performance for overall market conditions that may have contributed to the outcome. The value realized from MSUs can differ materially from reported

pay because MSUs may not vest, or may vest below target if our TSR does not sufficiently perform relative to the Index over the three year performance measurement period. For example, the MSUs granted in January 2015 did not vest. These limited vesting results were caused by the decrease in the Company's stock price during the early stages of the Company's transition to a cloud company.

PRSUs are performance vested restricted stock units distinct from MSUs which vest upon achievement of certain performance metrics, which were granted in 2016 with price contingencies that were materially higher than stock price at the time (Stock Price PRSUs). Stock Price PRSUs vest if the average trailing closing price of the Company's Common Stock meets certain minimum stock price growth hurdles. The actual number of shares of our Common Stock issuable under the Stock Price PRSUs is based on our average per share closing price for at least 105 calendar days prior to September 9, 2020, with 25% vesting at $27 (vested in 2017), an additional 25% vesting at $33 (vested in 2018), and the remaining 50% vesting at $41 (not yet vested). The Stock Price PRSUs were partially earned in 2017 and 2018 based on achieving the first two of three stock price growth goals. The remaining Stock Price PRSUs have not been earned yet as the applicable stock price hurdle has not been achieved. The following table shows the number of Stock Price PRSUs earned during 2017 through 2018 and the number that remain unearned but potentially earnable for each of our NEOs:

	Stock Price PRSUs per Price Hurdle		
Named Executive Officer	**Earned in 2017**	**Earned in 2018**	**Outstanding as of 12/31/2018**
Andres D. Reiner	50,000	50,000	100,000
Stefan B. Schulz	15,000	15,000	30,000
Thomas F. Dziersk	—	—	—

The following table sets forth information as of December 31, 2018 with respect to compensation plans under which our equity securities are authorized for issuance. For additional information on our equity compensation plans, see Note 11 of the Notes to the Consolidated Financial Statements in our 2018 Annual Report.

	I	II	III
Plan Category	Number of securities to be issued upon exercise of outstanding options and rights	Weighted-average exercise price of outstanding options and rights	Number of securities remaining available for future issuance under plans (excluding securities listed in Column (I))
All compensation plans previously approved by security holders	$ 2,889,749	$ 10.92	1,347,240
All compensation plans not previously approved by security holders	—	—	—
Total	2,889,749	$ 10.92	1,347,240

Executive compensation activities in 2019. In 2019, the CLD Committee reviewed the equity mix for our NEOs and believed it was in our best interests to continue to grant equity awards in an equal 50/50 mix of PRSUs and RSUs to Mr. Reiner, and 60% RSUs and 40% PRSUs for Messrs. Schulz and Dziersk to align with our peer group compensation practices. RSUs granted in 2019 to our NEOs vest in four equal annual installments on January 15th of each year. After considering feedback from stockholders, the CLD Committee decided to move from TSR-linked MSUs to PRSUs tied to achievement of internal performance metrics. The PRSUs awarded in 2019 (2019 PRSUs), are payable in shares of our Common Stock, and vest at up to 200% of the grant amount on the third anniversary of the grant based upon achievement of certain internal performance metrics set by the Committee over a two-year performance period beginning January 2019. If we achieve the target performance level, the percentage at which the 2019 PRSUs convert into shares of our Common Stock will be 100%. If we fail to achieve the performance level at target, the percentage at which the 2019 PRSUs convert into shares of our Common Stock will be reduced from 100%, through linear interpolation between 50% threshold and 100% achievement, with a minimum percentage of 0% for performance below threshold. If we perform above the target performance level, the percentage at which the 2019 PRSUs convert

to shares of our Common Stock will be increased from 100%, through linear interpolation, with a maximum percentage of 200% for performance above maximum performance levels.

Other Compensation

Our NEOs are eligible to participate in our health and welfare programs, 401(k) plan, Employee Stock Purchase Plan and other benefit programs on the same basis as other U.S. employees.

Severance Compensation and Termination Protection

We generally provide our NEOs with severance packages if they are terminated without cause (as defined in their employment agreements) or for good reason (as defined in their employment agreements) in order to attract and retain them. The amount of severance benefits is described below, and in more detail elsewhere in the section titled "*Potential Payments Upon Termination or Change of Control*" on page 41 of this Proxy Statement. The CLD Committee reviews the potential payouts to ensure their market-competitiveness in order to incentivize our NEOs to maintain focus on both daily and long-term efforts.

Our severance compensation provisions are designed to meet the following objectives:

- *Change in Control*: As part of our normal course of business, we may engage in discussions with other companies about possible collaborations and/or other ways in which the companies may work together to further our respective long-term objectives. In certain scenarios, the potential for merger or being acquired may be in the best interests of our stockholders. We provide a component of severance compensation if a NEO is terminated as a result of a change of control transaction to promote the ability of our NEOs to act in the best interests of our stockholders even though they could be terminated as a result of the transaction.

- *Termination Without Cause or For Good Reason*: If we terminate the employment of one of our NEOs "without cause" or one of our NEOs resigns for "good reason," each as defined in the applicable agreement, we are obligated to make certain payments based on the NEO's then-effective base salary. We believe this is appropriate because the terminated NEO is bound by confidentiality and non-competition provisions continuing after termination. We also believe it is beneficial to have a mutually-agreed severance package in place prior to any termination event, to avoid disruptive conflicts and provide us with more flexibility to make a change in management if such a change is in our and our stockholders' best interests.

Employment Agreements

Andres D. Reiner. In December 2018, we entered into a second amended and restated employment agreement with Mr. Reiner, our Chief Executive Officer and President, in order to reflect current competitive market practices. This agreement will automatically renew for additional three-year terms unless the Company decides not to renew. The base salary payable to Mr. Reiner is subject to periodic review by our CLD Committee. In the event Mr. Reiner's employment with us is terminated by him for good reason, by us without cause or we decide not to renew his agreement, he will receive (i) his full base salary each month for the following 12 months, (ii) any unpaid bonus earned prior to the termination relating to periods preceding the date of termination, (iii) the payment of a bonus at 100% of performance targets, including discretionary components, within the bonus plan in effect as if employed by us for 12 months, (iv) an amount equal to 12 times the monthly cost of Mr. Reiner's health benefits, (v) the acceleration of vesting of all equity awards with respect to such shares that would have vested following his termination date, and (vi) the acceleration of vesting of all market stock awards where the number of units vesting is determined as if the performance period ended on his termination date. If Mr. Reiner's employment is terminated by us without cause, if he resigns for good reason, or we decide not to renew his agreement within six months prior to, or any time after, a change of control of the Company, he will receive (i) an amount equal to 150% of his annual salary, (ii) any unpaid bonus earned prior to the termination relating to periods preceding the date of termination, (iii) the payment of an aggregate bonus equal to 100% of performance targets, including any discretionary components, within the bonus plan in effect as if employed by us for eighteen months, (iv) an amount equal to 18 times the monthly cost of Mr. Reiner's health benefits, and (v) the acceleration of vesting of

all equity awards with respect to shares that would have vested following the Termination Date. If Mr. Reiner's employment with us terminates due to his death or disability, his employment will automatically terminate and he will be entitled to accelerated vesting of (i) all equity awards with respect to all shares that would have vested after the termination date, and (ii) all MSUs at 100% of the target number granted. In addition, if the surviving or acquiring entity (or its parent entity) elects not to assume, continue or substitute for the equity awards or options due under the either the 2007 Plan or 2017 Plan, all outstanding equity awards and options under each plan will vest in full and become fully exercisable. Mr. Reiner is subject to non-competition and non-solicitation restrictions during the term of his employment and for the 12-month period following the termination of his employment.

Stefan B. Schulz. In December 2018, we entered into an amended and restated employment agreement with Mr. Schulz, our Executive Vice President and Chief Financial Officer, in order to reflect current competitive market practices. This agreement is for a three-year term and automatically renews for three-year terms unless the Company decides not to renew. The base salary payable to Mr. Schulz is subject to periodic review by our CLD Committee. In the event Mr. Schulz's employment with us is terminated by him for good reason, by us without cause, or we decide not to renew his agreement, he will receive (i) his full base salary each month for the following 12 months, (ii) any unpaid bonus earned prior to the termination relating to periods preceding the date of termination, (iii) the payment of a bonus at 100% of performance targets, including discretionary components, within the bonus plan in effect as if employed by us for 12 months, (iv) an amount equal to 12 times the monthly cost of Mr. Schulz's health benefits, (v) the acceleration of vesting of all equity awards with respect to such shares that would have vested following the date of termination and prior to the first anniversary of his termination date, and (vi) the acceleration of vesting of all market stock awards scheduled to vest prior to the first anniversary of his termination date, where the applicable performance period is deemed to have ended on his termination date. Alternatively, if Mr. Schulz's employment is terminated by us without cause, if he resigns for good reason, or we decide not to renew his agreement within six months prior to, or any time after, a change of control of the Company, he will receive (i) an amount equal to 150% of his annual salary, (ii) any unpaid bonus earned prior to the termination relating to periods preceding the date of termination, (iii) the payment of an aggregate bonus equal to 100% of performance targets, including discretionary components, within the bonus plan in effect as if employed by us for 18 months, (iv) an amount equal to 18 times the monthly cost of Mr. Schulz's health benefits, and (v) the acceleration of vesting of all equity awards with respect to such shares that would have vested following the date of termination. In addition, if the surviving or acquiring entity (or its parent entity) elects not to assume, continue or substitute for the equity awards or options due under the 2007 Plan or 2017 Plan, all outstanding equity awards and options under each plan will vest in full and become fully exercisable. If Mr. Schulz's employment with us terminates due to his death or disability, his employment will automatically terminate and he will be entitled to accelerated vesting of (i) all equity awards with respect to all shares that would have vested after the termination date, and (ii) all MSUs at 100% of the target number granted. Mr. Schulz is subject to non-competition and non-solicitation restrictions during the term of his employment and for the 12-month period following the termination of his employment.

Thomas F. Dziersk. In October 2017, we entered into an employment agreement with Mr. Dziersk, our Executive Vice President, Worldwide Sales. This agreement is for a three-year term and automatically renews for three-year terms unless the Company decides not to renew. The base salary payable to Mr. Dziersk is subject to periodic review by our CLD Committee. In the event Mr. Dziersk's employment with us is terminated by him for good reason, by us without cause, or we decide not to renew his agreement, he will receive (i) his full base salary each month for the following 12 months, and (ii) an amount equal to 12 times the monthly cost of Mr. Dziersk's health benefits. Alternatively, if Mr. Dziersk's employment is terminated by us without cause, if he resigns for good reason, or we decide not to renew his agreement within six months prior to, or any time after, a change of control of the Company, he will receive (i) an amount equal to 150% of his annual salary, (ii) any unpaid bonus earned prior to the termination relating to periods preceding the date of termination, (iii) an amount equal to 18 times the monthly cost of Mr. Dziersk's health benefits, and (iv) the acceleration of vesting of all equity awards with respect to such shares that would have vested following the date of termination. In addition, if the surviving or acquiring entity (or its parent entity) elects not to assume, continue or substitute for the equity awards or options due under the 2017 Plan, all outstanding equity awards and options under the 2017 Plan will vest in full and become fully exercisable. Mr. Dziersk is subject to non-competition and non-solicitation restrictions during the term of his employment and for the 12-month period following the termination of his employment.

“Cause” is defined in these employment agreements as (a) a breach by our officer of his duties of confidentiality which causes a material harm to us, (b) his conviction of, or a plea of guilty or no contest to, a felony or any other crime involving

dishonesty or moral turpitude under the laws of the United States; (c) continued failure to perform assigned duties or comply with any Company policy after notice and a cure period; (d) any material breach by our officer of his employment agreement or any other agreement between our officer and us after notice and a cure period; (e) any intentional wrongdoing by them that adversely affects us; and (f) any failure to cooperate in good faith with us in any governmental investigation or formal proceeding.

Each of our NEOs can resign for "good reason" and be entitled to severance. "Good reason" is defined in their employment agreements as (i) a material diminution in their authority, duties or responsibilities or the assignment of duties to them that are not materially commensurate with their position with us, other than where they are asked to assume substantially similar duties and responsibilities in a larger entity after any change of control; (ii) the relocation of their offices to more than 25 miles from their present location; (iii) a material reduction in their base salaries other than reductions which are part of a general reduction affecting all employees; (iv) our failure to provide them with similar benefits than we provide to our other employees; (v) any material breach by us of any provision of their employment agreement; or (vi) any failure by any successor corporation to assume our obligations under the NEO's employment agreement.

Stock Ownership Guidelines

As part of our overall corporate governance and compensation practices, our Board adopted stock ownership guidelines for our NEOs and directors. These guidelines are designed to align our NEOs' and directors' interests with our stockholders' long-term interests by promoting long-term share ownership, which reduces the incentive for excessive short-term risk taking and further increase our NEOs' and directors' alignment with stockholder interests. These guidelines require our Chief Executive Officer to hold shares of our stock worth six times his annual salary and each other NEO is required to hold shares of our stock worth two times their annual salary. The guidelines also state that each non-employee director is required to hold shares of our stock worth five times the annual retainer for directors. Share units or unexercised options held by a NEO or director under any of our equity incentive plans are included, at 100% of their intrinsic value, in calculating the value of ownership to determine whether this minimum ownership requirement has been met. Shares held by a NEO or director under either of our equity incentive plans will continue to be included in calculating the value of ownership to determine whether this minimum ownership requirement has been met. Our NEOs must attain this ownership threshold within five years after being appointed as a NEO. Our directors must attain this ownership threshold within six years after joining our Board. As of December 31, 2018, each of our NEOs and directors were in compliance with the applicable guidelines.

Clawback Policy

Our "clawback" policy permits our Board to consider and make a decision in its sole discretion to recover, under applicable law, any incentive bonuses awarded to NEOs whose fraud or intentional misconduct significantly contributed to a restatement of financial results that led to the awarding of incentive bonuses. This "clawback" policy is designed to further link our executive compensation and our long-term performance.

Tax and Accounting Considerations

Limits on Deductibility of Compensation. Section 162(m) of the Code (Section 162(m)) generally prevents us from deducting as a business expense that portion of compensation paid to certain of our executive officers that exceeds $1,000,000. Historically, there was an exception to this $1,000,000 deduction limit for compensation that qualified as "performance-based compensation" under Section 162(m). Under federal tax legislation enacted on December 22, 2017, referred to as the Tax Cuts and Jobs Act (Tax Act), the performance-based exemption was repealed for taxable years on or after January 1, 2018, and the persons treated as covered employees subject to the deduction limit have been expanded to include our CFO and mandated that once an individual is treated as a covered employee for a given year, that individual will be treated as a covered employee for all subsequent years. Accordingly, any compensation paid to our covered executive officers in excess of $1 million in any one year will not be deductible unless it qualifies for transition relief applicable to certain arrangements in place as of November 2, 2017. The CLD Committee believes that its primary responsibility is to provide a compensation program to meet our stated business objectives, and accordingly the Company reserves the right to pay compensation that is not tax-deductible if it determines that such a payment is in the best interests of the Company and our stockholders.

REPORT OF THE COMPENSATION AND LEADERSHIP DEVELOPMENT COMMITTEE OF THE BOARD OF DIRECTORS

We, the Compensation and Leadership Development Committee of the Board of Directors of PROS Holdings, Inc., have reviewed and discussed the preceding Compensation Discussion and Analysis with management and FW Cook. Based on this review and discussion, we recommended to the Board of Directors, and the Board of Directors has agreed that the Compensation Discussion and Analysis be included in this Proxy Statement.

THE COMPENSATION AND LEADERSHIP DEVELOPMENT COMMITTEE OF THE BOARD OF DIRECTORS

Greg B. Petersen, Chairman
Penelope Herscher
William Russell

Summary Compensation Table

The following table presents the compensation paid to or earned by our NEOs, including our Chief Executive Officer, our Chief Financial Officer, and our Executive Vice President, Worldwide Sales during 2018, 2017 and 2016:

Name and Principal Position	Year	Salary	Bonus	Stock Awards (1)	Non-Equity Incentive Plan Compensation	All Other Compensation (2)	Total
Andres D. Reiner	2018	$ 525,000	$ —	$ 5,408,210 (3)	$ 799,838	$ 1,785	$ 6,734,832
President and Chief Executive Officer	2017	$ 525,000	$ —	$ 4,032,840 (4)	$ 419,843	$ 18,584	$ 4,996,267
	2016	$ 525,000	$ —	$ 4,696,100 (5)	$ 887,618	$ 20,837	$ 6,129,555
Stefan B. Schulz	2018	$ 380,000	$ —	$ 2,186,406 (6)	$ 421,040	$ 5,660	$ 2,993,106
Executive Vice President	2017	$ 365,000	$ —	$ 1,528,423 (7)	$ 212,284	$ 20,981	$ 2,126,688
and Chief Financial Officer	2016	$ 365,000	$ —	$ 2,320,825 (8)	$ 448,804	$ 19,721	$ 3,154,350
Thomas F. Dziersk	2018	$ 375,000	$ —	$ 485,863 (11)	$ 519,375	$ —	$ 1,380,238
Executive Vice President,	2017	$ 85,336 (9)	$ 100,000 (10)	$ 2,697,901 (12)	$ 76,377	$ 5,418	$ 2,965,032
Worldwide Sales	2016	$ —	$ —	$ —	$ —	$ —	$ —

(1) Represents the aggregate grant date fair value of equity awards granted in the specified fiscal year as calculated in accordance with GAAP. For additional information about equity award valuation assumptions, refer to Note 13 of our financial statements in our Form 10-K for the year ended December 31, 2018.

(2) Represents executive physicals for Messrs. Reiner and Schulz, and for 2016 and 2017 also represents matching contributions for 401(k) Plan contributions, life and health insurance.

(3) Represents 82,948 RSUs awarded to Mr. Reiner on January 8, 2018 and 82,948 MSUs awarded on January 12, 2018. The 2018 RSUs vest annually in one fourth installments on January 10th of each year and have a grant date fair value of $27.02. The 2018 MSUs will vest on January 10, 2021, and have a grant date fair value of $38.18. For additional information regarding the 2018 MSUs and RSUs, see "2018 Grants of Plan-Based Awards" below.

(4) Represents 84,000 RSUs and 84,000 MSUs awarded to Mr. Reiner on January 20, 2017. The RSUs vest annually in one fourth installments on January 1st of each year and have a grant date fair value of $21.02. The 2017 MSUs will vest on March 1, 2020, and have a grant date fair value of $26.99.

(5) Represents 90,000 RSUs and 90,000 MSUs awarded to Mr. Reiner on March 24, 2016 and 200,000 PRSUs awarded on September 9, 2016. The RSUs vest annually in one fourth installments on March 1st of each year and have a grant date fair value of $11.40. The 2016 MSUs vest on March 1, 2019, and have a grant date fair value of $14.29. The Stock Price PRSUs will vest based on stock price performance criteria, and have a grant date fair value of $11.92.

(6) Represents 41,667 RSUs awarded to Mr. Schulz on January 8, 2018 and 27,778 MSUs awarded on January 12, 2018. The 2018 RSUs vest annually in one fourth installments on January 10th of each year and have a grant date fair value of $27.02. The 2018 MSUs will vest on January 10, 2021, and have a grant date fair value of $38.18. For additional information regarding the 2018 MSUs and RSUs, see "2018 Grants of Plan-Based Awards" below.

(7) Represents 39,200 RSUs and 26,100 MSUs awarded to Mr. Schulz on January 20, 2017. The RSUs vest annually in one fourth installments on January 1st of each year and have a grant date fair value of $21.02. The 2017 MSUs will vest on March 1, 2020, and have a grant date fair value of $26.99.

(8) Represents 62,500 RSUs and 62,500 MSUs awarded to Mr. Schulz on March 24, 2016 and 60,000 PRSUs awarded on September 9, 2016. The RSUs vest annually in one fourth installments on March 1st of each year and have a grant date fair value of $11.40. The 2016 MSUs vest on March 1, 2019, and have a grant date fair value of $14.29. The Stock Price PRSUs vest based on stock price performance, and have a grant date fair value of $11.92.

(9) Mr. Dziersk commenced his employment with us in October 2017.

(10) Represents a one-time cash inducement award following commencement of employment.

(11) Represents 9,259 RSUs awarded to Mr. Dziersk on January 8, 2018 and 6,173 MSUs awarded on January 12, 2018. The 2018 RSUs vest annually in one fourth installments on January 10th of each year and have a grant date fair value of $27.02. The 2018 MSUs will vest on January 10, 2021, and have a grant date fair value of $38.18. For additional information regarding the 2018 MSUs and RSUs, see "2018 Grants of Plan-Based Awards" below.

(12) Represents 59,504 RSUs and 39,699 MSUs awarded to Mr. Dziersk on October 9, 2017. The 2017 RSUs vest annually in one fourth installments on October 9th of each year and have a grant date fair value of $24.48. The 2017 MSUs will vest on October 9, 2020, and have a grant date fair value of $31.29.

Grants of Plan-Based Awards

The following table shows all plan-based awards granted to our NEOs during 2018, including:

Name	Type of Award	Grant Date	Estimated Future Payouts Under Non-Equity Incentive Plan Awards			Estimated Future Payouts Under Equity Incentive Awards		All Other Stock Awards: Number of Shares of Stock or	Exercise or Base Price of Option Awards ($/Sh)	Grant Date Fair value of Options and Awards ($)
			Threshold ($)	Target ($)	Maximum ($)	Target (#)	Maximum (#)			
Andres D. Reiner	RSU	1/8/2018						82,948	$ 27.02	$ 2,241,255
	MSU[(1)]	1/12/2018				82,948	165,896		$ 38.18	$ 3,166,955
	Cash incentive		$ 288,750	$ 577,500	$ 1,155,000					
Stefan B. Schulz	RSU	1/8/2018						41,667	$ 27.02	$ 1,125,842
	MSU[(1)]	1/12/2018				27,778	55,556		$ 38.18	$ 1,060,564
	Cash incentive		$ 152,000	$ 304,000	$ 608,000					
Thomas F. Dziersk	RSU	1/8/2018						9,259	$ 27.02	$ 250,178
	MSU[(1)]	1/12/2018				6,173	12,346		$ 38.18	$ 235,685
	Cash incentive		$ 187,500	$ 375,000	$ 75,000					

(1) The January 2018 MSUs are performance-vested units under which the number of shares of Common Stock received following vesting is based on the Company's TSR in relation to the Index over a three year period ending December 31, 2020 (January 2018 MSU Performance Period). The January 2018 MSUs vest on January 10, 2021, and the maximum number of shares issuable upon vesting is 200% of the January 2018 MSUs initially granted based on the average price of our Common Stock relative to the Index during the January 2018 MSU Performance Period. Includes the target number of shares issuable at the grant date fair value per share of $38.18 for the January 2018 MSUs.

Outstanding Equity Awards at Fiscal Year End

The following table presents the number of options to purchase shares of our Common Stock, SARs, RSUs, MSUs and PRSUs held by our NEOs as of December 31, 2018:

	Option Awards				Stock Awards	
Name	Number of securities underlying unexercised options/SARs (#) Exercisable	Number of securities underlying unexercised options/SARs (#) Unexercisable	Option/SAR s exercise price ($)	Option/SARs expiration date	Equity incentive plan awards: number of unearned shares, units or other rights that have not vested (#)	Equity incentive plan awards: market or payout value of unearned shares, units or other rights that have not vested ($)
Andres D. Reiner	20,000	—	8.68	3/9/2020		
	180,000	—	11.33	12/14/2020		
					14,300 (1)	$ 449,020
					45,000 (2)	$ 1,413,000
					90,000 (3)	$ 2,826,000
					100,000 (4)	$ 3,140,000
					63,000 (5)	$ 1,978,200
					84,000 (6)	$ 2,637,600
					82,948 (7)	$ 2,604,567
					82,498 (8)	$ 2,604,567
Stefan B. Schulz	—	—			20,625 (9)	$ 647,625
					31,250 (2)	$ 981,250
					62,500 (3)	$ 1,962,500
					30,000 (4)	$ 942,000
					29,400 (5)	$ 923,160
					26,100 (6)	$ 819,540
					41,667 (7)	$ 1,308,344
					27,778 (8)	$ 872,229
Thomas F. Dziersk	—	—			44,628 (10)	$ 1,401,319
					39,669 (11)	$ 1,245,607
					9,259 (7)	$ 290,733
					6,173 (8)	$ 193,832

(1) Represents the unvested portion of the 57,200 RSUs awarded to Mr. Reiner on January 23, 2015. The RSUs vest annually in one fourth installments on January 1st of each year and have a grant date fair value of $27.11.

(2) Represents 2016 RSUs awarded to Messrs. Reiner and Schulz on March 24, 2016. These RSUs vest annually in one fourth installments on March 1st of each year and have a grant date fair value of $11.40.

(3) Represents 2016 MSUs awarded to Messrs. Reiner and Schulz on March 24, 2016. These 2016 MSUs vest on March 1, 2019. The amounts shown above reflect the number and market value, as of December 31, 2018, of 2016 MSUs that would be earned if the performance goals related to these awards were met at the target level at the end of the 2016 MSU Performance Period. If the minimum performance threshold is not met, there will be no payout. The number of shares actually earned will depend on our TSR from March 1, 2016 and March 1, 2019 as compared to the Index.

(4) Represents Stock Price PRSUs awarded to Messrs. Reiner and Schulz on September 9, 2016. These Stock Price PRSUs vest if the average trailing closing price of our Common Stock is $41 for at least 105 calendar days prior to September 9, 2020.

(5) Represents 2017 RSUs awarded to Messrs. Reiner and Schulz on January 20, 2017. These RSUs vest annually in one fourth installments on January 1st of each year and have a grant date fair value of $21.02.

(6) Represents 2017 MSUs awarded to Messrs. Reiner and Schulz on January 20, 2017. These 2017 MSUs vest on March 1, 2020. The amounts shown above reflect the number and market value, as of December 31, 2018, of 2017 MSUs that would be earned if the performance goals were met at the target level at the end of the 2017 MSU Performance Period. If the minimum performance threshold is not met, there will be no payout. The number of shares actually earned will depend on our TSR from February 28, 2017 and February 28, 2020 as compared to the Index.

(7) Represents 2018 RSUs awarded to Messrs. Reiner, Schulz, and Dziersk on January 8, 2018. These RSUs vest annually in one fourth installments on January 10th of each year and have a grant date fair value of $27.02.

(8) Represents 2018 MSUs awarded to Messrs. Reiner, Schulz, and Dziersk on January 12, 2018. These 2018 MSUs vest on January 10, 2021. The amounts shown above reflect the number and market value, as of December 31, 2018, of 2018 MSUs that would be earned if performance goals were met at the target level at the end of the 2018 MSU Performance Period. If the minimum performance threshold is not met, there will be no payout. The number of shares that will actually be earned will depend on our TSR for the period from January 1, 2018 and December 31, 2020 as compared to the Index.

(9) Represents the unvested portion of the RSUs awarded to Mr. Schulz on March 3, 2015. Mr. Schulz was awarded 82,500 RSUs. The RSUs vest annually in one fourth installments on March 3rd of each year and have a grant date fair value of $24.32.

(10) Represents the unvested portion of the RSUs awarded to Mr. Dziersk on October 9, 2017. Mr. Dziersk was awarded 59,504 RSUs. The RSUs vest annually in one fourth installments on October 9th of each year and have a grant date fair value of $24.48.

(11) Represents October 2017 MSUs awarded on October 9, 2017 to Mr. Dziersk. These October 2017 MSUs vest on October 9, 2020. The amounts shown above reflect the number and market value, as of December 31, 2018, of October 2017 MSUs that would be earned if the performance goals were met at the target level at the end of the October 2017 MSU Performance Period. If the minimum performance threshold is not met, there will be no payout. The number of shares that will actually be earned depend on our TSR from October 9, 2017 and October 9, 2020 as compared to the Index.

Option Exercises and Equity Awards Vested

The following table presents information on the exercises of stock options and vesting of PRSUs, RSUs and MSUs for our NEOs during the year ended December 31, 2018:

	Option Awards		Stock Awards		
Name	Number of shares acquired on exercise[1] (#)	Value realized on exercise ($)[2]	Number of shares acquired on RSU vesting[3] (#)	Number of shares acquired on PRSU and MSU vesting[4] (#)	Value realized on vesting[5] ($)
Andres D. Reiner	50,000	$ 979,467	67,025	50,000	$ 3,672,811
Stefan B. Schulz	—	—	46,050	23,650	$ 2,237,444
Thomas F. Dziersk	—	—	14,876	—	481,239

(1) Represents the exercise of options

(2) Represents the value realized upon exercise of options

(3) Represents the vesting of RSUs

(4) Represents the vesting of PRSUs and MSUs

(5) Represents the value realized upon vesting of RSUs and PRSUs

Potential Payments Upon Termination of Employment or Change of Control

The following table represents amounts payable at, following, or in connection with the events described below, assuming that such events occurred on December 31, 2018 for each of the NEOs:

	Potential Payment on		
Name	Voluntary Termination or Termination for Cause ($)	Involuntary Termination (Without Cause) or Termination by NEO for Good Reason ($)	Involuntary Termination (Without Cause) or Termination by NEO for Good Reason on Change of Control ($)
Andres D. Reiner			
Severance[1]	$ —	$ 1,102,500	$ 1,653,750
Bonus[2]	$ —	$ 577,500	$ 577,500
Health Benefits[3]	$ —	$ 20,659	$ 30,989
Accelerated Equity[4]	$ —	$ 21,456,203	$ 14,512,954
Total	**$ —**	**$ 23,156,862**	**$ 16,775,193**
Stefan B. Schulz			
Severance[1]	$ —	$ 684,000	$ 1,026,000
Bonus[2]	$ —	$ 304,000	$ 304,000
Health Benefits[3]	$ —	$ 18,547	$ 27,821
Accelerated Equity	$ —	$ 5,698,032	$ 7,514,648
Total	**$ —**	**$ 6,704,579**	**$ 8,872,469**
Thomas F. Dziersk			
Severance[1]	$ —	$ 375,000	$ 562,500
Bonus[2]	$ —	$ —	$ 375,000
Health Benefits[3]	$ —	$ 18,547	$ 27,821
Accelerated Equity	$ —	$ —	$ 3,131,491
Total	**$ —**	**$ 393,547**	**$ 4,096,812**

(1) Reflects then current base monthly salary for 12 months for termination without cause, and 18 months for termination without cause upon change of control, and in each case, payable on normal payroll cycles. For Messrs. Reiner and Schulz, also reflects the payment of a bonus at 100% of performance targets, including the discretionary components, within the bonus plan in effect as if employed by the Company for 12 months for termination without cause, and for 18 months for termination without cause on change of control.

(2) Reflects 2018 earned but unpaid bonus, assuming target level performance on a completed bonus period.

(3) Reflects health benefits as made generally available to employees for 12 months for termination without cause, and for 18 months for termination without cause on change of control.

(4) Includes the acceleration of vesting of all market stock awards (a) for involuntary termination based on 2016 MSUs vesting at 200% of the target number granted due to our stock price performance relative to the Index, and (b) for involuntary termination associated with a change of control based on 2016 MSUs vesting at the target number granted.

PROPOSAL TWO

NON-BINDING ADVISORY VOTE ON EXECUTIVE COMPENSATION

What am I voting on?

As required pursuant to Section 14A of the Exchange Act, we are providing our stockholders with the opportunity to vote to approve, on an advisory or non-binding basis, the compensation of our NEOs as disclosed in this Proxy Statement in accordance with SEC rules. We currently conduct this advisory vote on an annual basis and expect to conduct the next advisory vote at our Annual Meeting to be held in 2020.

As described in the "*Executive Summary*" and "*Compensation Discussion and Analysis*" sections of this Proxy Statement, our executive compensation program is designed to attract, retain, and motivate talented individuals with the executive experience and leadership skills necessary for us to manage our business and meet our long-term objectives. We seek to provide executive compensation that is competitive with companies that are similar to us. We also seek to provide near-term and long-term financial incentives that reward well-performing executives when strategic corporate objectives designed to increase long-term stockholder value are achieved. We believe that executive compensation should include base salary, cash incentives and equity awards. We also believe that our executive officers' base salaries should be set at levels relative to comparable companies, and cash and equity incentives should generally be set at levels that give executives the opportunity to achieve above-average total compensation reflecting above-average Company performance. In particular, our executive compensation philosophy is to promote long-term value creation for our stockholders by rewarding improvement in selected financial metrics and by using equity incentives. *Please see our "Compensation Discussion and Analysis" on page 22 of this Proxy Statement and related compensation tables for detailed information about our executive compensation programs, including information about the fiscal year 2018 compensation of our NEOs*.

This vote is advisory and therefore not binding. However, the Compensation and Leadership Development Committee values the opinions of our stockholders and to the extent there is any significant vote against the NEO compensation as disclosed in this Proxy Statement, we will consider those stockholders' concerns, and the Compensation and Leadership Development Committee will evaluate whether any actions are necessary to address those concerns.

Note that because the advisory vote on executive compensation occurs well after the beginning of the compensation year, in most cases it may not be feasible to change any executive compensation program in consideration of any one year's advisory vote on executive compensation.

Vote Required

The affirmative vote of a majority of the outstanding shares of our Common Stock entitled to vote and present in person or represented by proxy at the Annual Meeting is required for advisory approval of this proposal. A properly executed proxy marked "ABSTAIN" with respect to this matter is considered entitled to vote, and thus will have the effect of a vote against this matter.

In accordance with Delaware law, abstentions will be counted for purposes of determining both whether a quorum is present at the Annual Meeting and the total number of shares represented and voting on this proposal. While broker non-votes will be counted for purposes of determining the presence or absence of a quorum, broker non-votes will not be counted for purposes of determining the number of shares represented and voting with respect to the particular proposal on which the broker has expressly not voted and, accordingly, will not affect the approval of this proposal.

THE BOARD UNANIMOUSLY RECOMMENDS VOTING "FOR" THE APPROVAL OF THE COMPENSATION OF OUR NAMED EXECUTIVE OFFICERS AS DISCLOSED IN THIS PROXY STATEMENT.

PROPOSAL THREE

APPROVAL OF PROPOSED AMENDMENTS TO 2017 EQUITY INCENTIVE PLAN

What am I voting on?

Stockholders are being asked to approve the following amendments (Proposed Amendments) to our 2017 Equity Incentive Plan (2017 Plan):

Increased Shares Authorized for Issuance. An increase of 2,050,000 shares, for an aggregate maximum number of shares of our common stock authorized for issuance under the 2017 Plan of 4,550,000 shares, subject to adjustment for certain changes in our capitalization. The 2017 Plan provides that all of these shares may be issued upon the exercise of incentive stock options.

Extension of Plan Term. An extension of the term of the 2017 Plan for an additional two years (currently scheduled to expire in May 2027) to May 7, 2029.

Add Eligibility for More Favorable French Tax Treatment. Stockholder approval of the amended 2017 Equity Plan, including a French sub-plan, enables us to grant Awards in France that qualify for favorable income tax and social security treatment in France should we decide to grant such awards to employees in France who are eligible to participate in the 2017 Plan.

On March 22, 2019 our Board, upon the recommendation of the CLD Committee, voted to amend the 2017 Plan to incorporate the Proposed Amendments and certain additional clarifying changes, subject to the approval of the Proposed Amendments by the Company's stockholders. If our stockholders approve the Proposed Amendments, they will become effective on the day of the Annual Meeting. If the Proposed Amendments are not approved, the Proposed Amendments will not take effect and the 2017 Plan will remain in effect, including only the clarifying changes.

Key Plan Features

The 2017 Plan, as amended, contains a number of provisions that we believe are consistent with best practices in equity compensation and which protect the interests of stockholders:

Fixed plan term. The 2017 Plan has a fixed term of ten years.

No evergreen authorization. The 2017 Plan does not have an evergreen provision, which would have permitted an annual increase in the number of shares authorized for issuance without further stockholder approval.

No liberal share recycling on options and stock appreciation rights. The 2017 Plan generally provides for gross share counting. The number of shares remaining available for grant under the 2017 Plan is reduced by the gross number of shares subject to options and stock appreciation rights settled on a net basis, and any shares withheld for taxes in connection with the exercise or settlement of options and stock appreciation rights will not again be available for the future grant of awards. Shares withheld or reacquired by the Company for taxes up to the minimum statutory withholding rate in connection with the vesting or settlement of full value awards will not reduce the number of shares remaining available for the future grant of awards.

Individual award limits. The 2017 Plan limits the maximum number of shares for which share-denominated awards may be granted to any employee in any fiscal year and the maximum dollar amount that an employee may earn for each fiscal year contained in a performance period under a cash-denominated award.

Non-employee director award limit. The number of shares for which awards may be granted to any non-employee member of our Board in a fiscal year is limited.

No discounted options or stock appreciation rights. Options and stock appreciation rights must have an exercise price or base price at or above the fair market value per share of our common stock on the date of grant.

Prohibition of option repricing. The 2017 Plan prohibits the repricing of stock options and stock appreciation rights without the approval of our stockholders.

Minimum vesting. The 2017 Plan requires each stock-based award to have a minimum vesting period of one year, except for 5% of the aggregate number of shares authorized for issuance under the 2017 Plan.

Performance-based awards. Performance share and performance unit awards require the achievement of pre-established goals. The 2017 Plan establishes a list of measures of business and financial performance from which the CLD Committee may construct predetermined performance goals that must be met for an award to vest, although the CLD Committee may choose construct performance goals using alternative metrics.

No liberal change-in-control definition. The 2017 Plan does not contain a "liberal" change in control definition (e.g., mergers require actual consummation).

No automatic vesting upon a change in control. With the exception of awards held by non-employee directors, the 2017 Plan does not provide for automatic acceleration of award vesting upon a change in control. The 2017 Plan allows for an acquiring corporation to assume, continue or substitute new awards for outstanding awards, and, if such awards are assumed, continued or replaced, their vesting will generally not accelerate in connection with the change in control, unless the award holder is involuntarily terminated without cause within 18 months following the change in control. The vesting of awards that are not assumed, continued or replaced will be accelerated. The vesting of awards held by non-employee directors will accelerate in full upon a change in control.

No tax gross-ups. The 2017 Plan does not provide for any tax gross-ups.

Limitation on dividends and dividend equivalents. Dividend equivalents may not be granted in connection with options or stock appreciation rights. Any dividends or dividend equivalents payable in connection with a full value award will be subject to the same restrictions as the underlying award and will not be paid until and unless such award vests.

The above description is a summary only and is qualified in its entirety by reference to the complete text of the 2017 Plan, as amended, which is attached to this Proxy Statement as Appendix A and which we encourage stockholders to read in its entirety.

Purpose

Competition for talent in the software industry is intense and our Board believes equity plays an important role in the success of the Company by encouraging and enabling the employees, officers, non-employee directors and other key persons of the Company and its subsidiaries upon whose judgment, initiative and efforts the Company largely depends for the successful conduct of its business to acquire a proprietary interest in the Company. Our Board anticipates that providing such persons with a direct stake in the Company will assure a closer identification of the interests of such individuals with those of the Company and its stockholders, thereby stimulating their efforts on the Company's behalf and strengthening their desire to remain with the Company. Further, our Board believes that the use of equity-based incentive awards supports the Company's goal of aligning our employees' compensation with long-term shareholder value, and serves as a retention tool for talent in a highly competitive environment.

In approving the initial adoption of the 2017 Plan, our stockholders authorized us to issue up to 2,500,000 shares of our common stock under the 2017 Plan. As of March 15, 2019, a total of 470,611 shares remained available for the future grant of awards under the 2017 Plan.

We believe that these shares remaining available for future award grants under the 2017 Plan is insufficient to meet our future needs. If the Proposed Amendments are approved by our stockholders, our CLD Committee will have flexibility to use various equity-based incentive awards as compensation tools to secure and retain our employees, consultants, and directors, motivate our workforce, and to align their interests with those of our stockholders. Based on our current equity award practices,

we expect that the additional shares that would be authorized by the Proposed Amendments would be sufficient for grants by the CLD Committee for approximately 2 to 3 years, assuming we continue to grant awards consistent with our current practices and historical usage, and further dependent on the price of our shares and hiring activity during the next few years, forfeitures of outstanding awards, and noting that future circumstances may require us to change our current equity grant practices. We cannot predict our future equity grant practices, the future price of our shares or future hiring activity with any degree of certainty at this time, and the share reserve under the 2017 Plan could last for a shorter or longer time.

Dilution, Burn Rate and Equity Overhang

We recognize that equity awards dilute existing stockholders. Our CLD Committee regularly reviews our equity compensation program to ensure that we balance our employee compensation objectives with our stockholders' interest in limiting dilution from equity awards.

Our CLD Committee also regularly reviews our burn rate and potential dilution from equity compensation. Our equity award burn rate averaged 4.0% of weighted average common shares outstanding over the last three fiscal years, calculated as follows:

		Fiscal Year		3-Year
Burn Rate	**2016**	**2017**	**2018**	**Average**
Time-vested RSUs granted	1,353,000	964,000	829,000	
Performance-Based awards earned (1)	252,000	220,000	200,000	
Total	1,605,000	1,184,000	1,029,000	
Weighted-average common shares outstanding	30,395,000	31,627,000	34,465,000	
Gross burn rate (2)	**5.3%**	**3.7%**	**3.0%**	**4.0%**

(1) Sum of MSUs earned in each year and 115,000 Market-based RSUs earned in each of 2017 and 2018.

(2) Total number of RSUs granted and Performance-Based awards earned in each year divided by weighted average common shares outstanding

Our total potential dilution from equity compensation, which includes all outstanding equity awards and shares available for grant under the 2017 Plan, was 10.2% of fully-diluted shares outstanding as of December 31, 2018, calculated as follows:

	As of
Potential Dilution	**December 31, 2018**
Stock-Settled SARs outstanding	287,000
RSUs outstanding	1,969,000
Target Performance-Based awards outstanding (1)	634,000
Total shares available for grant under the 2017 Plan	1,347,240
Total potential dilution (2)	10.2%

(1) Sum of 419,000 target MSUs outstanding and 215,000 Market-Based RSUs outstanding.

(2) We define total potential dilution as the sum of Stock-Settled SARs outstanding, RSUs outstanding,Target Performance-Based awards outstanding, and total shares available for grant under the 2017 Plan, which together are referred to as the "Total Outstanding and Available Shares," divided by the sum of Total Outstanding and Available Shares and 37,155,906 common shares outstanding as of 12/31/2018.

Summary of 2017 Plan, As Amended

The following description of certain features of the 2017 Plan, as amended, is intended to be a summary only. The summary is qualified in its entirety by the full text of the 2017 Plan, as amended, that is attached hereto as Appendix A.

General. The purpose of the 2017 Plan is to advance the interests of the Company and its stockholders by providing an incentive program that will enable the Company to attract and retain employees, consultants and directors and to provide them with an equity interest in the growth and profitability of the Company. These incentives are provided through the grant of stock

options, stock appreciation rights, restricted stock, restricted stock units, performance shares, performance units, other stock-based awards and cash-based awards.

Authorized Shares. The maximum aggregate number of shares authorized for issuance under the 2017 Plan is currently 2,500,000. If the Proposed Amendments are approved, the aggregate number of shares authorized for issuance under the 2017 Plan will be increased by 2,050,000 to a new total of 4,550,000.

Share Counting. Each share made subject to an award will reduce the number of shares remaining available for grant under the 2017 Plan by one share. If any award granted under the 2017 Plan expires or otherwise terminates for any reason without having been exercised or settled in full, or if shares subject to forfeiture or repurchase are forfeited or repurchased by the Company for not more than the participant's purchase price, any such shares reacquired or subject to a terminated award will again become available for issuance under the 2017 Plan. Shares will not be treated as having been issued under the 2017 Plan and will therefore not reduce the number of shares available for issuance to the extent an award is settled in cash. Shares that are withheld or that are tendered in payment of the exercise price of an option will not be made available for new awards under the 2017 Plan. However, shares withheld or reacquired by the Company in satisfaction of a tax withholding obligation determined by the minimum statutory withholding rate in connection with the vesting or settlement of any full value award (but not options or stock appreciation rights) will not reduce the number of shares remaining available for the future grant of awards. Shares withheld for taxes in excess of the minimum statutory withholding rate will not again be available for grant under the 2017 Plan. Upon the exercise of a stock appreciation right or net exercise of an option, the number of shares available under the 2017 Plan will be reduced by the gross number of shares for which the award is exercised.

Adjustments for Capital Structure Changes. Appropriate and proportionate adjustments will be made to the number of shares authorized under the 2017 Plan, to the numerical limits on certain types of awards described below, and to outstanding awards in the event of any change in our common stock through merger, consolidation, reorganization, reincorporation, recapitalization, reclassification, stock dividend, stock split, reverse stock split, split-up, split-off, spin-off, combination of shares, exchange of shares or similar change in our capital structure, or if we make a distribution to our stockholders in a form other than common stock (excluding regular, periodic cash dividends) that has a material effect on the fair market value of our common stock. In such circumstances, the CLD Committee also has the discretion under the 2017 Plan to adjust other terms of outstanding awards as it deems appropriate.

Non-employee Director Award Limits. A non-employee director may not be granted awards under the 2017 Plan in any fiscal year having an aggregate grant date fair value exceeding $500,000.

Other Award Limits. The 2017 Plan establishes limits on the maximum aggregate number of shares or dollar value for which awards may be granted to an employee in any fiscal year, as follows:

- No more than 1,250,000 shares under stock-based awards.

- No more than $2,000,000 for each full fiscal year contained in the performance period under cash-based awards.

In addition, to comply with applicable tax rules, the 2017 Plan also limits to 4,550,000 the number of shares that may be issued upon the exercise of incentive stock options granted under the 2017 Plan.

Administration. The 2017 Plan generally will be administered by the CLD Committee of the Board, although the Board retains the right to appoint another of its committees to administer the 2017 Plan or to administer the 2017 Plan directly. For purposes of this summary, the term "Committee" will refer to either such duly appointed committee or the Board. Subject to the provisions of the 2017 Plan, the Committee determines in its discretion the persons to whom and the times at which awards are granted, the types and sizes of awards, and all of their terms and conditions. The Committee may, subject to certain limitations on the exercise of its discretion provided by the 2017 Plan, amend, cancel or renew any award, waive any restrictions or conditions applicable to any award, and accelerate, continue, extend or defer the vesting of any award.

The 2017 Plan provides, subject to certain limitations, for indemnification by the Company of any director, officer or employee against all reasonable expenses, including attorneys' fees, incurred in connection with any legal action arising from such person's action or failure to act in administering the 2017 Plan. All awards granted under the 2017 Plan will be evidenced by a written or digitally signed agreement between the Company and the participant specifying the terms and conditions of the award, consistent with the requirements of the 2017 Plan. The Committee will interpret the 2017 Plan and awards granted thereunder, and all determinations of the Committee generally will be final and binding on all persons having an interest in the 2017 Plan or any award.

Prohibition of Option and SAR Repricing. The 2017 Plan expressly provides that, without the approval of a majority of the votes cast in person or by proxy at a meeting of our stockholders, the Committee may not provide for any of the following with respect to options or stock appreciation rights: (1) the cancellation of outstanding options or stock appreciation rights with exercise prices per share greater than the then fair market value of the Company's common stock in exchange for new options or stock appreciation rights having a lower exercise price, other awards or payments in cash (except in the event of a change in control), or (2) the amendment of outstanding options or stock appreciation rights to reduce the exercise price.

Minimum Vesting. No more than 5% of the aggregate number of shares authorized under the 2017 Plan may be issued pursuant to stock-based awards that vest earlier than one year following the date of grant. This minimum vesting requirement will not prohibit the Committee from accelerating vesting in connection with a participant's death or disability or in connection with a change in control of the Company. Also, the minimum vesting requirement will not apply to awards granted by another company that we assume or substitute for in connection with our acquisition of such company or to awards granted to our non-employee directors that vest on the earlier of the one year anniversary of the date of grant or the next annual meeting of the stockholders which is at least 50 weeks after the immediately preceding year's annual meeting.

Eligibility. Awards may be granted to employees, directors and consultants of the Company or any present or future parent or subsidiary corporation or other affiliated entity of the Company. Incentive stock options may be granted only to employees who, as of the time of grant, are employees of the Company or any parent or subsidiary corporation of the Company. As of March 15, 2019, we had approximately 1,042 employees, 7 non-employee directors, as well as other consultants, who would be eligible under the 2017 Plan.

Stock Options. The Committee may grant nonstatutory stock options, incentive stock options within the meaning of Section 422 of the Code, or any combination of these. The exercise price of each option may not be less than the fair market value of a share of our common stock on the date of grant. However, any incentive stock option granted to a person who at the time of grant owns stock possessing more than 10% of the total combined voting power of all classes of stock of the Company or any parent or subsidiary corporation of the Company (10% Stockholder) must have an exercise price equal to at least 110% of the fair market value of a share of common stock on the date of grant. On March 15, 2019, the closing price of our common stock as reported on the New York Stock Exchange was $41.95 per share.

The 2017 Plan provides that the option exercise price may be paid in cash, by check, or cash equivalent; by means of a broker-assisted cashless exercise; by means of a net-exercise procedure; to the extent legally permitted, by tender to the Company of shares of common stock owned by the participant having a fair market value not less than the exercise price; by such other lawful consideration as approved by the Committee; or by any combination of these. Nevertheless, the Committee may restrict the forms of payment permitted in connection with any option grant. No option may be exercised unless the participant has made adequate provision for federal, state, local and foreign taxes, if any, relating to the exercise of the option, including, if permitted or required by the Company, through the participant's surrender of a portion of the option shares to the Company.

Options will become vested and exercisable at such times or upon such events and subject to such terms, conditions, performance criteria or restrictions as specified by the Committee, subject to the minimum vesting requirements described above. The maximum term of any option granted under the 2017 Plan is ten years, provided that an incentive stock option granted to a 10% Stockholder must have a term not exceeding five years. Unless otherwise permitted by the Committee, an option generally will remain exercisable for three months following the participant's termination of service, provided that if service terminates as

a result of the participant's death or disability, the option generally will remain exercisable for 12 months, but in any event the option must be exercised no later than its expiration date.

Options are nontransferable by the participant other than by will or by the laws of descent and distribution, and are exercisable during the participant's lifetime only by the participant. However, an option may be assigned or transferred to certain family members or trusts for their benefit to the extent permitted by the Committee and, in the case of an incentive stock option, only to the extent that the transfer will not terminate its tax qualification. No option may be transferred to a third party financial institution for value.

Stock Appreciation Rights. The Committee may grant stock appreciation rights either in tandem with a related option (Tandem SAR) or independently of any option (Freestanding SAR). A Tandem SAR requires the option holder to elect between the exercise of the underlying option for shares of common stock or the surrender of the option and the exercise of the related stock appreciation right. A Tandem SAR is exercisable only at the time and only to the extent that the related stock option is exercisable, while a Freestanding SAR is exercisable at such times or upon such events and subject to such terms, conditions, performance criteria or restrictions as specified by the Committee. The exercise price of each stock appreciation right may not be less than the fair market value of a share of our common stock on the date of grant.

Upon the exercise of any stock appreciation right, the participant is entitled to receive an amount equal to the excess of the fair market value of the underlying shares of common stock as to which the right is exercised over the aggregate exercise price for such shares. Payment of this amount upon the exercise of a Tandem SAR may be made only in shares of common stock whose fair market value on the exercise date equals the payment amount. At the Committee's discretion, payment of this amount upon the exercise of a Freestanding SAR may be made in cash or shares of common stock. The maximum term of any stock appreciation right granted under the 2017 Plan is ten years.

Stock appreciation rights are generally nontransferable by the participant other than by will or by the laws of descent and distribution, and are generally exercisable during the participant's lifetime only by the participant. If permitted by the Committee, a Tandem SAR related to a nonstatutory stock option and a Freestanding SAR may be assigned or transferred to certain family members or trusts for their benefit to the extent permitted by the Committee. Other terms of stock appreciation rights are generally similar to the terms of comparable stock options.

Restricted Stock Awards. The Committee may grant restricted stock awards under the 2017 Plan either in the form of a restricted stock purchase right, giving a participant an immediate right to purchase common stock, or in the form of a restricted stock bonus, in which stock is issued in consideration for services to the Company rendered by the participant. The Committee determines the purchase price payable under restricted stock purchase awards, which may be less than the then current fair market value of our common stock. Restricted stock awards may be subject to vesting conditions based on such service or performance criteria as the Committee specifies, including the attainment of one or more performance goals similar to those described below in connection with performance awards. Shares acquired pursuant to a restricted stock award may not be transferred by the participant until vested. Unless otherwise provided by the Committee, a participant will forfeit any shares of restricted stock as to which the vesting restrictions have not lapsed prior to the participant's termination of service. Participants holding restricted stock will have the right to vote the shares and to receive any dividends or other distributions paid in cash or shares, subject to the same vesting conditions as the original award.

Restricted Stock Units. The Committee may grant restricted stock units under the 2017 Plan, which represent rights to receive shares of our common stock at a future date determined in accordance with the participant's award agreement. No monetary payment is required for receipt of restricted stock units or the shares issued in settlement of the award, the consideration for which is furnished in the form of the participant's services to the Company. The Committee may grant restricted stock unit awards subject to the attainment of one or more performance goals similar to those described below in connection with performance awards, or may make the awards subject to vesting conditions similar to those applicable to restricted stock awards. Restricted stock units may not be transferred by the participant. Unless otherwise provided by the Committee, a participant will forfeit any restricted stock units which have not vested prior to the participant's termination of service. Participants have no voting rights or rights to receive cash dividends with respect to restricted stock unit awards until shares of common stock are

issued in settlement of such awards. However, the Committee may grant restricted stock units that entitle their holders to dividend equivalent rights, which are rights to receive cash or additional restricted stock units whose value is equal to any cash dividends the Company pays. Dividend equivalent rights will be subject to the same vesting conditions and settlement terms as the original award.

Performance Awards. The Committee may grant performance awards subject to such conditions and the attainment of such performance goals over such periods as the Committee determines in writing and sets forth in a written agreement between the Company and the participant. These awards may be designated as performance shares or performance units, which consist of unfunded bookkeeping entries generally having initial values equal to the fair market value determined on the grant date of a share of common stock in the case of performance shares and a monetary value established by the Committee at the time of grant in the case of performance units. Performance awards will specify a predetermined amount of performance shares or performance units that may be earned by the participant to the extent that one or more performance goals are attained within a predetermined performance period. To the extent earned, performance awards may be settled in cash, shares of common stock (including shares of restricted stock that are subject to additional vesting) or any combination of these.

Performance goals will be based on the attainment of specified target levels with respect to one or more measures of business or financial performance of the Company and each subsidiary corporation consolidated with the Company for financial reporting purposes, or such division or business unit of the Company as may be selected by the Committee. The Committee, in its discretion, may base performance goals on one or more of the following such measures (or any other metric or goal the Committee may determine): bookings, revenue; sales; expenses; operating income; gross margin; operating margin; earnings before any one or more of: stock-based compensation expense, interest, taxes, depreciation and amortization; pre-tax profit; adjusted pre-tax profit; net operating income; net income; economic value added; free cash flow; operating cash flow; balance of cash, cash equivalents and marketable securities; stock price; earnings per share; return on stockholder equity; return on capital; return on assets; return on investment; total stockholder return, employee satisfaction; employee retention; market share; customer satisfaction; product development; research and development expense; completion of an identified special project and completion of a joint venture or other corporate transaction.

The target levels with respect to these performance measures may be expressed on an absolute basis or relative to an index, budget or other standard specified by the Committee. The degree of attainment of performance measures will be calculated in accordance with the Company's financial statements, generally accepted accounting principles, if applicable, or other methodology established by the Committee, but prior to the accrual or payment of any performance award for the same performance period, and, according to criteria established by the Committee, excluding the effect (whether positive or negative) of any event the Committee determines is appropriate to exclude, including changes in accounting standards or any unusual or infrequently occurring event or transaction.

Following completion of the applicable performance period, the Committee will certify in writing the extent to which the applicable performance goals have been attained and the resulting value to be paid to the participant. The Committee retains the discretion to reduce the amount that would otherwise be payable on the basis of the performance goals attained. The Committee may make positive or negative adjustments to performance award payments to reflect the participant's individual job performance or other factors determined by the Committee. In its discretion, the Committee may provide for a participant awarded performance shares to receive dividend equivalent rights with respect to cash dividends paid on the Company's common stock to the extent that the performance shares become vested. The Committee may provide for performance award payments in lump sums or installments.

Unless otherwise provided by the Committee, if a participant's service terminates due to the participant's death or disability prior to completion of the applicable performance period, the final award value will be determined at the end of the performance period on the basis of the performance goals attained during the entire performance period but will be prorated for the number of days of the participant's service during the performance period. The Committee may provide similar treatment for a participant whose service is involuntarily terminated. If a participant's service terminates prior to completion of the applicable performance period for any other reason, the 2017 Plan provides that the performance award will be forfeited, unless

otherwise determined by the Committee. No performance award may be sold or transferred other than by will or the laws of descent and distribution prior to the end of the applicable performance period.

Cash-Based Awards and Other Stock-Based Awards. The Committee may grant cash-based awards or other stock-based awards in such amounts and subject to such terms and conditions as the Committee determines. Cash-based awards will specify a monetary payment or range of payments, while other stock-based awards will specify a number of shares or units based on shares or other equity-related awards. Such awards may be subject to vesting conditions based on continued performance of service or subject to the attainment of one or more performance goals similar to those described above in connection with performance awards. Settlement of awards may be in cash or shares of common stock, as determined by the Committee. A participant will have no voting rights with respect to any such award unless and until shares are issued pursuant to the award. The Committee may grant dividend equivalent rights with respect to other stock-based awards that will be subject to the same vesting conditions and settlement terms as the original award.. The effect on such awards of the participant's termination of service will be determined by the Committee and set forth in the participant's award agreement.

Change in Control. The 2017 Plan provides that a "Change in Control" occurs upon (a) a person or entity (with certain exceptions described in the 2017 Plan) becoming the direct or indirect beneficial owner of more than 50% of the Company's voting stock; (b) stockholder approval of a liquidation or dissolution of the Company; or (c) the occurrence of any of the following events upon which the stockholders of the Company immediately before the event do not retain immediately after the event direct or indirect beneficial ownership of more than 50% of the voting securities of the Company, its successor or the entity to which the assets of the company were transferred: (i) a sale or exchange by the stockholders in a single transaction or series of related transactions of more than 50% of the Company's voting stock; (ii) a merger or consolidation in which the Company is a party; or (iii) the sale, exchange or transfer of all or substantially all of the assets of the Company (other than a sale, exchange or transfer to one or more subsidiaries of the Company).

If a Change in Control occurs, the surviving, continuing, successor or purchasing entity or its parent may, without the consent of any participant, either assume or continue outstanding awards or substitute substantially equivalent awards for its stock. If so determined by the Committee, stock-based awards will be deemed assumed if, for each share subject to the award prior to the Change in Control, its holder is given the right to receive the same amount of consideration that a stockholder would receive as a result of the Change in Control. The vesting of any awards that are not assumed, continued or replaced in connection with a Change in Control will be accelerated in full, and, if not exercised prior to the Change in Control, will terminate effective as of the time of the Change in Control. The vesting of any awards that are assumed, continue or replaced will be accelerated in full if, within 18 months following the Change in Control, the holder's employment is terminated without cause or the holder resigns following reduction in base salary of 15% or more.

Subject to the restrictions of Section 409A of the Code, the Committee may provide for the acceleration of vesting or settlement of any or all outstanding awards upon such other terms and to such extent as it determines. The vesting of all awards held by non-employee directors will be accelerated in full upon a Change in Control.

The 2017 Plan also authorizes the Committee, in its discretion and without the consent of any participant, to cancel each or any award denominated in shares of stock upon a Change in Control in exchange for a payment to the participant with respect each vested share (and each unvested share if so determined by the Committee) subject to the canceled award of an amount equal to the excess of the consideration to be paid per share of common stock in the Change in Control transaction over the exercise or purchase price per share, if any, under the award.

Awards Subject to Section 409A of the Code. Certain awards granted under the 2017 Plan may be deemed to constitute "deferred compensation" within the meaning of Section 409A of the Code, providing rules regarding the taxation of nonqualified deferred compensation plans, and the regulations and other administrative guidance issued pursuant to Section 409A. Any such awards will be required to comply with the requirements of Section 409A. Notwithstanding any provision of the 2017 Plan to the contrary, the Committee is authorized, in its sole discretion and without the consent of any participant, to amend the 2017 Plan or any award agreement as it deems necessary or advisable to comply with Section 409A.

Amendment, Suspension or Termination. The 2017 Plan will continue in effect until its termination by the Committee, provided that no awards may be granted under the 2017 Plan following the tenth anniversary of the 2017 Plan's effective date, which is May 18, 2027. If our stockholders approve the Proposed Amendments, the term of the 2017 Plan will be extended to May 7, 2029. The Committee may amend, suspend or terminate the 2017 Plan at any time, provided that no amendment may be made without stockholder approval that would increase the maximum aggregate number of shares of stock authorized for issuance under the 2017 Plan, change the class of persons eligible to receive incentive stock options or require stockholder approval under any applicable law or the rules of any stock exchange on which the Company's shares are then listed. No amendment, suspension or termination of the 2017 Plan may affect any outstanding award unless expressly provided by the Committee, and, in any event, may not have a materially adverse effect an outstanding award without the consent of the participant unless necessary to comply with any applicable law, regulation or rule, including, but not limited to, Section 409A of the Code.

Tax Aspects Under the Code

The following summary is intended only as a general guide to the U.S. federal income tax consequences of participation in the 2017 Plan and does not attempt to describe all possible federal or other tax consequences of such participation or tax consequences based on particular circumstances.

Incentive Stock Options. A participant recognizes no taxable income for regular income tax purposes as a result of the grant or exercise of an incentive stock option qualifying under Section 422 of the Code. Participants who neither dispose of their shares within two years following the date the option was granted nor within one year following the exercise of the option will normally recognize a capital gain or loss upon the sale of the shares equal to the difference, if any, between the sale price and the purchase price of the shares. If a participant satisfies such holding periods upon a sale of the shares, we will not be entitled to any deduction for federal income tax purposes. If a participant disposes of shares within two years after the date of grant or within one year after the date of exercise (a "disqualifying disposition"), the difference between the fair market value of the shares on the option exercise date and the exercise price (not to exceed the gain realized on the sale if the disposition is a transaction with respect to which a loss, if sustained, would be recognized) will be taxed as ordinary income at the time of disposition. Any gain in excess of that amount will be a capital gain. If a loss is recognized, there will be no ordinary income, and such loss will be a capital loss. Any ordinary income recognized by the participant upon the disqualifying disposition of the shares generally should be deductible by us for federal income tax purposes, except to the extent such deduction is limited by applicable provisions of the Code.

In general, the difference between the option exercise price and the fair market value of the shares on the date of exercise of an incentive stock option is treated as an adjustment in computing the participant's alternative minimum taxable income and may be subject to an alternative minimum tax which is paid if such tax exceeds the regular tax for the year. Special rules may apply with respect to certain subsequent sales of the shares in a disqualifying disposition, certain basis adjustments for purposes of computing the alternative minimum taxable income on a subsequent sale of the shares and certain tax credits which may arise with respect to participants subject to the alternative minimum tax.

Nonstatutory Stock Options. Options not designated or qualifying as incentive stock options are nonstatutory stock options having no special tax status. A participant generally recognizes no taxable income upon receipt of such an option. Upon exercising a nonstatutory stock option, the participant normally recognizes ordinary income equal to the difference between the exercise price paid and the fair market value of the shares on the date when the option is exercised. If the participant is an employee, such ordinary income generally is subject to withholding of income and employment taxes. Upon the sale of stock acquired by the exercise of a nonstatutory stock option, any gain or loss, based on the difference between the sale price and the fair market value of the shares on the exercise date, will be taxed as capital gain or loss. We generally should be entitled to a tax deduction equal to the amount of ordinary income recognized by the participant as a result of the exercise of a nonstatutory stock option, except to the extent such deduction is limited by applicable provisions of the Code.

Stock Appreciation Rights. A Participant recognizes no taxable income upon the receipt of a stock appreciation right. Upon the exercise of a stock appreciation right, the participant generally will recognize ordinary income in an amount equal to the excess of the fair market value of the underlying shares of common stock on the exercise date over the exercise price. If the participant is an employee, such ordinary income generally is subject to withholding of income and employment taxes. We generally should be entitled to a deduction equal to the amount of ordinary income recognized by the participant in connection with the exercise of the stock appreciation right, except to the extent such deduction is limited by applicable provisions of the Code.

Restricted Stock. A participant acquiring restricted stock generally will recognize ordinary income equal to the excess of the fair market value of the shares on the "determination date" over the price paid, if any, for such shares. The "determination date" is the date on which the participant acquires the shares unless the shares are subject to a substantial risk of forfeiture and are not transferable, in which case the determination date is the earlier of (i) the date on which the shares become transferable or (ii) the date on which the shares are no longer subject to a substantial risk of forfeiture (e.g., when they become vested). If the determination date follows the date on which the participant acquires the shares, the participant may elect, pursuant to Section 83(b) of the Code, to designate the date of acquisition as the determination date by filing an election with the Internal Revenue Service no later than 30 days after the date on which the shares are acquired. If the participant is an employee, such ordinary income generally is subject to withholding of income and employment taxes. Upon the sale of shares acquired pursuant to a restricted stock award, any gain or loss, based on the difference between the sale price and the fair market value of the shares on the determination date, will be taxed as capital gain or loss. We generally should be entitled to a deduction equal to the amount of ordinary income recognized by the participant on the determination date, except to the extent such deduction is limited by applicable provisions of the Code.

Restricted Stock Unit, Performance, Cash-Based and Other Stock-Based Awards. A participant generally will recognize no income upon the receipt of a restricted stock unit, performance share, performance unit, cash-based or other stock-based award. Upon the settlement of such awards, participants normally will recognize ordinary income in the year of settlement in an amount equal to the cash received and the fair market value of any substantially vested shares of stock received. If the participant is an employee, such ordinary income generally is subject to withholding of income and employment taxes. If the participant receives shares of restricted stock, the participant generally will be taxed in the same manner as described above under "Restricted Stock." Upon the sale of any shares received, any gain or loss, based on the difference between the sale price and the fair market value of the shares on the determination date (as defined above under "Restricted Stock"), will be taxed as capital gain or loss. We generally should be entitled to a deduction equal to the amount of ordinary income recognized by the participant on the determination date, except to the extent such deduction is limited by applicable provisions of the Code.

Options Granted to Certain Persons

Since its inception, no options have been granted under the 2017 Plan to (i) any current executive officers, (ii) any current directors who are not executive officers, or (iii) any employees, including current officers who are not executive officers. Since its inception, no options have been granted under the 2017 Plan to any other nominee for election as a director, or any associate of any such director, nominee or executive officer.

Vote Required

Approval of this proposal requires the affirmative vote of a majority of the shares present or represented by proxy and entitled to vote on this proposal. If you hold your shares in your own name and abstain from voting on this matter, your abstention will have the same effect as a negative vote. If you hold your shares through a broker and you do not instruct the broker on how to vote on this proposal, your broker will not have authority to vote your shares. Broker non-votes will have no effect on the outcome of this vote. Abstentions and broker non-votes will each be counted as present for purposes of determining the presence of a quorum.

THE BOARD UNANIMOUSLY RECOMMENDS VOTING "FOR" THE APPROVAL OF THE PROPOSED AMENDMENTS TO THE 2017 EQUITY INCENTIVE PLAN.

SECURITY OWNERSHIP

The following tables set forth information regarding beneficial ownership of our Common Stock for each person known to own beneficially more than 5% of our outstanding Common Stock; each director and director nominee; and each of our NEOs, both individually and as a group. Applicable percentage of ownership is based on 38,036,801 shares of our Common Stock outstanding as of the Record Date, unless otherwise noted below, together with applicable options for each stockholder.

Principal Shareholders	Shares Beneficially Owned	Percentage
Brown Capital Management, LLC(1)	5,580,504	14.7%
Ronald F. and Mariette M. Woestemeyer(2)	3,887,403	10.2%
PRIMECAP Management Company(3)	2,815,900	7.4%
Conestoga Capital Advisors, LLC(4)	2,634,109	6.9%
BlackRock, Inc.(5)	2,321,872	6.1%
Riverbridge Partners, LLC(6)	2,218,402	5.8%

(1) Information regarding Brown Capital Management, LLC (Brown) is based solely upon a Schedule 13G/A filed by Brown Capital with the SEC on February 14, 2019, which indicates that Brown Capital beneficially owned 5,580,504 shares of our Common Stock as of December 31, 2018, with sole voting power with respect to 3,082,517 shares of our Common Stock and sole dispositive power with respect to 5,580,504 shares of our Common Stock. The address of Brown Capital is 1201 N. Calvert Street, Baltimore, MD 21202.

(2) Includes 3,887,403 shares held by various trusts for the benefit of certain family members. The address for Mr. & Mrs. Woestemeyer is c/o PROS Holdings, Inc., 3100 Main Street, Suite 900, Houston, Texas 77002.

(3) Information regarding PRIMECAP Management Company (PRIMECAP) is based solely upon a Schedule 13G/A filed by PRIMECAP with the SEC on February 8, 2019, which indicates that PRIMECAP beneficially owned 2,815,900 shares of our Common Stock as of December 31, 2018, with sole voting power with respect to 2,641,500 shares of our Common Stock and sole dispositive power with respect to 2,641,500 shares of our Common Stock. The address of PRIMECAP is 177 E. Colorado Blvd., 11th Floor, Pasadena, CA 91105.

(4) Information regarding Conestoga Capital Advisors, LLC (Conestoga) is based solely upon a Schedule 13G/A filed by Conestoga with the SEC on January 8, 2019, which indicates that Conestoga beneficially owned 2,634,109 shares of our Common Stock as of December 31, 2018, with sole voting power with respect to 2,354,386 shares of our Common Stock and sole dispositive power with respect to 2,634,109 shares of our Common Stock. The address of Conestoga is 550 E. Swedesford Road, Suite 120, Wayne, PA 19087.

(5) Information regarding BlackRock, Inc. (BlackRock) is based solely upon a Schedule 13G/A filed by BlackRock with the SEC on February 6, 2019, which indicates that BlackRock beneficially owned 2,321,872 shares of our Common Stock as of December 31, 2018, with sole voting power with respect to 2,096,161 shares of our Common Stock and sole dispositive power with respect to 2,321,872 shares of our Common Stock. The address of BlackRock is 55 East 52nd Street, New York, NY 10055.

(6) Information regarding Riverbridge Partners LLC (Riverbridge) is based solely upon a Schedule 13G/A filed by Riverbridge with the SEC on January 25, 2019, which indicates that Riverbridge beneficially owned 2,218,402 shares of our Common Stock as of December 31, 2018, with sole voting power with respect to 1,536,516 shares of our Common Stock and sole dispositive power with respect to 2,218,402 shares of our Common Stock. The address of Riverbridge is 80 South Eighth St., Suite 1200, Minneapolis, MN 55402.

Name of Beneficial Owner	Shares Beneficially Owned[1]	Percentage
Named Executive Officers		
Andres D. Reiner(2)	767,252	2.0 %
Stefan B. Schulz	193,949	*
Thomas F. Dziersk	8,357	*
Non-Employee Directors and Director Nominees		
Penelope Herscher	3,189	*
Greg B. Petersen	103,119	*
Leslie Rechan	30,704	*
William Russell	126,571	*
Timothy V. Williams	108,071	*
Mariette M. Woestemeyer(3)	3,887,403	10.2 %
Ronald F. Woestemeyer(3)	3,877,403	10.2 %
All NEOs, directors and director nominees as a group	**5,228,615**	**13.7%**

** Represents less than 1% of the outstanding shares of Common Stock*

(1) Includes shares held and stock options, RSUs, PRSUs, MSUs and stock appreciation rights (SARs) vesting and exercisable within 60 days of the Record Date. MSUs are displayed at 100% of the target number granted.

(2) Includes 200,000 shares issuable pursuant to SARs that are immediately exercisable or exercisable within 60 days of the Record Date.

(3) Mr. and Mrs. Woestemeyer jointly beneficially own an aggregate of 3,887,403 shares, which include shares held by various trusts for the benefit of certain family members.

SECTION 16(a) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Exchange Act requires each of our directors and NEOs, among others, to file with the SEC an initial report of ownership and reports of changes in ownership of Common Stock of the Company. Such persons are required by SEC regulations to furnish us with copies of all such filings. Based on a review of the copies of such forms in our possession, and on written representations from reporting persons, we believe that during 2018, all of our NEOs and directors filed the required reports on a timely basis under Section 16(a).

CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

Since January 1, 2018, there has not been (nor is there currently proposed), any transaction or series of similar transactions to which we were or are a party in which the amount involved exceeded or exceeds $120,000 and in which any of our directors, executive officers, holders of more than 5% of any class of our voting securities, or any member of the immediate family of any of the foregoing persons, had or will have a direct or indirect material interest, other than compensation arrangements with directors and executive officers, and the transactions described below:

Relationships with Management, Founders and Investors

Ownership. Ronald F. Woestemeyer and Mariette Woestemeyer, who each serve on our Board, jointly hold more than 5% of our Common Stock.

Indemnification agreements. We have entered into indemnification agreements with each of our current directors and officers. These agreements require us, among other things, to indemnify these individuals to the fullest extent permitted under Delaware law against liabilities that may arise by reason of their service to us, and to advance expenses incurred as a result of any proceeding against them as to which they could be indemnified. We also intend to enter into indemnification agreements with our future directors and officers.

Employment arrangements. We have entered into employment agreements with each of our executive officers, which address, among other things, the terms of their employment, such as base salary, severance payments and payment on a change in control.

Family relationships. Mr. Rob Reiner, who serves as our Chief Technology Officer is the brother of Andres Reiner, our CEO. All compensation paid to Mr. R. Reiner has been approved by our Compensation and Leadership Development Committee, which reviews and approves all compensation for our NEOs and any family members who are employees.

Procedures for Related Party Transactions

Under our Code of Business Conduct and Ethics, our employees and officers are discouraged from entering into any transaction that may cause a conflict of interest. In addition, they must report any potential conflict of interest, including related party transactions, to their managers or our compliance officer who then reviews and summarizes the proposed transaction for our Audit Committee. Pursuant to its charter, our Audit Committee must then approve any related party transactions, including those transactions involving our directors. In approving or rejecting such proposed transactions, the Audit Committee considers the relevant facts and circumstances available and deemed relevant to the Audit Committee, including the material terms of the transactions, risks, benefits, costs, availability of other comparable services or products and, if applicable, the impact on a director's independence. Our Audit Committee will approve only those transactions that, in light of known circumstances, are in, or are not inconsistent with, our best interests, as our Audit Committee determines in the good faith exercise of its discretion.

REPORT OF THE AUDIT COMMITTEE OF THE BOARD OF DIRECTORS

The Audit Committee operates under a written charter adopted by the Board of Directors, a current copy of which is available under *Corporate Governance* in the *Investor Relations* section of our website at www.pros.com. The Audit Committee reviews and assesses the adequacy of its charter at least annually and, when appropriate, recommends changes to the Board to reflect the evolving role of the Audit Committee. The Audit Committee is composed of non-employee directors who meet the independence and financial literacy requirements of the NYSE and additional, heightened independence criteria applicable to members of the Audit Committee under SEC and NYSE rules. The Audit Committee currently consists of Timothy V. Williams (Chairman), Greg B. Petersen and Les Rechan. Our Board of Directors has determined that each of the members of the Audit Committee are each an "Audit Committee financial expert" as is currently defined under SEC regulations and the rules of the NYSE.

Primary Responsibilities

The Audit Committee oversees the Company's accounting and financial reporting processes on behalf of the Board of Directors, and assists the Board in fulfilling its oversight responsibility relating to the integrity of the Company's financial statements and the financial reporting process, the systems of internal accounting and financial controls, and the annual independent audit of the Company's financial statements. The Audit Committee also oversees the independent auditors' qualifications and independence. The Company's management has the primary responsibility for preparing the Company's financial statements, for maintaining effective internal control over financial reporting, and for assessing the effectiveness of internal control over financial reporting.

Oversight of Independent Auditors

The Audit Committee engaged PricewaterhouseCoopers LLP (PwC) as our independent auditors for the year ended December 31, 2018. In its meetings with our independent auditors, the Audit Committee asks them to address, and discusses their responses to, several questions that the Audit Committee believes are relevant to its oversight. The Audit Committee also discussed with the independent auditors those matters required to be discussed by the auditors with the Audit Committee under the rules adopted by the Public Company Accounting Oversight Board (PCAOB). The Audit Committee received the written disclosures and the letter from the independent auditors required by applicable requirements of the PCAOB regarding the independent auditors' communication with the Audit Committee concerning independence, and has discussed with the independent auditors their independence.

2018 Audited Financial Statements

In its oversight role, the Audit Committee relies on the work and assurances of the Company's management. In fulfilling its oversight responsibilities in 2018, the Audit Committee reviewed and discussed with management the Company's consolidated financial statements for the fiscal year ended December 31, 2018, including a discussion of, among other things, the quality of the Company's accounting principles, the reasonableness of significant estimates and judgments, and the clarity of disclosures in the Company's financial statements.

The Audit Committee has (1) reviewed and discussed the audited financial statements with management, (2) discussed with PwC, our independent registered public accounting firm, the matters required to be discussed by the statement on Auditing Standard No. 1301, "Communications with Audit Committees", as adopted by the Public Company Accounting Oversight Board, (3) received the written disclosures and the letter from the independent accountant required by applicable requirements of the Public Company Accounting Oversight Board regarding the independent accountant's communications with the Audit Committee concerning independence, and has discussed with the independent accountant the independent accountant's independence, and (4) considered with the independent auditors whether the provision of non-audit services provided by them to the Company during 2018 was compatible with their independence. Based upon these discussions and reviews, the Audit Committee recommended to our Board of Directors, and the Board has approved, that the audited financial statements be included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 and filed with the SEC.

THE AUDIT COMMITTEE OF THE BOARD OF DIRECTORS

Timothy V. Williams, Chairman
Greg B. Petersen
Les Rechan

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM FEES

The Audit Committee has adopted a policy for the pre-approval of services performed by our independent registered public accounting firm. Under this policy, each year the Audit Committee pre-approves the audit engagement terms and fees and may also pre-approve detailed types of audit-related and permitted tax services, subject to certain dollar limits, to be performed during the year. All other permitted non-audit services are required to be pre-approved by the Audit Committee on an engagement-by-engagement basis.

The following table summarizes the aggregate fees in 2018 billed for professional services rendered to us by PwC in 2018 and 2017. A description of these various fees and services follows the table:

	2018	2017
Audit fees	$ 1,845,680	$ 2,058,773
Audit-related fees	—	—
Tax fees	41,992	31,000
All other fees	1,919	1,919
Total fees	$ 1,889,591	$ 2,091,692

Fees Billed by PricewaterhouseCoopers, LLP

Audit fees. The aggregate fees billed to us by PwC in connection with the annual audit of our financial statements, reviews of our financial statements included in quarterly reports on Form 10-Q, consents related to documents filed with the SEC and comfort letters, were $1,845,680 and $2,058,773 for the years ended December 31, 2018 and 2017, respectively.

Audit-related fees. Audit-related fees consist of fees for professional services that are reasonably related to the performance of the audit or review of the Company's financial statements. This category may include fees related to due diligence related to mergers and acquisitions, accounting and financial reporting consultations and research necessary to comply with generally accepted audit standards. There were no audit-related fees billed for the years ended December 31, 2018 and 2017.

Tax fees. The aggregate tax fees billed to us by PwC related to tax compliance, tax advice and tax planning, and were $41,992 and $31,000 for the years ended December 31, 2018 and 2017, respectively.

All other fees. The other fees consist of subscription fees for an accounting and auditing research tool.

Audit Committee Approval of Services

The Audit Committee is authorized by its charter to pre-approve all auditing and permitted non-audit services to be performed by our independent registered public accounting firm. The Audit Committee reviews and approves the independent registered public accounting firm’s retention to perform attest services, including the associated fees. The Audit Committee also evaluates other known potential engagements of the independent registered public accounting firm, including the scope of the proposed work and the proposed fees, and approves or rejects each service, taking into account whether the services are permissible under applicable law and the possible impact of each non-audit service on the independent registered public accounting firm’s independence from management. At subsequent meetings, the Audit Committee receives updates on services actually provided by the independent registered public accounting firm, and management may present additional services for approval. The Audit Committee has delegated to the chairman of the Audit Committee the authority to evaluate and approve engagements on behalf of the Audit Committee in the event that a need arises for pre-approval between Audit Committee meetings. If the Chairman approves any such engagements, he reports that approval to the full Audit Committee at its next meeting. During fiscal year 2018, all such services were pre-approved in accordance with the procedures described above.

Our Audit Committee has reviewed the fees described above and believes that such fees are compatible with maintaining the independence of PwC.

PROPOSAL FOUR

RATIFICATION OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM APPOINTMENT

The Audit Committee has selected the independent registered public accounting firm of PwC to audit our consolidated financial statements for the fiscal year ending December 31, 2019. We have determined to submit the selection of auditors to stockholder ratification, even though it is not required by our governing documents or Delaware law. If the selection of PwC as our independent auditors is not ratified by our stockholders, our Audit Committee will reconsider, but might not change, its selection. Notwithstanding the selection and ratification, the Audit Committee, in its discretion, may appoint a different independent registered public accounting firm at any time, if it believes doing so would be in the best interests of us and our stockholders.

PwC has audited our financial statements annually since 2002. Representatives of PwC are expected to be present at the Annual Meeting with the opportunity to make a statement if they desire to do so and are expected to be available to respond to appropriate questions.

Vote Required

Approval of the ratification of the appointment of PwC as our independent registered public accounting firm requires the affirmative vote of the holders of at least a majority of the outstanding shares of our Common Stock entitled to vote and present or represented at the Annual Meeting. A properly executed proxy marked "ABSTAIN" with respect to this matter is considered entitled to vote and thus, will have the effect of a vote against this matter.

In accordance with Delaware law, abstentions will be counted for purposes of determining both whether a quorum is present at the Annual Meeting and the total number of shares represented and voting on this proposal. While broker non-votes will be counted for purposes of determining the presence or absence of a quorum, broker non-votes will not be counted for purposes of determining the number of shares represented and voting with respect to the particular proposal on which the broker has expressly not voted and, accordingly, will not affect the approval of this proposal.

THE BOARD UNANIMOUSLY RECOMMENDS VOTING "FOR" THE RATIFICATION OF THE APPOINTMENT OF PRICEWATERHOUSECOOPERS LLP AS OUR INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM FOR THE FISCAL YEAR ENDING DECEMBER 31, 2019.

STOCKHOLDERS PROPOSALS

Stockholders may present proposals for action at meetings of stockholders only if they comply with the rules established by the SEC, applicable Delaware law and our amended and restated bylaws, as contained in the Current Report on Form 8-K filed with the SEC on August 21, 2013 (Bylaws). No stockholder proposals were received for consideration at the Annual Meeting.

Stockholders interested in submitting a proposal for inclusion in our proxy materials and for consideration at the 2020 annual meeting of our stockholders (2020 Annual Meeting) may do so by following the procedures set forth in Rule 14a-8 under the Exchange Act, as amended. To be eligible for inclusion in such proxy materials, stockholder proposals must be received by our Corporate Secretary no later than November 26, 2019.

Under our Bylaws, for any stockholder proposal or director nomination that is not submitted for inclusion in the next year's proxy statement but instead is proposed to be presented directly at our 2020 Annual Meeting, the stockholder must provide us written notice not later than the close of business on the later of the ninetieth day prior to our 2020 Annual Meeting or the tenth day following the date on which public announcement of the date of the 2020 Annual Meeting is first made. Any such notice for director nominations must satisfy the requirements specified in Article II, Section 2.15(b) of our Bylaws. Any such notice for other stockholder proposals (other than director nomination) must satisfy the requirements specified in Article I, Section 1.10(b) of our Bylaws. In the absence of such notice meeting the above requirements, a stockholder shall not be entitled to present any business at our 2020 Annual Meeting.

Notwithstanding the above, in the event that the number of directors to be elected at an annual meeting of stockholders is increased and there is no public announcement by the Company naming the nominees for the additional directorships at least 100 days prior to the first anniversary of the date of the Company's previous year's annual meeting of stockholders, a stockholder's notice shall also be considered timely, but only with respect to nominees for the additional directorships, if it is be delivered to the Corporate Secretary at our principal executive offices not later than the close of business on the 10th day following the day on which such public announcement is first made by the Company. In the event the Company calls a special meeting of stockholders for the purpose of electing one or more directors to the Board, any such stockholder may nominate a person(s), for election to such positions as are specified in the Company's notice of meeting, if the stockholder's notice is delivered to the Corporate Secretary at our principal executive offices not earlier than the 90th day prior to such special meeting and not later than the close of business on the later of the 60th day prior to such special meeting or the 10th day following the day on which public announcement is first made of the date of the special meeting and of the nominees proposed by our Board to be elected at such meeting.

EXPENSES AND SOLICITATION

We will bear the expense of soliciting proxies in the enclosed form. In addition, we might reimburse banks, brokerage firms, and other custodians, nominees and fiduciaries representing beneficial owners of our Common Stock, for their expenses in forwarding soliciting materials to those beneficial owners. Proxies may also be solicited by our directors, officers or employees, personally or by telephone, telegram, facsimile or other means of communication. We do not intend to pay additional compensation for doing so.

NO INCORPORATION BY REFERENCE OF CERTAIN PORTIONS OF THIS PROXY STATEMENT

Notwithstanding anything to the contrary set forth in any of our filings made under the Securities Act of 1933, as amended, or the Exchange Act, as amended, that might incorporate information in this Proxy Statement, neither the Audit Committee Report nor the Compensation and Leadership Development Committee Report is to be incorporated by reference into any such filings as provided by SEC regulations. In addition, this Proxy Statement includes certain website addresses intended to provide inactive, textual references only. The information on these websites shall not be deemed part of this Proxy Statement.

OTHER MATTERS

The Board knows of no other matters to be submitted at the Annual Meeting. If any other matters properly come before the Annual Meeting, the persons appointed in the enclosed proxy intend to vote the shares represented thereby in accordance with their best judgment on such matters, under applicable laws.

The Board of Directors
PROS HOLDINGS, INC.

March 25, 2019

PROS HOLDINGS, INC.
3100 MAIN STREET, 9TH FLOOR
HOUSTON, TX 77002

VOTE BY INTERNET - www.proxyvote.com
Use the Internet to transmit your voting instructions and for electronic delivery of information. Vote by 11:59 P.M. ET on 05/06/2019 for shares held directly and by 11:59 P.M. ET on 05/02/2019 for shares held in a Plan. Have your proxy card in hand when you access the web site and follow the instructions to obtain your records and to create an electronic voting instruction form.

ELECTRONIC DELIVERY OF FUTURE PROXY MATERIALS
If you would like to reduce the costs incurred by PROS Holdings, Inc. in mailing proxy materials, you can consent to receiving all future proxy statements, proxy cards and annual reports electronically via e-mail or the Internet. To sign up for electronic delivery, please follow the instructions above to vote using the Internet and, when prompted, indicate that you agree to receive or access proxy materials electronically in future years.

VOTE BY PHONE - 1-800-690-6903
Use any touch-tone telephone to transmit your voting instructions. Vote by 11:59 P.M. ET on 05/06/2019 for shares held directly and by 11:59 P.M. ET on 05/02/2019 for shares held in a Plan. Have your proxy card in hand when you call and then follow the instructions.

VOTE BY MAIL
Mark, sign and date your proxy card and return it in the postage-paid envelope we have provided or return it to Vote Processing, c/o Broadridge, 51 Mercedes Way, Edgewood, NY 11717.

TO VOTE, MARK BLOCKS BELOW IN BLUE OR BLACK INK AS FOLLOWS:

KEEP THIS PORTION FOR YOUR RECORDS

THIS PROXY CARD IS VALID ONLY WHEN SIGNED AND DATED.

DETACH AND RETURN THIS PORTION ONLY

The Board of Directors recommends you vote FOR the following:

	For All	Withhold All	For All Except
	☐	☐	☐

To withhold authority to vote for any individual nominee(s), mark "For All Except" and write the number(s) of the nominee(s) on the line below.

1. Election of Directors

Nominees

01 Andres D. Reiner 02 Ronald F. Woestemeyer

The Board of Directors recommends you vote FOR proposals 2, 3 and 4.

		For	Against	Abstain
2	To conduct an advisory vote on executive compensation.	☐	☐	☐
3	To approve proposed amendments to 2017 Equity Incentive Plan.	☐	☐	☐
4	To ratify the appointment of PricewaterhouseCoopers LLP as the independent registered public accounting firm of PROS Holdings, Inc. for the fiscal year ending December 31, 2019.	☐	☐	☐

NOTE: Such other business as may properly come before the meeting or any adjournment thereof will be voted at the proxies' discretion. The Board of Directors recommends a vote IN FAVOR OF the directors listed above, IN FAVOR OF the advisory vote on executive compensation, IN FAVOR OF proposed amendments to 2017 Equity Incentive Plan, and IN FAVOR OF the appointment of PricewaterhouseCoopers LLP. This Proxy, when properly executed, will be voted as specified. If no specification is made, the Proxy will be voted IN FAVOR OF the directors listed above, IN FAVOR OF advisory vote on executive compensation, IN FAVOR OF proposed amendments to 2017 Equity Incentive Plan, and IN FAVOR OF the appointment of PricewaterhouseCoopers LLP.

For address change/comments, mark here. ☐
(see reverse for instructions)

	Yes	No
Please indicate if you plan to attend this meeting	☐	☐
Please indicate if you wish to view meeting materials electronically via the Internet rather than receiving a hard copy. Please note that you will continue to receive a proxy card for voting purposes only.	☐	☐

Please sign exactly as your name(s) appear(s) hereon. When signing as attorney, executor, administrator, or other fiduciary, please give full title as such. Joint owners should each sign personally. All holders must sign. If a corporation or partnership, please sign in full corporate or partnership name, by authorized officer.

Signature [PLEASE SIGN WITHIN BOX] Date

Signature (Joint Owners) Date

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Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting: The Notice & Proxy Statement and Annual Report are available at www.proxyvote.com

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PROS HOLDINGS, INC.
THIS PROXY IS SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS
ANNUAL MEETING OF STOCKHOLDERS
MAY 7, 2019

The stockholder(s) hereby appoint(s) Stefan B. Schulz and Damian W. Olthoff, or each of them, as proxies, each with the power to appoint his substitute, and hereby authorize(s) them to represent and to vote, as designated on the reverse side of this ballot, all of the shares of Common Stock of PROS Holdings, Inc. that the stockholder(s) is/are entitled to vote at the Annual Meeting of Stockholders to be held at 8:00 a.m. CDT on May 7, 2019, at 3100 Main Street, 9th Floor, Houston, TX 77002, and any adjournment or postponement thereof.

Such shares shall be voted as indicated with respect to the proposals listed on the reverse side hereof and the proxies' discretion on such other matters as may properly come before the meeting or any adjournment thereof.

The Board of Directors recommends a vote IN FAVOR OF the directors listed on the reverse side, IN FAVOR OF the advisory vote on executive compensation, IN FAVOR OF proposed amendments to 2017 Equity Incentive Plan, and IN FAVOR OF the appointment of PricewaterhouseCoopers LLP. If no specification is made, this Proxy will be voted IN FAVOR OF the election of directors listed on the reverse side of this proxy card, IN FAVOR OF the advisory vote on executive compensation, IN FAVOR OF proposed amendments to 2017 Equity Incentive Plan, and IN FAVOR OF the appointment of PricewaterhouseCoopers LLP.

Address change/comments:

____

____

____

(If you noted any Address Changes and/or Comments above, please mark corresponding box on the reverse side.)

Continued and to be signed on reverse side

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PROS

AMENDED AND RESTATED

2017 EQUITY INCENTIVE PLAN

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PROS
Amended and Restated 2017 Equity Incentive Plan

1. **Establishment, Purpose and Term of Plan.**

1.1 **Establishment.** The Amended and Restated PROS 2017 Equity Incentive Plan (the ***"Plan"***) is hereby established effective as of May __, 2019, the date of its approval by the stockholders of the Company (the ***"Effective Date"***). The PROS 2017 Equity Incentive Plan was originally approved by stockholders of the Company on May 11, 2017, was amended and restated on March 22, 2019 by the Board, and certain amendments to the Plan requiring stockholder approval were submitted for approval by the stockholders of the Company at the Company's 2019 annual meeting of stockholders.

1.2 **Purpose.** The purpose of the Plan is to advance the interests of the Participating Company Group and its stockholders by providing an incentive to attract, retain and reward persons performing services for the Participating Company Group and by motivating such persons to contribute to the growth and profitability of the Participating Company Group. The Plan seeks to achieve this purpose by providing for Awards in the form of Options, Stock Appreciation Rights, Restricted Stock Awards, Restricted Stock Units, Performance Shares, Performance Units, Cash-Based Awards and Other Stock-Based Awards.

1.3 **Term of Plan.** The Plan will continue in effect until its termination by the Committee; provided, however, that all Awards must be granted, if at all, within ten (10) years from the Effective Date.

2. **Definitions and Construction.**

2.1 **Definitions.** Whenever used herein, the following terms have their respective meanings set forth below:

(a) ***"Affiliate"*** means (i) a parent entity, other than a Parent Corporation, that directly, or indirectly through one or more intermediary entities, controls the Company or (ii) a subsidiary entity, other than a Subsidiary Corporation, that is controlled by the Company directly or indirectly through one or more intermediary entities. For this purpose, the terms "parent," "subsidiary," "control" and "controlled by" have the meanings assigned such terms for the purposes of registration of securities on Form S-8 under the Securities Act.

(b) ***"Award"*** means any Option, Stock Appreciation Right, Restricted Stock Purchase Right, Restricted Stock Bonus, Restricted Stock Unit, Performance Share, Performance Unit, Cash-Based Award or Other Stock-Based Award granted under the Plan.

(c) ***"Award Agreement"*** means a written or electronic agreement between the Company and a Participant setting forth the terms, conditions and restrictions applicable to an Award.

(d) ***"Board"*** means the Board of Directors of the Company.

(e) ***"Cash-Based Award"*** means an Award denominated in cash and granted pursuant to Section 11.

(f) ***"Cashless Exercise"*** means a Cashless Exercise as defined in Section 6.3(b)(i).

(g) ***"Cause"*** means, unless such term or an equivalent term is otherwise defined by the applicable Award Agreement or other written agreement between a Participant and a Participating Company applicable to an Award, any of the following: (i) the Participant's theft, dishonesty, willful misconduct, breach of fiduciary duty for personal profit, or falsification of any Participating Company documents or records; (ii) the Participant's material failure to abide by a Participating Company's code of conduct or other policies (including, without limitation, policies relating to confidentiality and reasonable workplace conduct); (iii) the Participant's unauthorized use, misappropriation, destruction or diversion of any tangible or intangible asset or corporate opportunity of a Participating Company (including, without limitation, the Participant's improper use or disclosure of a Participating Company's confidential or proprietary information); (iv) any intentional act by the Participant which has a material detrimental effect on a Participating Company's reputation or business; (v) the Participant's repeated failure to perform any reasonable assigned duties after written notice from a Participating Company of, and a reasonable opportunity to cure, such failure; (vi) any material breach by the Participant of any employment, service, non-disclosure, non-competition, non-solicitation or other similar agreement between the Participant and a Participating Company, which breach is not cured pursuant to the terms of such agreement; or (vii) the Participant's conviction (including any plea of guilty or *nolo contendere*) of any criminal act involving fraud, dishonesty, misappropriation or moral turpitude, or which impairs the Participant's ability to perform his or her duties with a Participating Company.

(h) ***"Change in Control"*** means the occurrence of any one or a combination of the following:

(i) any "person" (as such term is used in Sections 13(d) and 14(d) of the Exchange Act) becomes the "beneficial owner" (as such term is defined in Rule 13d-3 under the Exchange Act), directly or indirectly, of securities of the Company representing more than fifty percent (50%) of the total Fair Market Value or total combined voting power of the Company's then-outstanding securities entitled to vote generally in the election of Directors; provided, however, that a Change in Control shall not be deemed to have occurred if such degree of beneficial ownership results from any of the following: (A) an acquisition by any person who on the Effective Date is the beneficial owner of more than fifty percent (50%) of such voting power, (B) any acquisition directly from the Company, including, without limitation, pursuant to or in connection with a public offering of securities, (C) any acquisition by the Company, (D) any acquisition by a trustee or other fiduciary under an employee benefit plan of a Participating Company or (E) any acquisition by an entity owned directly or indirectly by the stockholders of the Company in substantially the same proportions as their ownership of the voting securities of the Company; or

(ii) an Ownership Change Event or series of related Ownership Change Events (collectively, a ***"Transaction"***) in which the stockholders of the Company immediately before the Transaction do not retain immediately after the Transaction direct or indirect beneficial ownership of more than fifty percent (50%) of the total combined voting power of the outstanding securities entitled to vote generally in the election of Directors or, in the case of an Ownership Change Event described in Section 2.1(ee)(iii), the entity to which the assets of the Company were transferred (the ***"Transferee"***), as the case may be; or

(iii) a date specified by the Committee following approval by the stockholders of a plan of complete liquidation or dissolution of the Company;

provided, however, that a Change in Control shall be deemed not to include a transaction described in subsections (i) or (ii) of this Section 2.1(h) in which a majority of the members of the board of directors of the continuing, surviving or successor entity, or parent thereof, immediately after such transaction is comprised of Incumbent Directors.

For purposes of the preceding sentence, indirect beneficial ownership includes, without limitation, an interest resulting from ownership of the voting securities of one or more corporations or other business entities which own the Company or the Transferee, as the case may be, either directly or through one or more subsidiary corporations or other business entities. The Committee shall determine whether multiple events described in subsections (i), (ii) and (iii) of this Section 2.1(h) are related and to be treated in the aggregate as a single Change in Control, and its determination shall be final, binding and conclusive.

(i) ***"Code"*** means the Internal Revenue Code of 1986, as amended, and any applicable regulations and administrative guidelines promulgated thereunder.

(j) ***"Committee"*** means the Compensation and Leadership Development Committee and such other committee or subcommittee of the Board, if any, duly appointed to administer the Plan and having such powers in each instance as specified by the Board. If, at any time, there is no committee of the Board then authorized or properly constituted to administer the Plan, the Board must exercise all of the powers of the Committee granted herein, and, in any event, the Board may in its discretion exercise any or all of such powers.

(k) ***"Company"*** means PROS Holdings, Inc., a Delaware corporation, and any successor corporation thereto.

(l) ***"Consultant"*** means a person engaged to provide consulting or advisory services (other than as an Employee or a Director) to a Participating Company, provided that the identity of such person, the nature of such services or the entity to which such services are provided would not preclude the Company from offering or selling securities to such person pursuant to the Plan in reliance on registration on Form S-8 under the Securities Act.

(m) ***"Director"*** means a member of the Board.

(n) ***"Disability"*** means, unless such term or an equivalent term is otherwise defined by the applicable Award Agreement or other written agreement between the Participant and a Participating Company applicable to an Award, the permanent and total disability of the Participant, within the meaning of Section 22(e)(3) of the Code.

(o) ***"Dividend Equivalent Right"*** means the right of a Participant, granted at the discretion of the Committee or as otherwise provided by the Plan, to receive a credit for the account of such Participant in an amount equal to the cash dividends paid on one share of Stock for each share of Stock represented by an Award held by such Participant. Dividend Equivalent Rights may not be granted in connection with an Option or SAR.

(p) ***"Employee"*** means any person treated as an employee (including an Officer or a Director who is also treated as an employee) in the records of a Participating Company and, with respect to any Incentive Stock Option granted to such person, who is an employee for purposes of Section 422 of the Code; provided, however, that neither service as a Director nor payment of a Director's fee is sufficient to constitute employment for purposes of the Plan. The Company shall determine in good faith and in the exercise of its discretion

whether an individual has become or has ceased to be an Employee and the effective date of such individual's employment or termination of employment, as the case may be. For purposes of an individual's rights, if any, under the terms of the Plan as of the time of the Company's determination of whether or not the individual is an Employee, all such determinations by the Company are final, binding and conclusive as to such rights, if any, notwithstanding that the Company or any court of law or governmental agency subsequently makes a contrary determination as to such individual's status as an Employee.

(q) "***Exchange Act***" means the Securities Exchange Act of 1934, as amended.

(r) "***Fair Market Value***" means, as of any date, the value of a share of Stock or other property as determined by the Committee, in its discretion, or by the Company, in its discretion, if such determination is expressly allocated to the Company herein, subject to the following:

(i) Except as otherwise determined by the Committee, if, on such date, the Stock is listed or quoted on a national or regional securities exchange or quotation system, the Fair Market Value will be the closing price of a share of Stock as quoted on the national or regional securities exchange or quotation system constituting the primary market for the Stock, as reported in *The Wall Street Journal* or such other source as the Company deems reliable. If the relevant date does not fall on a day on which the Stock has traded on such securities exchange or quotation system, the date on which the Fair Market Value is established will be the last day on which the Stock was so traded or quoted prior to the relevant date, or such other appropriate day as determined by the Committee, in its discretion.

(ii) Notwithstanding the foregoing, the Committee may, in its discretion, determine the Fair Market Value of a share of Stock on the basis of the opening, closing, or average of the high and low sale prices of a share of Stock on such date or the preceding trading day, the actual sale price of a share of Stock received by a Participant, any other reasonable basis using actual transactions in the Stock as reported on a national or regional securities exchange or quotation system, or on any other basis consistent with the requirements of Section 409A. The Committee may vary its method of determination of the Fair Market Value as provided in this Section for different purposes under the Plan to the extent consistent with the requirements of Section 409A.

(iii) If, on such date, the Stock is not listed or quoted on a national or regional securities exchange or quotation system, the Fair Market Value of a share of Stock must be determined by the Committee in good faith without regard to any restriction other than a restriction which, by its terms, will never lapse, and in a manner consistent with the requirements of Section 409A.

(s) "***Full Value Award***" means any Award settled in Stock, other than (i) an Option, (ii) a Stock Appreciation Right, or (iii) a Restricted Stock Purchase Right or an Other Stock-Based Award under which the Company will receive monetary consideration equal to the Fair Market Value (determined on the effective date of grant) of the shares subject to such Award.

(t) "***Incentive Stock Option***" means an Option intended to be (as set forth in the Award Agreement) and which qualifies as an incentive stock option within the meaning of Section 422(b) of the Code.

(u) "***Incumbent Director***" means a Director who either (i) is a member of the Board as of the Effective Date or (ii) is elected, or nominated for election, to the Board with the affirmative votes of at least a majority of the Incumbent Directors at the time of such election or nomination (but excluding a Director who was elected or nominated in connection with an actual or threatened proxy contest relating to the election of Directors of the Company).

(v) "***Insider***" means an Officer, a Director or other person whose transactions in Stock are subject to Section 16 of the Exchange Act.

(w) "***Net Exercise***" means a Net Exercise as defined in Section 6.3(b)(iii).

(x) "***Nonemployee Director***" means a Director who is not an Employee.

(y) "***Nonemployee Director Award***" means any Award granted to a Nonemployee Director.

(z) "***Non-Exempt Employee***" means an Employee who is a non-exempt employee for purposes of the Fair Labor Standards Act of 1938, as amended.

(aa) "***Nonstatutory Stock Option***" means an Option not intended to be (as set forth in the Award Agreement evidencing such Option) or which does not qualify as an incentive stock option within the meaning of Section 422(b) of the Code.

(bb) "***Officer***" means any person designated by the Board as an officer of the Company.

(cc) "***Option***" means an Incentive Stock Option or a Nonstatutory Stock Option granted pursuant to the Plan.

(dd) “***Other Stock-Based Award***” means an Award denominated in shares of Stock and granted pursuant to Section 11.

(ee) “***Ownership Change Event***” means the occurrence of any of the following with respect to the Company: (i) the direct or indirect sale or exchange in a single or series of related transactions by the stockholders of the Company of securities of the Company representing more than fifty percent (50%) of the total combined voting power of the Company’s then outstanding securities entitled to vote generally in the election of Directors; (ii) a merger or consolidation in which the Company is a party; or (iii) the sale, exchange, or transfer of all or substantially all of the assets of the Company (other than a sale, exchange or transfer to one or more subsidiaries of the Company).

(ff) “***Parent Corporation***” means any present or future “parent corporation” of the Company, as defined in Section 424(e) of the Code.

(gg) “***Participant***” means any eligible person who has been granted one or more Awards.

(hh) “***Participating Company***” means the Company or any Parent Corporation, Subsidiary Corporation or Affiliate.

(ii) “***Participating Company Group***” means, at any point in time, the Company and all other entities collectively which are then Participating Companies.

(jj) “***Performance Award***” means an Award of Performance Shares or Performance Units.

(kk) “***Performance Award Formula***” means, for any Performance Award, a formula or table established by the Committee pursuant to Section 10.3 which provides the basis for computing the value of a Performance Award at one or more levels of attainment of the applicable Performance Goal(s) measured as of the end of the applicable Performance Period.

(ll) “***Performance Goal***” means a performance goal established by the Committee pursuant to Section 10.3.

(mm) “***Performance Period***” means a period established by the Committee pursuant to Section 10.3 at the end of which one or more Performance Goals are to be measured.

(nn) “***Performance Share***” means a right granted to a Participant pursuant to Section 10 to receive a payment equal to the value of a Performance Share, as determined by the Committee, based upon attainment of applicable Performance Goal(s).

(oo) “***Performance Unit***” means a right granted to a Participant pursuant to Section 10 to receive a payment equal to the value of a Performance Unit, as determined by the Committee, based upon attainment of applicable Performance Goal(s).

(pp) “***Restricted Stock Award***” means an Award of a Restricted Stock Bonus or a Restricted Stock Purchase Right.

(qq) “***Restricted Stock Bonus***” means Stock granted to a Participant pursuant to Section 8.

(rr) “***Restricted Stock Purchase Right***” means a right to purchase Stock granted to a Participant pursuant to Section 8.

(ss) “***Restricted Stock Unit***” means a right granted to a Participant pursuant to Section 9 to receive on a future date or occurrence of a future event a share of Stock or cash in lieu thereof, as determined by the Committee.

(tt) “***Rule 16b-3***” means Rule 16b-3 under the Exchange Act, as amended from time to time, or any successor rule or regulation.

(uu) “***SAR***” or “***Stock Appreciation Right***” means a right granted to a Participant pursuant to Section 7 to receive payment, for each share of Stock subject to such Award, of an amount equal to the excess, if any, of the Fair Market Value of a share of Stock on the date of exercise of the Award over the exercise price thereof.

(vv) “***Section 409A***” means Section 409A of the Code.

(ww) “***Section 409A Deferred Compensation***” means compensation provided pursuant to an Award that constitutes nonqualified deferred compensation within the meaning of Section 409A.

(xx) "***Securities Act***" means the Securities Act of 1933, as amended.

(yy) "***Service***" means a Participant's employment or service with the Participating Company Group, whether as an Employee, a Director or a Consultant. Unless otherwise provided by the Committee, a Participant's Service shall not be deemed to have terminated merely because of a change in the capacity in which the Participant renders Service or a change in the Participating Company for which the Participant renders Service, provided that there is no interruption or termination of the Participant's Service. Furthermore, a Participant's Service shall not be deemed to have been interrupted or terminated if the Participant takes any military leave, sick leave, or other bona fide leave of absence approved by the Company. However, unless otherwise provided by the Committee, if any such leave taken by a Participant exceeds ninety (90) days, then on the ninety-first (91st) day following the commencement of such leave the Participant's Service shall be deemed to have terminated, unless the Participant's right to return to Service is guaranteed by statute or contract. Notwithstanding the foregoing, unless otherwise designated by the Company or required by law, an unpaid leave of absence shall not be treated as Service for purposes of determining vesting under the Participant's Award Agreement. A Participant's Service shall be deemed to have terminated either upon an actual termination of Service or upon the business entity for which the Participant performs Service ceasing to be a Participating Company. Subject to the foregoing, the Company, in its discretion, shall determine whether the Participant's Service has terminated and the effective date of and reason for such termination.

(zz) "***Stock***" means the common stock of the Company, as adjusted from time to time in accordance with Section 4.3.

(aaa) "***Stock Tender Exercise***" means a Stock Tender Exercise as defined in Section 6.3(b (ii).

(bbb) "***Subsidiary Corporation***" means any present or future "subsidiary corporation" of the Company, as defined in Section 424(f) of the Code.

(ccc) "***Substitute Awards***" shall mean Awards granted or Stock issued by the Company in assumption of, or in substitution or exchange for, awards previously granted, or the right or obligation to make future awards, in each case by a company acquired by the Company or any Subsidiary Corporation or with which the Company or any Subsidiary Corporation combines.

(ddd) "***Ten Percent Owner***" means a Participant who, at the time an Option is granted to the Participant, owns stock possessing more than ten percent (10%) of the total combined voting power of all classes of stock of a Participating Company (other than an Affiliate) within the meaning of Section 422(b)(6) of the Code.

(eee) "***Trading Compliance Policy***" means the written policy of the Company pertaining to the purchase, sale, transfer or other disposition of the Company's equity securities by Directors, Officers, Employees or other service providers who may possess material, nonpublic information regarding the Company or its securities.

(fff) "***Vesting Conditions***" mean those conditions established in accordance with the Plan prior to the satisfaction of which an Award or shares subject to an Award remain subject to forfeiture or a repurchase option in favor of the Company exercisable for the Participant's monetary purchase price, if any, for such shares upon the Participant's termination of Service or failure of a performance condition to be satisfied.

2.2 **Construction.** Captions and titles contained herein are for convenience only and shall not affect the meaning or interpretation of any provision of the Plan. Except when otherwise indicated by the context, the singular shall include the plural and the plural shall include the singular. Use of the term "or" is not intended to be exclusive, unless the context clearly requires otherwise.

3. **Administration.**

3.1 **Administration by the Committee.** The Plan must be administered by the Committee. All questions of interpretation of the Plan, of any Award Agreement or of any other form of agreement or other document employed by the Company in the administration of the Plan or of any Award shall be determined by the Committee, and such determinations shall be final, binding and conclusive upon all persons having an interest in the Plan or such Award, unless fraudulent or made in bad faith. Any and all actions, decisions and determinations taken or made by the Committee in the exercise of its discretion pursuant to the Plan or Award Agreement or other agreement thereunder (other than determining questions of interpretation pursuant to the preceding sentence) shall be final, binding and conclusive upon all persons having an interest therein. All expenses incurred in connection with the administration of the Plan shall be paid by the Company.

3.2 **Authority of Officers.** Any Officer shall have the authority to act on behalf of the Company with respect to any matter, right, obligation, determination or election that is the responsibility of or that is allocated to the Company herein, provided that the Officer has apparent authority with respect to such matter, right, obligation, determination or election.

3.3 **Administration with Respect to Insiders.** With respect to participation by Insiders in the Plan, at any time that any class of equity security of the Company is registered pursuant to Section 12 of the Exchange Act, the Plan must be administered in compliance with the requirements, if any, of Rule 16b-3.

3.4 **Powers of the Committee.** In addition to any other powers set forth in the Plan and subject to the provisions of the Plan, the Committee shall have the full and final power and authority, in its discretion:

(a) to determine the persons to whom, and the time(s) at which, Awards are granted and the number of shares of Stock, units or monetary value to be subject to each Award;

(b) to determine the type of Award granted;

(c) to determine the Fair Market Value of Stock or other property;

(d) to determine the terms, conditions and restrictions applicable to each Award (which need not be identical) and any shares acquired pursuant thereto, including, without limitation, (i) the exercise or purchase price of shares of Stock pursuant to any Award, (ii) the method of payment for shares of Stock purchased pursuant to any Award, (iii) the method for satisfaction of any tax withholding obligation arising in connection with any Award, including by the withholding or delivery of shares of Stock, (iv) the timing, terms and conditions of the exercisability or vesting of any Award or any shares acquired pursuant thereto, (v) the Performance Measures, Performance Period, Performance Award Formula and Performance Goals applicable to any Award and the extent to which such Performance Goals have been attained, (vi) the time of expiration of any Award, (vii) the effect of any Participant's termination of Service on any of the foregoing, and (viii) all other terms, conditions and restrictions applicable to any Award or shares acquired pursuant thereto not inconsistent with the terms of the Plan;

(e) to determine whether an Award will be settled in Stock, cash, other property or in any combination thereof;

(f) to approve one or more forms of Award Agreement;

(g) to amend, modify, extend, cancel or renew any Award or to waive any restrictions or conditions applicable to any Award or any shares of Stock acquired pursuant thereto;

(h) to accelerate, continue, extend or defer the exercisability or vesting of any Award or any shares of Stock acquired pursuant thereto, including with respect to the period following a Participant's termination of Service;

(i) to prescribe, amend or rescind rules, guidelines and policies relating to the Plan, and to adopt sub-plans or supplements to, or alternative versions of, the Plan, including, without limitation, as the Committee deems necessary or desirable to comply with the laws of, or to accommodate the tax policy, accounting principles or custom of, foreign jurisdictions whose residents may be granted Awards; and

(j) to correct any defect, supply any omission or reconcile any inconsistency in the Plan or any Award Agreement and to make all other determinations and take such other actions with respect to the Plan or any Award as the Committee may deem advisable to the extent not inconsistent with the provisions of the Plan or applicable law.

3.5 **Option or SAR Repricing.** Without the affirmative vote of holders of a majority of the shares of Stock cast in person or by proxy at a meeting of the stockholders of the Company at which a quorum representing a majority of all outstanding shares of Stock is present or represented by proxy, the Committee shall not approve a program providing for either (a) the cancellation of outstanding Options or SARs having exercise prices per share greater than the then Fair Market Value of Stock ("***Underwater Awards***") and the grant in substitution therefor of new Options or SARs having a lower exercise price, other Awards or payments in cash (except in the event of a Change in Control), or (b) the amendment of outstanding Awards to reduce the exercise price thereof. This Section shall not be construed to apply to (i) "issuing or assuming a stock option in a transaction to which Section 424(a) applies," within the meaning of Section 424 of the Code, (ii) adjustments pursuant to the assumption of or substitution for an Option or SAR in a manner that would comply with Section 409A, or (iii) an adjustment pursuant to Section 4.3.

3.6 **Indemnification.** In addition to such other rights of indemnification as they may have as members of the Board or the Committee or as officers or employees of the Participating Company Group, to the extent permitted by applicable law, members of the Board or the Committee and any officers or employees of the Participating Company Group to whom authority to act for the Board, the Committee or the Company is delegated shall be indemnified by the Company against all reasonable expenses, including attorneys' fees, actually and necessarily incurred in connection with the defense of any action, suit or proceeding, or in connection with any appeal therein, to which they or any of them may be a party by reason of any action taken or failure to act under or in connection with the Plan, or any right granted

hereunder, and against all amounts paid by them in settlement thereof (provided such settlement is approved by independent legal counsel selected by the Company) or paid by them in satisfaction of a judgment in any such action, suit or proceeding, except in relation to matters as to which it shall be adjudged in such action, suit or proceeding that such person is liable for gross negligence, bad faith or intentional misconduct in duties; provided, however, that within sixty (60) days after the institution of such action, suit or proceeding, such person shall offer to the Company, in writing, the opportunity at its own expense to handle and defend the same.

4. **Shares Subject to Plan.**

4.1 **Maximum Number of Shares Issuable.** Subject to adjustment as provided in Sections 4.2 and 4.3, the maximum aggregate number of shares of Stock that may be issued under the Plan shall be equal to 4,550,000 shares, and shall consist of authorized but unissued or reacquired shares of Stock or any combination thereof.

4.2 **Share Counting.** If an outstanding Award for any reason expires or is terminated or canceled without having been exercised or settled in full, or if shares of Stock acquired pursuant to an Award subject to forfeiture or repurchase are forfeited or repurchased by the Company for an amount not greater than the Participant's purchase price, the shares of Stock allocable to the terminated portion of such Award or such forfeited or repurchased shares of Stock shall again be available for issuance under the Plan. Shares of Stock shall not be deemed to have been issued pursuant to the Plan with respect to any portion of an Award that is settled in cash. Upon payment in shares of Stock pursuant to the exercise of an SAR, the number of shares available for issuance under the Plan shall be reduced by the gross number of shares for which the SAR is exercised. If the exercise price of an Option is paid by tender to the Company, or attestation to the ownership, of shares of Stock owned by the Participant, or by means of a Net Exercise, the number of shares available for issuance under the Plan shall be reduced by the gross number of shares for which the Option is exercised. Shares withheld or reacquired by the Company in satisfaction of tax withholding obligations pursuant to the exercise or settlement of Options or SARs pursuant to Section 16.2 shall not again be available for issuance under the Plan. Shares withheld or reacquired by the Company in satisfaction of tax withholding obligations pursuant to the vesting or settlement of Full Value Awards pursuant to Section 16.2 will again become available for issuance under the Plan; provided, however, that any shares so withheld or tendered above the applicable minimum statutory withholding rate will not become available again for issuance under the Plan.

4.3 **Adjustments for Changes in Capital Structure.** Subject to any required action by the stockholders of the Company and the requirements of Sections 409A and 424 of the Code to the extent applicable, in the event of any change in the Stock effected without receipt of consideration by the Company, whether through merger, consolidation, reorganization, reincorporation, recapitalization, reclassification, stock dividend, stock split, reverse stock split, split-up, split-off, spin-off, combination of shares, exchange of shares, or similar change in the capital structure of the Company, or in the event of payment of a dividend or distribution to the stockholders of the Company in a form other than Stock (excepting regular, periodic cash dividends) that has a material effect on the Fair Market Value of Stock, appropriate and proportionate adjustments will be made in the number and kind of shares of Stock subject to the Plan and to any outstanding Awards, the Award limits set forth in Section 5.3 and Section 5.4, and in the exercise or purchase price per share of Stock under any outstanding Award in order to prevent dilution or enlargement of Participants' rights under the Plan. For purposes of the foregoing, conversion of any convertible securities of the Company will not be treated as "effected without receipt of consideration by the Company." If a majority of the shares which are of the same class as the shares that are subject to outstanding Awards are exchanged for, converted into, or otherwise become (whether or not pursuant to an Ownership Change Event) shares of another corporation (the ***"New Shares"***), the Committee may unilaterally amend the outstanding Awards to provide that such Awards are for New Shares. In the event of any such amendment, the number of shares subject to, and the exercise or purchase price per share of, the outstanding Awards must be adjusted in a fair and equitable manner as determined by the Committee, in its discretion. Any fractional share resulting from an adjustment pursuant to this Section shall be rounded down to the nearest whole number and the exercise or purchase price per share shall be rounded up to the nearest whole cent. In no event may the exercise or purchase price, if any, under any Award be decreased to an amount less than the par value, if any, of the Stock subject to such Award. The Committee in its discretion, may also make such adjustments in the terms of any Award to reflect, or related to, such changes in the capital structure of the Company or distributions as it deems appropriate, including modification of Performance Goals, Performance Award Formulas and Performance Periods. Any adjustments determined by the Committee pursuant to this Section shall be final, binding and conclusive.

4.4 **Assumption or Substitution of Awards.** The Committee may, without affecting the number of shares of Stock reserved or available hereunder, authorize the issuance or assumption of benefits under this Plan in connection with any merger, consolidation, acquisition of property or stock, or reorganization upon such terms and conditions as it may deem appropriate, subject to compliance with Section 409A and any other applicable provisions of the Code.

5. **Eligibility, Participation and Award Limitations.**

5.1 **Persons Eligible for Awards.** Awards may be granted only to Employees, Consultants and Directors.

5.2 **Participation in the Plan.** Awards are granted solely at the discretion of the Committee. Eligible persons may be granted more than one Award. However, eligibility in accordance with this Section shall not entitle any person to be granted an Award, or, having been granted an Award, to be granted an additional Award.

5.3 **Incentive Stock Option Limitations.**

(a) ***Maximum Number of Shares Issuable Pursuant to Incentive Stock Options.*** Subject to adjustment as provided in Section 4.3, the maximum aggregate number of shares of Stock that may be issued under the Plan pursuant to the exercise of Incentive Stock Options shall not exceed 4,550,000 shares. The maximum aggregate number of shares of Stock that may be issued under the Plan pursuant to all Awards other than Incentive Stock Options will be the number of shares determined in accordance with Section 4.1, subject to adjustment as provided in Sections 4.2 and 4.3.

(b) ***Persons Eligible.*** An Incentive Stock Option may be granted only to a person who, on the effective date of grant, is an Employee of the Company, a Parent Corporation or a Subsidiary Corporation (each being an *"**ISO-Qualifying Corporation**"*). Any person who is not an Employee of an ISO-Qualifying Corporation on the effective date of the grant of an Option to such person may be granted only a Nonstatutory Stock Option.

(c) ***Fair Market Value Limitation.*** To the extent that options designated as Incentive Stock Options (granted under all stock plans of the Participating Company Group, including the Plan) become exercisable by a Participant for the first time during any calendar year for stock having a Fair Market Value greater than One Hundred Thousand Dollars ($100,000), the portion of such options which exceeds such amount shall be treated as Nonstatutory Stock Options. For purposes of this Section, options designated as Incentive Stock Options shall be taken into account in the order in which they were granted, and the Fair Market Value of Stock shall be determined as of the time the option with respect to such Stock is granted. If the Code is amended to provide for a limitation different from that set forth in this Section, such different limitation shall be deemed incorporated herein effective as of the date and with respect to such Options as required or permitted by such amendment to the Code. If an Option is treated as an Incentive Stock Option in part and as a Nonstatutory Stock Option in part by reason of the limitation set forth in this Section, the Participant may designate which portion of such Option the Participant is exercising. In the absence of such designation, the Participant shall be deemed to have exercised the Incentive Stock Option portion of the Option first. Upon exercise of the Option, shares of Stock issued pursuant to each such portion shall be separately identified.

5.4 **Award Limits.** Subject to adjustment as provided in Section 4.3, no Employee shall be granted within any fiscal year of the Company one or more share-denominated Awards which in the aggregate are for more than 1,250,000 shares or one or more cash-dominated Awards which could result in such Employee receiving more than $2,000,000 or equivalent value in shares for each full fiscal year of the Company contained in the Performance Period for such Award.

5.5 **Nonemployee Director Award Limit.** Notwithstanding any other provision of the Plan to the contrary, the aggregate grant date fair value (computed as of the date of grant in accordance with generally accepted accounting principles in the United States) of all Awards granted to any Nonemployee Director during any fiscal year of the Company shall not exceed $500,000.

5.6 **Minimum Vesting.** As provided in Section 4, no Award (other than cash-based Awards) shall vest earlier than one year following the date of grant of such Award; <u>provided that</u>, the foregoing minimum vesting requirement shall not apply to any (a) acceleration of vesting of any Award, including upon death, disability, or in connection with a Change in Control, as determined by the Committee in its discretion, (b) Substitute Awards, (c) Awards to non-employee Directors that vest on the earlier of the one year anniversary of the date of grant or the next annual meeting of stockholders which is at least 50 weeks after the immediately preceding year's annual meeting, and (d) other Awards up to a maximum of five percent (5%) of the aggregate number of shares of Stock that may be issued under the Plan (subject to adjustment as provided in Section 4.3).

6. **<u>Stock Options</u>.**

Options shall be evidenced by Award Agreements specifying the number of shares of Stock covered thereby, in such form as the Committee establishes. Such Award Agreements may incorporate all or any of the terms of the Plan by reference and must comply with and will be subject to the following terms and conditions:

6.1 **Exercise Price.** The Committee, in its discretion, shall establish the exercise price for each Option; provided, however, that (a) the exercise price per share will not be less than the Fair Market Value per share of Stock on the effective date of grant of the Option and (b) the exercise price per share for any Incentive Stock Option granted to a Ten Percent Owner, must be no less than one hundred ten percent (110%) of the Fair Market Value per share of Stock on the effective date of grant of the Option. Notwithstanding the foregoing, an Option (whether an Incentive Stock Option or a Nonstatutory Stock Option) may be granted with an exercise price less than the minimum exercise price set forth above if such Option is granted pursuant to an assumption or substitution for another option in a manner that would qualify under the provisions of Section 409A or Section 424(a) of the Code.

6.2 **Exercisability and Term of Options.** Subject to the minimum vesting provisions of Section 5.6, Options will be exercisable at such time or times, or upon such event or events, and subject to such terms, conditions, performance criteria and restrictions as determined by the Committee and set forth in the Award Agreement evidencing such Option; provided, however, that (a) no Option will be exercisable after the expiration of ten (10) years after the effective date of grant of such Option, (b) no Incentive Stock Option granted to a Ten Percent Owner will be exercisable after the expiration of five (5) years after the effective date of grant of such Option and (c) no Option granted to a Non-Exempt Employee will be first exercisable until at least six (6) months following the date of grant of such Option (except in the event of such Non-Exempt Employee's death, disability or retirement, upon a Change in Control, or as otherwise permitted by the Worker Economic Opportunity Act). Subject to the foregoing, unless otherwise specified by the Committee in the grant of an Option, each Option terminates ten (10) years after the effective date of grant of the Option, unless earlier terminated in accordance with its provisions.

6.3 **Payment of Exercise Price.**

(a) ***Forms of Consideration Authorized.*** Except as otherwise provided below, payment of the exercise price for the number of shares of Stock being purchased pursuant to any Option must be made (i) in cash, by check or in cash equivalent; (ii) if permitted by the Committee and subject to the limitations contained in Section 6.3(b), by means of (1) a Cashless Exercise, (2) a Stock Tender Exercise or (3) a Net Exercise; (iii) by such other consideration as may be approved by the Committee from time to time to the extent permitted by applicable law, or (iv) by any combination thereof. The Committee may from time to time grant Options which do not permit all of the foregoing forms of consideration to be used in payment of the exercise price or which otherwise restrict one or more forms of consideration.

(b) ***Limitations on Forms of Consideration.***

(i) **Cashless Exercise.** A *"**Cashless Exercise**"* means the delivery of a properly executed notice of exercise together with irrevocable instructions to a broker providing for the assignment to the Company of the proceeds of a sale or loan with respect to some or all of the shares of Stock being acquired upon the exercise of the Option (including, without limitation, through an exercise complying with the provisions of Regulation T as promulgated from time to time by the Board of Governors of the Federal Reserve System). The Company reserves, at any and all times, the right, in the Company's sole and absolute discretion, to establish, decline to approve or terminate any program or procedures for the exercise of Options by means of a Cashless Exercise, including with respect to one or more Participants specified by the Company notwithstanding that such program or procedures may be available to other Participants.

(ii) **Stock Tender Exercise.** A *"**Stock Tender Exercise**"* means the delivery of a properly executed exercise notice accompanied by a Participant's tender to the Company, or attestation to the ownership, in a form acceptable to the Company of whole shares of Stock owned by the Participant having a Fair Market Value that does not exceed the aggregate exercise price for the shares of Stock with respect to which the Option is exercised. A Stock Tender Exercise is not permitted if it would constitute a violation of the provisions of any law, regulation or agreement restricting the redemption of the Company's Stock. If required by the Company, an Option may not be exercised by tender to the Company, or attestation to the ownership, of shares of Stock unless such shares either have been owned by the Participant for a period of time required by the Company (and not used for another option exercise by attestation during such period) or were not acquired, directly or indirectly, from the Company.

(iii) **Net Exercise.** A *"**Net Exercise**"* means the delivery of a properly executed exercise notice followed by a procedure pursuant to which (1) the Company will reduce the number of shares otherwise issuable to a Participant upon the exercise of an Option by the largest whole number of shares having a Fair Market Value that does not exceed the aggregate exercise price for the shares with respect to which the Option is exercised, and (2) the Participant shall pay to the Company in cash the remaining balance of such aggregate exercise price not satisfied by such reduction in the number of whole shares to be issued.

6.4 **Effect of Termination of Service.**

(a) ***Option Exercisability.*** Subject to earlier termination of the Option as otherwise provided by this Plan and unless otherwise provided by the Committee, a Participant may exercise an Option after the Participant's termination of Service to the extent it is then vested only during the applicable time period determined in accordance with this Section and the Option will thereafter terminate.

(i) **Disability.** If the Participant's Service terminates because of the Disability of the Participant, the Option, to the extent unexercised and exercisable for vested shares of Stock on the date on which the Participant's Service terminated, may be exercised by the Participant (or the Participant's guardian or legal representative) at any time prior to the expiration of twelve (12) months (or such longer or shorter period provided by the Award Agreement) after the date on which the Participant's Service terminated, but in any event no later than the date of expiration of the Option's term as set forth in the Award Agreement evidencing such Option (the *"**Option Expiration Date**"*).

(ii) **Death.** If the Participant's Service terminates because of the death of the Participant, the Option, to the extent unexercised and exercisable for vested shares of Stock on the date on which the Participant's Service terminated, may be exercised by the Participant's legal representative or other person who acquired the right to exercise the Option by reason of the Participant's death at any time prior to the expiration of twelve (12) months (or such longer or shorter period provided by the Award Agreement) after the date on which the Participant's Service terminated, but in any event no later than the Option Expiration Date. The Participant's Service will be deemed to have terminated on account of death if the Participant dies within three (3) months (or such longer or shorter period provided by the Award Agreement) after the Participant's termination of Service.

(iii) **Termination for Cause.** Notwithstanding any other provision of the Plan to the contrary, if the Participant's Service is terminated for Cause or if, following the Participant's termination of Service and during any period in which the Option otherwise would remain exercisable, the Participant engages in any act that would constitute Cause, the Option will terminate in its entirety and cease to be exercisable immediately upon such termination of Service or act.

(iv) **Other Termination of Service.** If the Participant's Service terminates for any reason, except Disability, death or Cause, the Option, to the extent unexercised and exercisable for vested shares of Stock on the date on which the Participant's Service terminated, may be exercised by the Participant at any time prior to the expiration of three (3) months (or such longer or shorter period provided by the Award Agreement) after the date on which the Participant's Service terminated, but in any event no later than the Option Expiration Date.

(b) ***Extension if Exercise Prevented by Law.*** Notwithstanding the foregoing, other than termination of Service for Cause, if the exercise of an Option within the applicable time periods set forth in Section 6.4(a) is prevented by the provisions of Section 14 below, the Option shall remain exercisable until the later of (i) thirty (30) days after the date such exercise first would no longer be prevented by such provisions or (ii) the end of the applicable time period under Section 6.4(a), but in any event no later than the Option Expiration Date.

6.5 **Transferability of Options.** During the lifetime of the Participant, an Option shall be exercisable only by the Participant or the Participant's guardian or legal representative. An Option is not subject in any manner to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance, or garnishment by creditors of the Participant or the Participant's beneficiary, except transfer by will or by the laws of descent and distribution. Notwithstanding the foregoing, to the extent permitted by the Committee, in its discretion, and set forth in the Award Agreement evidencing such Option, an Option shall be assignable or transferable subject to the applicable limitations, if any, described in the General Instructions to Form S-8 under the Securities Act or, in the case of an Incentive Stock Option, only as permitted by applicable regulations under Section 421 of the Code in a manner that does not disqualify such Option as an Incentive Stock Option. An Option shall never be transferred to a third-party financial institution for value.

7. **Stock Appreciation Rights.**

Stock Appreciation Rights must be evidenced by Award Agreements specifying the number of shares of Stock subject to the Award, in such form as the Committee establishes. Such Award Agreements may incorporate all or any of the terms of the Plan by reference and must comply with and be subject to the following terms and conditions:

7.1 **Types of SARs Authorized.** SARs may be granted in tandem with all or any portion of a related Option (a ***"Tandem SAR"***) or may be granted independently of any Option (a ***"Freestanding SAR"***). A Tandem SAR may only be granted concurrently with the grant of the related Option.

7.2 **Exercise Price.** The exercise price for each SAR will be established in the discretion of the Committee; provided, however, that (a) the exercise price per share subject to a Tandem SAR will be the exercise price per share under the related Option and (b) the exercise price per share subject to a Freestanding SAR may not be less than the Fair Market Value per share of Stock on the effective date of grant of the SAR. Notwithstanding the foregoing, an SAR may be granted with an exercise price lower than the minimum exercise price set forth above if such SAR is granted pursuant to an assumption or substitution for another stock appreciation right in a manner that would qualify under the provisions of Section 409A of the Code.

7.3 **Exercisability and Term of SARs.**

(a) ***Tandem SARs.*** Tandem SARs are exercisable only at the time and to the extent, and only to the extent, that the related Option is exercisable, subject to such provisions as the Committee may specify where the Tandem SAR is granted with respect to less than the full number of shares of Stock subject to the related Option. The Committee may, in its discretion, provide in any Award Agreement evidencing a Tandem SAR that such SAR may not be exercised without the advance approval of the Company and, if such approval is not given, then the Option will nevertheless remain exercisable in accordance with its terms. A Tandem SAR will terminate and cease to be exercisable no later than the date on which the related Option expires or is terminated or canceled. Upon the exercise of a Tandem SAR with

respect to some or all of the shares of Stock subject to such SAR, the related Option shall be canceled automatically as to the number of shares with respect to which the Tandem SAR was exercised. Upon the exercise of an Option related to a Tandem SAR as to some or all of the shares subject to such Option, the related Tandem SAR is canceled automatically as to the number of shares with respect to which the related Option was exercised.

(b) ***Freestanding SARs.*** Subject to the minimum vesting provisions of Section 5.6, Freestanding SARs are exercisable at such time or times, or upon such event or events, and subject to such terms, conditions, performance criteria and restrictions as determined by the Committee and set forth in the Award Agreement evidencing such SAR; provided, however, that (i) no Freestanding SAR will be exercisable after the expiration of ten (10) years after the effective date of grant of such SAR and (ii) no Freestanding SAR granted to a Non-Exempt Employee will be first exercisable until at least six (6) months following the date of grant of such SAR (except in the event of such Non-Exempt Employee's death, disability or retirement, upon a Change in Control, or as otherwise permitted by the Worker Economic Opportunity Act). Subject to the foregoing, unless otherwise specified by the Committee in the grant of a Freestanding SAR, each Freestanding SAR terminates ten (10) years after the effective date of grant of the SAR, unless earlier terminated in accordance with its provisions.

7.4 **Exercise of SARs.** Upon the exercise (or deemed exercise pursuant to Section 7.5) of an SAR, the Participant (or the Participant's legal representative or other person who acquired the right to exercise the SAR by reason of the Participant's death) shall be entitled to receive payment of an amount for each share with respect to which the SAR is exercised equal to the excess, if any, of the Fair Market Value per share of Stock on the date of exercise of the SAR over the exercise price. The Company shall pay such amount (a) in the case of a Tandem SAR, solely in shares of Stock in a lump sum upon the date of exercise of the SAR and (b) in the case of a Freestanding SAR, in cash, shares of Stock, or any combination thereof as determined by the Committee, in a lump sum upon the date of exercise of the SAR. When payment is to be made in shares of Stock, the number of shares to be issued will be determined on the basis of the Fair Market Value of Stock on the date of exercise of the SAR. For purposes of Section 7, an SAR is deemed exercised on the date on which the Company receives notice of exercise from the Participant or as otherwise provided in Section 7.5.

7.5 **Deemed Exercise of SARs.** If, on the date on which an SAR would otherwise terminate or expire, the SAR by its terms remains exercisable immediately prior to such termination or expiration and, if so exercised, would result in a payment to the holder of such SAR, then any portion of such SAR which has not previously been exercised is automatically deemed to be exercised as of such date with respect to such portion.

7.6 **Effect of Termination of Service.** Subject to earlier termination of the SAR as otherwise provided herein and unless otherwise provided by the Committee, an SAR shall be exercisable after a Participant's termination of Service only to the extent and during the applicable time period determined in accordance with Section 6.4 (treating the SAR as if it were an Option) and thereafter terminates.

7.7 **Transferability of SARs.** During the lifetime of the Participant, an SAR is only exercisable by the Participant or the Participant's guardian or legal representative. An SAR is not subject in any manner to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance, or garnishment by creditors of the Participant or the Participant's beneficiary, except transfer by will or by the laws of descent and distribution. Notwithstanding the foregoing, to the extent permitted by the Committee, in its discretion, and set forth in the Award Agreement evidencing such Award, a Tandem SAR related to a Nonstatutory Stock Option or a Freestanding SAR is assignable or transferable subject to the applicable limitations, if any, described in the General Instructions to Form S-8 under the Securities Act.

8. **Restricted Stock Awards**.

Restricted Stock Awards must be evidenced by Award Agreements specifying whether the Award is a Restricted Stock Bonus or a Restricted Stock Purchase Right and the number of shares of Stock subject to the Award, in such form as the Committee establishes. Such Award Agreements may incorporate all or any of the terms of the Plan by reference and shall comply with and be subject to the following terms and conditions:

8.1 **Types of Restricted Stock Awards Authorized.** Restricted Stock Awards may be granted in the form of either a Restricted Stock Bonus or a Restricted Stock Purchase Right. Restricted Stock Awards may be granted upon such conditions as the Committee shall determine, including, without limitation, upon the attainment of one or more Performance Goals described in Section 10.4. If either the grant of or satisfaction of Vesting Conditions applicable to a Restricted Stock Award is to be contingent upon the attainment of one or more Performance Goals, the Committee shall follow procedures substantially equivalent to those set forth in Sections 10.3 through 10.5(a).

8.2 **Purchase Price.** The purchase price for shares of Stock issuable under each Restricted Stock Purchase Right will be established by the Committee in its discretion. No monetary payment (other than applicable tax withholding) is required as a condition of receiving shares of Stock pursuant to a Restricted Stock Bonus, the consideration for which is services actually rendered to a Participating Company or for its benefit. Notwithstanding the foregoing, if required by applicable state corporate law, the Participant shall furnish consideration in the form of cash or past services rendered to a Participating Company or for its benefit having a value not less than the par value of the shares of Stock subject to a Restricted Stock Award.

8.3 **Purchase Period.** A Restricted Stock Purchase Right is exercisable within the period established by the Committee, which shall in no event exceed thirty (30) days from the effective date of the grant of the Restricted Stock Purchase Right.

8.4 **Payment of Purchase Price.** Except as otherwise provided below, payment of the purchase price for the number of shares of Stock being purchased pursuant to any Restricted Stock Purchase Right shall be made (a) in cash, by check or in cash equivalent, (b) by such other consideration as may be approved by the Committee from time to time to the extent permitted by applicable law, or (c) by any combination thereof.

8.5 **Vesting and Restrictions on Transfer.** Subject to the minimum vesting provisions of Section 5.6, shares issued pursuant to any Restricted Stock Award may (but need not) be made subject to Vesting Conditions based upon the satisfaction of such Service requirements, conditions, restrictions or performance criteria, including, without limitation, Performance Goals as described in Section 10.4, as established by the Committee and set forth in the Award Agreement evidencing such Award. During any period in which shares acquired pursuant to a Restricted Stock Award remain subject to Vesting Conditions, such shares may not be sold, exchanged, transferred, pledged, assigned or otherwise disposed of other than pursuant to an Ownership Change Event or as provided in Section 8.8. The Committee, in its discretion, may provide in any Award Agreement evidencing a Restricted Stock Award that, if the satisfaction of Vesting Conditions with respect to any shares subject to such Restricted Stock Award would otherwise occur on a day on which the sale of such shares would violate the provisions of the Trading Compliance Policy, then satisfaction of the Vesting Conditions automatically shall be determined on the next trading day on which the sale of such shares would not violate the Trading Compliance Policy. Upon request by the Company, each Participant shall execute any agreement evidencing such transfer restrictions prior to the receipt of shares of Stock hereunder and shall promptly present to the Company any and all certificates representing shares of Stock acquired hereunder for the placement on such certificates of appropriate legends evidencing any such transfer restrictions.

8.6 **Voting Rights; Dividends and Distributions.** Except as provided in this Section 8.6, Section 8.5 and any Award Agreement, during any period in which shares acquired pursuant to a Restricted Stock Award remain subject to Vesting Conditions, the Participant shall have all of the rights of a stockholder of the Company holding shares of Stock, including the right to vote such shares and to receive all dividends and other distributions paid with respect to such shares; provided, however, that such dividends and distributions shall be subject to the same Vesting Conditions as the shares subject to the Restricted Stock Award with respect to which such dividends or distributions were paid. In the event of a dividend or distribution paid in shares of Stock or other property or any other adjustment made upon a change in the capital structure of the Company as described in Section 4.3, any and all new, substituted or additional securities or other property (other than regular, periodic cash dividends) to which the Participant is entitled by reason of the Participant's Restricted Stock Award shall be immediately subject to the same Vesting Conditions as the shares subject to the Restricted Stock Award with respect to which such dividends or distributions were paid or adjustments were made.

8.7 **Effect of Termination of Service.** Unless otherwise provided by the Committee in the Award Agreement evidencing a Restricted Stock Award, if a Participant's Service terminates for any reason, whether voluntary or involuntary (including the Participant's death or disability), then (a) the Company shall have the option to repurchase for the purchase price paid by the Participant any shares acquired by the Participant pursuant to a Restricted Stock Purchase Right which remain subject to Vesting Conditions as of the date of the Participant's termination of Service and (b) the Participant shall forfeit to the Company any shares acquired by the Participant pursuant to a Restricted Stock Bonus which remain subject to Vesting Conditions as of the date of the Participant's termination of Service. The Company shall have the right to assign at any time any repurchase right it may have, whether or not such right is then exercisable, to one or more persons as may be selected by the Company.

8.8 **Nontransferability of Restricted Stock Award Rights.** Rights to acquire shares of Stock pursuant to a Restricted Stock Award are not be subject in any manner to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance or garnishment by creditors of the Participant or the Participant's beneficiary, except transfer by will or the laws of descent and distribution. All rights with respect to a Restricted Stock Award granted to a Participant hereunder shall be exercisable during his or her lifetime only by such Participant or the Participant's guardian or legal representative.

9. **Restricted Stock Units.**

Restricted Stock Unit Awards must be evidenced by Award Agreements specifying the number of Restricted Stock Units subject to the Award, in such form as the Committee establishes. Such Award Agreements may incorporate all or any of the terms of the Plan by reference and shall comply with and be subject to the following terms and conditions:

9.1 **Grant of Restricted Stock Unit Awards.** Restricted Stock Unit Awards may be granted upon such conditions as the Committee shall determine, including, without limitation, upon the attainment of one or more Performance Goals described in Section 10.4. If either the grant of a Restricted Stock Unit Award or the Vesting Conditions with respect to such Award is to be contingent upon

the attainment of one or more Performance Goals, the Committee shall follow procedures substantially equivalent to those set forth in Sections 10.3 through 10.5(a).

9.2 **Purchase Price.** No monetary payment (other than applicable tax withholding, if any) may be required as a condition of receiving a Restricted Stock Unit Award, the consideration for which shall be services actually rendered to a Participating Company or for its benefit. Notwithstanding the foregoing, if required by applicable state corporate law, the Participant shall furnish consideration in the form of cash or past services rendered to a Participating Company or for its benefit having a value not less than the par value of the shares of Stock issued upon settlement of the Restricted Stock Unit Award.

9.3 **Vesting.** Subject to the minimum vesting provisions of Section 5.6, Restricted Stock Unit Awards may (but need not) be made subject to Vesting Conditions based upon the satisfaction of such Service requirements, conditions, restrictions or performance criteria, including, without limitation, Performance Goals as described in Section 10.4, as established by the Committee and set forth in the Award Agreement evidencing such Award.

9.4 **Voting Rights, Dividend Equivalent Rights and Distributions.** Participants have no voting rights with respect to shares of Stock represented by Restricted Stock Units until the date of the issuance of such shares (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company). However, the Committee, in its discretion, may provide in the Award Agreement evidencing any Restricted Stock Unit Award that the Participant shall be entitled to Dividend Equivalent Rights with respect to the payment of cash dividends on Stock during the period beginning on the date such Award is granted and ending, with respect to each share subject to the Award, on the earlier of the date the Award is settled or the date on which it is terminated. Dividend Equivalent Rights, if any, will be paid by crediting the Participant with a cash amount or with additional whole Restricted Stock Units as of the date of payment of such cash dividends on Stock, as determined by the Committee. The number of additional Restricted Stock Units (rounded to the nearest whole number), if any, to be credited will be determined by dividing (a) the amount of cash dividends paid on the dividend payment date with respect to the number of shares of Stock represented by the Restricted Stock Units previously credited to the Participant by (b) the Fair Market Value of Stock on such date. Such cash amount or additional Restricted Stock Units are subject to the same terms and conditions and must be settled in the same manner and at the same time as the Restricted Stock Units originally subject to the Restricted Stock Unit Award. In the event of a dividend or distribution paid in shares of Stock or other property or any other adjustment made upon a change in the capital structure of the Company as described in Section 4.3, appropriate adjustments will be made in the Participant's Restricted Stock Unit Award so that it represents the right to receive upon settlement any and all new, substituted or additional securities or other property (other than regular, periodic cash dividends) to which the Participant would be entitled by reason of the shares of Stock issuable upon settlement of the Award, and all such new, substituted or additional securities or other property are immediately subject to the same Vesting Conditions as are applicable to the Award.

9.5 **Effect of Termination of Service.** Unless otherwise provided by the Committee and set forth in the Award Agreement evidencing a Restricted Stock Unit Award, if a Participant's Service terminates for any reason, whether voluntary or involuntary (including the Participant's death or disability), then the Participant shall forfeit to the Company any Restricted Stock Units pursuant to the Award which remain subject to Vesting Conditions as of the date of the Participant's termination of Service.

9.6 **Settlement of Restricted Stock Unit Awards.** The Company shall issue to a Participant on the date on which Restricted Stock Units subject to the Participant's Restricted Stock Unit Award vest or on such other date determined by the Committee in compliance with Section 409A, if applicable, and set forth in the Award Agreement one (1) share of Stock (and/or any other new, substituted or additional securities or other property pursuant to an adjustment described in Section 9.4) for each Restricted Stock Unit then becoming vested or otherwise to be settled on such date, subject to the withholding of applicable taxes, if any. The Committee, in its discretion, may provide in any Award Agreement evidencing a Restricted Stock Unit Award that if the settlement date with respect to any shares issuable upon vesting of Restricted Stock Units would otherwise occur on a day on which the sale of such shares would violate the provisions of the Trading Compliance Policy, then the settlement date will be deferred until the next trading day on which the sale of such shares would not violate the Trading Compliance Policy but in any event no later than the 15th day of the third calendar month following the year in which such Restricted Stock Units vest. If permitted by the Committee, the Participant may elect, consistent with the requirements of Section 409A, to defer receipt of all or any portion of the shares of Stock or other property otherwise issuable to the Participant pursuant to this Section, and such deferred issuance date(s) and amount(s) elected by the Participant must be set forth in the Award Agreement. Notwithstanding the foregoing, the Committee, in its discretion, may provide for settlement of any Restricted Stock Unit Award by payment to the Participant in cash of an amount equal to the Fair Market Value on the payment date of the shares of Stock or other property otherwise issuable to the Participant pursuant to this Section.

9.7 **Nontransferability of Restricted Stock Unit Awards.** The right to receive shares pursuant to a Restricted Stock Unit Award is not subject in any manner to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance, or garnishment by creditors of the Participant or the Participant's beneficiary, except transfer by will or by the laws of descent and distribution. All rights with respect to a Restricted Stock Unit Award granted to a Participant hereunder will be exercisable during his or her lifetime only by such Participant or the Participant's guardian or legal representative.

10. **<u>Performance Awards</u>.**

Performance Awards must be evidenced by Award Agreements in such form as the Committee establishes. Such Award Agreements may incorporate all or any of the terms of the Plan by reference and must comply with and will be subject to the following terms and conditions:

10.1 **Types of Performance Awards Authorized.** Performance Awards may be granted in the form of either Performance Shares or Performance Units. Each Award Agreement evidencing a Performance Award must specify the number of Performance Shares or Performance Units subject thereto, the Performance Award Formula, the Performance Goal(s) and Performance Period applicable to the Award, and the other terms, conditions and restrictions of the Award.

10.2 **Initial Value of Performance Shares and Performance Units.** Unless otherwise provided by the Committee in granting a Performance Award, each Performance Share has an initial monetary value equal to the Fair Market Value of one (1) share of Stock, subject to adjustment as provided in Section 4.3, on the effective date of grant of the Performance Share, and each Performance Unit has an initial monetary value established by the Committee at the time of grant. The final value payable to the Participant in settlement of a Performance Award determined on the basis of the applicable Performance Award Formula will depend on the extent to which Performance Goals established by the Committee are attained within the applicable Performance Period established by the Committee.

10.3 **Establishment of Performance Period, Performance Goals and Performance Award Formula.** In granting each Performance Award, the Committee shall establish in writing the applicable Performance Period (subject to the minimum vesting provisions of Section 5.6), Performance Award Formula and one or more Performance Goals which, when measured at the end of the Performance Period, shall determine on the basis of the Performance Award Formula the final value of the Performance Award to be paid to the Participant. The Company shall notify each Participant granted a Performance Award of the terms of such Award, including the Performance Period, Performance Goal(s) and Performance Award Formula.

10.4 **Measurement of Performance Goals.** Performance Goals must be established by the Committee on the basis of targets to be attained (***"Performance Targets"***) with respect to one or more measures of business or financial performance (each, a ***"Performance Measure"***), subject to the following:

(a) ***Performance Measures.*** Performance Measures must be calculated in accordance with the Company's financial statements, or, if such measures are not reported in the Company's financial statements, they must be calculated in accordance with generally accepted accounting principles, a method used generally in the Company's industry, or in accordance with a methodology established by the Committee prior to the grant of the Performance Award. As specified by the Committee, Performance Measures may be calculated with respect to the Company and each Subsidiary Corporation consolidated therewith for financial reporting purposes, one or more Subsidiary Corporations or such division or other business unit of any of them selected by the Committee. Unless otherwise determined by the Committee, the Performance Measures applicable to the Performance Award will be calculated prior to the accrual of expense for any Performance Award for the same Performance Period and excluding the effect (whether positive or negative) on the Performance Measures of any event the Committee determines is appropriate to exclude, including change in accounting standards or any unusual or infrequently occurring event or transaction. Each such adjustment, if any, shall be made solely for the purpose of providing a consistent basis from period to period for the calculation of Performance Measures in order to prevent the dilution or enlargement of the Participant's rights with respect to a Performance Award. Performance Measures may be based upon one or more of the following, as determined by the Committee (or any other metric or goal as the Committee may determine): revenue; sales; expenses; operating income; gross margin; operating margin; earnings before any one or more of: stock-based compensation expense, interest, taxes, depreciation and amortization; pre-tax profit; net operating income; net income; economic value added; free cash flow; operating cash flow; balance of cash, cash equivalents and marketable securities; stock price; earnings per share; return on stockholder equity; return on capital; return on assets; return on investment; total stockholder return; employee satisfaction; employee retention; market share; customer satisfaction; product development; research and development expenses; completion of an identified special project; completion of a joint venture or other corporate transaction; and bookings.

(b) ***Performance Targets.*** Performance Targets may include a minimum, maximum, target level and intermediate levels of performance, with the final value of a Performance Award determined under the applicable Performance Award Formula by the Performance Target level attained during the applicable Performance Period. A Performance Target may be stated as an absolute value, an increase or decrease in a value, or as a value determined relative to an index, budget or other standard selected by the Committee.

10.5 **Settlement of Performance Awards.**

(a) ***Determination of Final Value.*** As soon as practicable following the completion of the Performance Period applicable to a Performance Award, the Committee shall certify in writing the extent to which the applicable Performance Goals have been attained and the resulting final value of the Award earned by the Participant and to be paid upon its settlement in accordance with the applicable Performance Award Formula.

(b) ***Discretionary Adjustment of Award Formula.*** In its discretion, the Committee may, either at the time it grants a Performance Award or at any time thereafter, provide for the positive or negative adjustment of the Performance Award Formula applicable to a Performance Award granted to any Participant to reflect such Participant's individual performance in his or her position with the Company or such other factors as the Committee may determine. The Committee shall have the discretion, on the basis of such criteria as may be established by the Committee, to reduce some or all of the value of the Performance Award that would otherwise be paid to the Employee upon its settlement notwithstanding the attainment of any Performance Goal and the resulting value of the Performance Award determined in accordance with the Performance Award Formula.

(c) ***Effect of Leaves of Absence.*** Unless otherwise required by law or a Participant's Award Agreement, payment of the final value, if any, of a Performance Award held by a Participant who has taken in excess of thirty (30) days in unpaid leaves of absence during a Performance Period will be prorated on the basis of the number of days of the Participant's Service during the Performance Period during which the Participant was not on an unpaid leave of absence.

(d) ***Notice to Participants.*** As soon as practicable following the Committee's determination and certification in accordance with Sections 10.5(a) and (b), the Company shall notify each Participant of the determination of the Committee.

(e) ***Payment in Settlement of Performance Awards.*** As soon as practicable following the Committee's determination and certification in accordance with Sections 10.5(a) and (b), but in any event within the Short-Term Deferral Period described in Section 15.1 (except as otherwise provided below or consistent with the requirements of Section 409A), payment will be made to each eligible Participant (or such Participant's legal representative or other person who acquired the right to receive such payment by reason of the Participant's death) of the final value of the Participant's Performance Award. Payment of such amount will be made in cash, shares of Stock, or a combination thereof as determined by the Committee. Unless otherwise provided in the Award Agreement evidencing a Performance Award, payment will be made in a lump sum. If permitted by the Committee, the Participant may elect, consistent with the requirements of Section 409A, to defer receipt of all or any portion of the payment to be made to the Participant pursuant to this Section, and such deferred payment date(s) elected by the Participant must be set forth in the Award Agreement. If any payment is to be made on a deferred basis, the Committee may, but is not obligated to, provide for the payment during the deferral period of Dividend Equivalent Rights or interest.

(f) ***Provisions Applicable to Payment in Shares.*** If payment is to be made in shares of Stock, the number of such shares of Stock shall be determined by dividing the final value of the Performance Award by the Fair Market Value of Stock determined by the method specified in the Award Agreement. Shares of Stock issued in payment of any Performance Award may be fully vested and freely transferable shares or may be shares of Stock subject to Vesting Conditions as provided in Section 8.5. Any shares subject to Vesting Conditions must be evidenced by an appropriate Award Agreement and will be subject to the provisions of Sections 8.5 through 8.8 above.

10.6 **Voting Rights; Dividend Equivalent Rights and Distributions.** Participants have no voting rights with respect to shares of Stock represented by Performance Share Awards until the date of the issuance of such shares, if any (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company). However, the Committee, in its discretion, may provide in the Award Agreement evidencing any Performance Share Award that the Participant will be entitled to Dividend Equivalent Rights with respect to the payment of cash dividends on Stock during the period beginning on the date the Award is granted and ending, with respect to each share subject to the Award, on the earlier of the date on which the Performance Shares are settled or the date on which they are forfeited. Such Dividend Equivalent Rights, if any, will be credited to the Participant either in cash or in the form of additional whole Performance Shares as of the date of payment of such cash dividends on Stock, as determined by the Committee. The number of additional Performance Shares (rounded to the nearest whole number), if any, to be so credited shall be determined by dividing (a) the amount of cash dividends paid on the dividend payment date with respect to the number of shares of Stock represented by the Performance Shares previously credited to the Participant by (b) the Fair Market Value per share of Stock on such date. Dividend Equivalent Rights, if any, will be accumulated and paid to the extent that the related Performance Shares become nonforfeitable. Settlement of Dividend Equivalent Rights may be made in cash, shares of Stock, or a combination thereof as determined by the Committee, and may be paid on the same basis as settlement of the related Performance Share as provided in Section 10.5. Dividend Equivalent Rights will not be paid with respect to Performance Units. In the event of a dividend or distribution paid in shares of Stock or other property or any other adjustment made upon a change in the capital structure of the Company as described in Section 4.3, appropriate adjustments shall be made in the Participant's Performance Share Award so that it represents the right to receive upon settlement any and all new, substituted or additional securities or other property (other than regular, periodic cash dividends) to which the Participant would be entitled by reason of the shares of Stock issuable upon settlement of the Performance Share Award, and all such new, substituted or additional securities or other property shall be immediately subject to the same Performance Goals as are applicable to the Award.

10.7 **Effect of Termination of Service.** Unless otherwise provided by the Committee and set forth in the Award Agreement evidencing a Performance Award, the effect of a Participant's termination of Service on the Performance Award will be as follows:

(a) ***Death or Disability.*** If the Participant's Service terminates because of the death or Disability of the Participant before the completion of the Performance Period applicable to the Performance Award, the final value of the Participant's Performance Award will be determined by the extent to which the applicable Performance Goals have been attained with respect to the entire Performance Period and will be prorated based on the number of months of the Participant's Service during the Performance Period. Payment will be made following the end of the Performance Period in any manner permitted by Section 10.5.

(b) ***Other Termination of Service.*** If the Participant's Service terminates for any reason except death or Disability before the completion of the Performance Period applicable to the Performance Award, such Award is forfeited in its entirety; provided, however, that in the event of an involuntary termination of the Participant's Service, the Committee, in its discretion, may waive the automatic forfeiture of all or any portion of any such Award and determine the final value of the Performance Award in the manner provided by Section 10.7(a). Payment of any amount pursuant to this Section will be made following the end of the Performance Period in any manner permitted by Section 10.5.

10.8 **Nontransferability of Performance Awards.** Prior to settlement in accordance with the provisions of the Plan, no Performance Award is subject in any manner to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance, or garnishment by creditors of the Participant or the Participant's beneficiary, except transfer by will or by the laws of descent and distribution. All rights with respect to a Performance Award granted to a Participant hereunder is exercisable during his or her lifetime only by such Participant or the Participant's guardian or legal representative.

11. **Cash-Based Awards and Other Stock-Based Awards.**

Cash-Based Awards and Other Stock-Based Awards must be evidenced by Award Agreements in such form as the Committee establishes. Such Award Agreements may incorporate all or any of the terms of the Plan by reference and will comply with and be subject to the following terms and conditions:

11.1 **Grant of Cash-Based Awards**. Subject to the provisions of the Plan, the Committee, at any time and from time to time, may grant Cash-Based Awards to Participants in such amounts and upon such terms and conditions, including the achievement of performance criteria, as the Committee determines.

11.2 **Grant of Other Stock-Based Awards**. The Committee may grant other types of equity-based or equity-related Awards not otherwise described by the terms of this Plan (including the grant or offer for sale of unrestricted securities, stock-equivalent units, stock appreciation units, securities or debentures convertible into common stock or other forms determined by the Committee) in such amounts and subject to such terms and conditions as the Committee shall determine. Other Stock-Based Awards may be made available as a form of payment in the settlement of other Awards or as payment in lieu of compensation to which a Participant is otherwise entitled. Other Stock-Based Awards may involve the transfer of actual shares of Stock to Participants, or payment in cash or otherwise of amounts based on the value of Stock and may include, without limitation, Awards designed to comply with or take advantage of the applicable local laws of jurisdictions other than the United States.

11.3 **Value of Cash-Based and Other Stock-Based Awards**. Each Cash-Based Award shall specify a monetary payment amount or payment range as determined by the Committee. Each Other Stock-Based Award must be expressed in terms of shares of Stock or units based on such shares of Stock, as determined by the Committee. Subject to the minimum vesting provisions of Section 5.6, The Committee may require the satisfaction of such Service requirements, conditions, restrictions or performance criteria, including, without limitation, Performance Goals as described in Section 10.4, as established by the Committee and set forth in the Award Agreement evidencing such Award. If the Committee exercises its discretion to establish performance criteria, the final value of Cash-Based Awards or Other Stock-Based Awards that will be paid to the Participant will depend on the extent to which the performance criteria are met. The establishment of performance criteria with respect to the grant or vesting of any Cash-Based Award or Other Stock-Based Award shall follow procedures substantially equivalent to those applicable to Performance Awards set forth in Section 10.

11.4 **Payment or Settlement of Cash-Based Awards and Other Stock-Based Awards**. Payment or settlement, if any, with respect to a Cash-Based Award or Other Stock-Based Award will be made in accordance with the terms of the Award, in cash, shares of Stock or other securities or any combination thereof as the Committee determines. The determination and certification of the final value with respect to any Cash-Based Award or Other Stock-Based Award will comply with the requirements applicable to Performance Awards set forth in Section 10. To the extent applicable, payment or settlement with respect to each Cash-Based Award and Other Stock-Based Award shall be made in compliance with the requirements of Section 409A.

11.5 **Voting Rights; Dividend Equivalent Rights and Distributions.** Participants have no voting rights with respect to shares of Stock represented by Other Stock-Based Awards until the date of the issuance of such shares of Stock (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company), if any, in settlement of such Award. However, the Committee, in its discretion, may provide in the Award Agreement evidencing any Other Stock-Based Award that the Participant

shall be entitled to Dividend Equivalent Rights with respect to the payment of cash dividends on Stock during the period beginning on the date such Award is granted and ending, with respect to each share subject to the Award, on the earlier of the date the Award is settled or the date on which it is terminated. Such Dividend Equivalent Rights, if any, will be paid in accordance with the provisions set forth in Section 9.4. Dividend Equivalent Rights are not granted with respect to Cash-Based Awards. In the event of a dividend or distribution paid in shares of Stock or other property or any other adjustment made upon a change in the capital structure of the Company as described in Section 4.3, appropriate adjustments will be made in the Participant's Other Stock-Based Award so that it represents the right to receive upon settlement any and all new, substituted or additional securities or other property (other than regular, periodic cash dividends) to which the Participant would be entitled by reason of the shares of Stock issuable upon settlement of such Award, and all such new, substituted or additional securities or other property are immediately subject to the same Vesting Conditions and performance criteria, if any, as are applicable to the Award.

11.6 **Effect of Termination of Service**. Each Award Agreement evidencing a Cash-Based Award or Other Stock-Based Award must set forth the extent to which the Participant shall have the right to retain such Award following termination of the Participant's Service. Such provisions will be determined in the discretion of the Committee, need not be uniform among all Cash-Based Awards or Other Stock-Based Awards, and may reflect distinctions based on the reasons for termination, subject to the requirements of Section 409A, if applicable.

11.7 **Nontransferability of Cash-Based Awards and Other Stock-Based Awards.** Prior to the payment or settlement of a Cash-Based Award or Other Stock-Based Award, the Award is not subject in any manner to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance, or garnishment by creditors of the Participant or the Participant's beneficiary, except transfer by will or by the laws of descent and distribution. The Committee may impose such additional restrictions on any shares of Stock issued in settlement of Cash-Based Awards and Other Stock-Based Awards as it may deem advisable, including, without limitation, minimum holding period requirements, restrictions under applicable federal securities laws, under the requirements of any stock exchange or market upon which such shares of Stock are then listed and/or traded, or under any state securities laws or foreign law applicable to such shares of Stock.

12. **Standard Forms of Award Agreement.**

12.1 **Award Agreements.** Each Award must comply with and be subject to the terms and conditions set forth in the appropriate form of Award Agreement approved by the Committee and as amended from time to time. No Award or purported Award is a valid and binding obligation of the Company unless evidenced by a fully executed Award Agreement, which execution may be evidenced by electronic means.

12.2 **Authority to Vary Terms.** The Committee has the authority from time to time to vary the terms of any standard form of Award Agreement either in connection with the grant or amendment of an individual Award or in connection with the authorization of a new standard form or forms; provided, however, that the terms and conditions of any such new, revised or amended standard form or forms of Award Agreement are not inconsistent with the terms of the Plan.

13. **Change in Control.**

13.1 **Effect of Change in Control on Awards.** In the event of a Change in Control, outstanding Awards will be subject to the definitive agreement entered into by the Company in connection with the Change in Control. Subject to the requirements and limitations of Section 409A, if applicable, the Committee may provide for any one or more of the following:

(a) ***Accelerated Vesting.*** In its discretion, the Committee may provide in the grant of any Award or at any other time may take such action as it deems appropriate to provide for acceleration of the exercisability, vesting and/or settlement in connection with a Change in Control of each or any outstanding Award or portion thereof and shares acquired pursuant thereto upon such conditions, including termination of the Participant's Service prior to, upon, or following the Change in Control, and to such extent as the Committee determines.

(b) ***Assumption, Continuation or Substitution.*** In the event of a Change in Control, the surviving, continuing, successor, or purchasing corporation or other business entity or parent thereof, as the case may be (the ***"Acquiror"***), may, without the consent of any Participant, assume or continue the Company's rights and obligations under each or any Award or portion thereof outstanding immediately prior to the Change in Control or substitute for each or any such outstanding Award or portion thereof a substantially equivalent award with respect to the Acquiror's stock, as applicable. For purposes of this Section, if so determined by the Committee in its discretion, an Award denominated in shares of Stock will be deemed assumed if, following the Change in Control, the Award confers the right to receive, subject to the terms and conditions of the Plan and the applicable Award Agreement, for each share of Stock subject to the Award immediately prior to the Change in Control, the consideration (whether stock, cash, other securities or property or a combination thereof) to which a holder of a share of Stock on the effective date of the Change in Control was entitled (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding shares of Stock); provided, however, that if such consideration is not solely common stock of the Acquiror, the Committee may, with the consent of the Acquiror, provide for the consideration to be received upon

the exercise or settlement of the Award, for each share of Stock subject to the Award, to consist solely of common stock of the Acquiror equal in Fair Market Value to the per share consideration received by holders of Stock pursuant to the Change in Control. Any Award or portion thereof which is neither assumed or continued by the Acquiror in connection with the Change in Control nor exercised or settled as of the time of consummation of the Change in Control will become immediately exercisable and vested in full (a) as of ten (10) days prior to, and subject to, the consummation of the Change in Control or (b) settled effective immediately prior to the time of consummation of the Change in Control, as applicable. Any Award or portion thereof that is immediately exercisable and vested in full pursuant to the preceding sentence to the extent unexercised immediately prior to the consummation of the Change in Control shall terminate and cease to be outstanding effective as of the time of the consummation of the Change in Control.

(c) ***Termination in Connection with a Change in Control.*** Notwithstanding any other provision of the Plan to the contrary, if the Participant's Service is terminated without Cause or the Participant voluntarily terminates the Participant's employment after a reduction of the Participant's base salary of fifteen percent (15%) or greater without the Participant's express written consent within eighteen (18) months following the consummation of a Change in Control, such Participant's Awards will become immediately exercisable and vested in full as of the date of such termination. Such immediately exercisable and fully vested Awards will be settled to the extent possible on the date of the Participant's termination pursuant to this subsection (c). Awards requiring the Participant's exercise, may be exercised by the Participant at any time prior to the expiration of three (3) months after the date on which the Participant's Service terminated, but in any event no later than the Option Expiration Date.

(d) ***Cash-Out of Outstanding Stock-Based Awards.*** The Committee may, in its discretion and without the consent of any Participant, determine that, upon the occurrence of a Change in Control, each or any Award denominated in shares of Stock or portion thereof outstanding immediately prior to the Change in Control and not previously exercised or settled shall be canceled in exchange for a payment with respect to each vested share (and each unvested share, if so determined by the Committee) of Stock subject to such canceled Award in (i) cash, (ii) stock of the Company or of a corporation or other business entity a party to the Change in Control, or (iii) other property which, in any such case, will be in an amount having a Fair Market Value equal to the Fair Market Value of the consideration to be paid per share of Stock in the Change in Control, reduced (but not below zero) by the exercise or purchase price per share, if any, under such Award. In the event such determination is made by the Committee, an Award having an exercise or purchase price per share equal to or greater than the Fair Market Value of the consideration to be paid per share of Stock in the Change in Control may be canceled without payment of consideration to the holder thereof. Payment pursuant to this Section (reduced by applicable withholding taxes, if any) will be made to Participants in respect of the vested portions of their canceled Awards as soon as practicable following the date of the Change in Control and in respect of the unvested portions of their canceled Awards in accordance with the vesting schedules applicable to such Awards.

13.2 **Effect of Change in Control on Nonemployee Director Awards.** Subject to the requirements and limitations of Section 409A, if applicable, including as provided by Section 15.4(f), in the event of a Change in Control, each outstanding Nonemployee Director Award shall become immediately exercisable and vested in full and, except to the extent assumed, continued or substituted for pursuant to Section 13.1(b), will be settled effective immediately prior to the time of consummation of the Change in Control.

13.3 **Federal Excise Tax Under Section 4999 of the Code.**

(a) ***Excess Parachute Payment.*** If any acceleration of vesting pursuant to an Award and any other payment or benefit received or to be received by a Participant would subject the Participant to any excise tax pursuant to Section 4999 of the Code due to the characterization of such acceleration of vesting, payment or benefit as an "excess parachute payment" under Section 280G of the Code, then, provided such election would not subject the Participant to taxation under Section 409A, the Participant may elect to reduce the amount of any acceleration of vesting called for under the Award in order to avoid such characterization.

(b) ***Determination by Tax Firm.*** To aid the Participant in making any election called for under Section 13.3(a), no later than the date of the occurrence of any event that might reasonably be anticipated to result in an "excess parachute payment" to the Participant as described in Section 13.3(a), the Company shall request a determination in writing by the professional firm engaged by the Company for general tax purposes, or, if the tax firm so engaged by the Company is serving as accountant or auditor for the Acquiror, the Company will appoint a nationally recognized tax firm to make the determinations required by this Section (the "***Tax Firm***"). As soon as practicable thereafter, the Tax Firm shall determine and report to the Company and the Participant the amount of such acceleration of vesting, payments and benefits which would produce the greatest after-tax benefit to the Participant. For the purposes of such determination, the Tax Firm may rely on reasonable, good faith interpretations concerning the application of Sections 280G and 4999 of the Code. The Company and the Participant shall furnish to the Tax Firm such information and documents as the Tax Firm may reasonably request in order to make its required determination. The Company shall bear all fees and expenses the Tax Firm charges in connection with its services contemplated by this Section.

14. **Compliance with Securities Law.**

The grant of Awards and the issuance of shares of Stock pursuant to any Award is subject to compliance with all applicable requirements of federal, state and foreign law with respect to such securities and the requirements of any stock exchange or market system upon which the Stock may then be listed. In addition, no Award may be exercised or shares issued pursuant to an Award unless (a) a registration statement under the Securities Act is at the time of such exercise or issuance in effect with respect to the shares issuable pursuant to the Award, or (b) in the opinion of legal counsel to the Company, the shares issuable pursuant to the Award may be issued in accordance with the terms of an applicable exemption from the registration requirements of the Securities Act. The inability of the Company to obtain from any regulatory body having jurisdiction the authority, if any, deemed by the Company's legal counsel to be necessary to the lawful issuance and sale of any shares under the Plan will relieve the Company of any liability in respect of the failure to issue or sell such shares as to which such requisite authority shall not have been obtained. As a condition to issuance of any Stock, the Company may require the Participant to satisfy any qualifications that may be necessary or appropriate, to evidence compliance with any applicable law or regulation and to make any representation or warranty with respect thereto as may be requested by the Company.

15. **Compliance with Section 409A.**

15.1 **Awards Subject to Section 409A.** The Company intends that Awards granted pursuant to the Plan either be exempt from or comply with Section 409A, and the Plan shall be so construed. The provisions of this Section 15 apply to any Award or portion thereof that constitutes or provides for payment of Section 409A Deferred Compensation. Such Awards may include, without limitation:

(a) A Nonstatutory Stock Option or SAR that includes any feature for the deferral of compensation other than the deferral of recognition of income until the later of (i) the exercise or disposition of the Award or (ii) the time the stock acquired pursuant to the exercise of the Award first becomes substantially vested.

(b) Any Restricted Stock Unit Award, Performance Award, Cash-Based Award or Other Stock-Based Award that either (i) provides by its terms for settlement of all or any portion of the Award at a time or upon an event that will or may occur later than the end of the Short-Term Deferral Period (as defined below) or (ii) permits the Participant granted the Award to elect one or more dates or events upon which the Award will be settled after the end of the Short-Term Deferral Period.

Subject to the provisions of Section 409A, the term "***Short-Term Deferral Period***" means the 2½ month period ending on the later of (i) the 15th day of the third month following the end of the Participant's taxable year in which the right to payment under the applicable portion of the Award is no longer subject to a substantial risk of forfeiture or (ii) the 15th day of the third month following the end of the Company's taxable year in which the right to payment under the applicable portion of the Award is no longer subject to a substantial risk of forfeiture. For this purpose, the term "substantial risk of forfeiture" has the meaning provided by Section 409A.

15.2 **Deferral and/or Distribution Elections.** Except as otherwise permitted or required by Section 409A, the following rules applies to any compensation deferral and/or payment elections (each, an "***Election***") that may be permitted or required by the Committee pursuant to an Award providing Section 409A Deferred Compensation:

(a) Elections must be in writing and specify the amount of the payment in settlement of an Award being deferred, as well as the time and form of payment as permitted by this Plan.

(b) Elections must be made by the end of the Participant's taxable year prior to the year in which services commence for which an Award may be granted to the Participant.

(c) Elections continue in effect until a written revocation or change in Election is received by the Company, except that a written revocation or change in Election must be received by the Company prior to the last day for making the Election determined in accordance with paragraph (b) above or as permitted by Section 15.3.

15.3 **Subsequent Elections.** Except as otherwise permitted or required by Section 409A, any Award providing Section 409A Deferred Compensation which permits a subsequent Election to delay the payment or change the form of payment in settlement of such Award must comply with the following requirements:

(a) No subsequent Election may take effect until at least twelve (12) months after the date on which the subsequent Election is made.

(b) Each subsequent Election related to a payment in settlement of an Award not described in Section 15.4(a)(ii), 15.4(a)(iii) or 15.4(a)(vi) must result in a delay of the payment for a period of not less than five (5) years from the date on which such payment would otherwise have been made.

(c) No subsequent Election related to a payment pursuant to Section 15.4(a)(iv) may be made less than twelve (12) months before the date on which such payment would otherwise have been made.

(d) Subsequent Elections continue in effect until a written revocation or change in the subsequent Election is received by the Company, except that a written revocation or change in a subsequent Election must be received by the Company prior to the last day for making the subsequent Election determined in accordance the preceding paragraphs of this Section 15.3.

15.4 **Payment of Section 409A Deferred Compensation.**

(a) ***Permissible Payments.*** Except as otherwise permitted or required by Section 409A, an Award providing Section 409A Deferred Compensation must provide for payment in settlement of the Award only upon one or more of the following:

(i) The Participant's "separation from service" (as defined by Section 409A);

(ii) The Participant's becoming "disabled" (as defined by Section 409A);

(iii) The Participant's death;

(iv) A time or fixed schedule that is either (i) specified by the Committee upon the grant of an Award and set forth in the Award Agreement evidencing such Award or (ii) specified by the Participant in an Election complying with the requirements of Section 15.2 or 15.3, as applicable;

(v) A change in the ownership or effective control or the Company or in the ownership of a substantial portion of the assets of the Company determined in accordance with Section 409A; or

(vi) The occurrence of an "unforeseeable emergency" (as defined by Section 409A).

(b) ***Installment Payments***. It is the intent of this Plan that any right of a Participant to receive installment payments (within the meaning of Section 409A) will, for all purposes of Section 409A, be treated as a right to a series of separate payments.

(c) ***Required Delay in Payment to Specified Employee Pursuant to Separation from Service.*** Notwithstanding any provision of the Plan or an Award Agreement to the contrary, except as otherwise permitted by Section 409A and to the extent necessary to avoid the imposition of taxes under Section 409A, no payment pursuant to Section 15.4(a)(i) in settlement of an Award providing for Section 409A Deferred Compensation may be made to a Participant who is a "specified employee" (as defined by Section 409A) as of the date of the Participant's separation from service before the date (the ***"Delayed Payment Date"***) that is six (6) months after the date of such Participant's separation from service, or, if earlier, the date of the Participant's death. All such amounts that would, but for this paragraph, become payable prior to the Delayed Payment Date will be accumulated and paid on the Delayed Payment Date.

(d) ***Payment Upon Disability.*** All distributions of Section 409A Deferred Compensation payable pursuant to Section 15.4(a)(ii) by reason of a Participant becoming disabled will be paid in a lump sum or in periodic installments as established by the Participant's Election. If the Participant has made no Election with respect to distributions of Section 409A Deferred Compensation upon becoming disabled, all such distributions will be paid in a lump sum upon the determination that the Participant has become disabled.

(e) ***Payment Upon Death.*** If a Participant dies before complete distribution of amounts payable upon settlement of an Award subject to Section 409A, such undistributed amounts will be distributed to his or her beneficiary under the distribution method for death established by the Participant's Election upon receipt by the Committee of satisfactory notice and confirmation of the Participant's death. If the Participant has made no Election with respect to distributions of Section 409A Deferred Compensation upon death, all such distributions will be paid in a lump sum upon receipt by the Committee of satisfactory notice and confirmation of the Participant's death.

(f) ***Payment Upon Change in Control.*** Notwithstanding any provision of the Plan or an Award Agreement to the contrary, to the extent that any amount constituting Section 409A Deferred Compensation would become payable under this Plan by reason of a Change in Control, such amount will become payable only if the event constituting a Change in Control would also constitute a change in ownership or effective control of the Company or a change in the ownership of a substantial portion of the assets of the Company within the meaning of Section 409A. Any Award which constitutes Section 409A Deferred Compensation and which would vest and otherwise become payable upon a Change in Control as a result of the failure of the Acquiror to assume, continue or substitute for such Award in accordance with Section 13.1(b) will vest to the extent provided by such Award but will be converted automatically at the effective time of such Change in Control into a right to receive, in cash on the date or dates such award would have been settled in accordance with its then existing settlement schedule (or as required by Section 15.4(c)), an amount or amounts equal in the aggregate to the intrinsic value of the Award at the time of the Change in Control.

(g) ***Payment Upon Unforeseeable Emergency.*** The Committee shall have the authority to provide in the Award Agreement evidencing any Award providing for Section 409A Deferred Compensation for payment pursuant to Section 15.4(a)(vi) in settlement of all or a portion of such Award in the event that a Participant establishes, to the satisfaction of the Committee, the occurrence of an unforeseeable emergency. In such event, the amount(s) distributed with respect to such unforeseeable emergency cannot exceed the amounts reasonably necessary to satisfy the emergency need plus amounts necessary to pay taxes reasonably anticipated as a result of such distribution(s), after taking into account the extent to which such emergency need is or may be relieved through reimbursement or compensation by insurance or otherwise, by liquidation of the Participant's assets (to the extent the liquidation of such assets would not itself cause severe financial hardship) or by cessation of deferrals under the Award. All distributions with respect to an unforeseeable emergency shall be made in a lump sum upon the Committee's determination that an unforeseeable emergency has occurred. The Committee's decision with respect to whether an unforeseeable emergency has occurred and the manner in which, if at all, the payment in settlement of an Award will be altered or modified, is final, conclusive, and not subject to approval or appeal.

(h) ***Prohibition of Acceleration of Payments.*** Notwithstanding any provision of the Plan or an Award Agreement to the contrary, this Plan does not permit the acceleration of the time or schedule of any payment under an Award providing Section 409A Deferred Compensation, except as permitted by Section 409A.

(i) ***No Representation Regarding Section 409A Compliance***. Notwithstanding any other provision of the Plan, the Company makes no representation that Awards will be exempt from or comply with Section 409A. No Participating Company is liable for any tax, penalty or interest imposed on a Participant by Section 409A.

16. **Tax Withholding.**

16.1 **Tax Withholding in General.** The Company has the right to deduct from any and all payments made under the Plan, or to require the Participant, through payroll withholding, cash payment or otherwise, to make adequate provision for, the federal, state, local and foreign taxes (including social insurance), if any, required by law to be withheld by any Participating Company with respect to an Award or the shares acquired pursuant thereto. The Company has no obligation to deliver shares of Stock, to release shares of Stock from an escrow established pursuant to an Award Agreement, or to make any payment in cash under the Plan until the Participating Company Group's tax withholding obligations have been satisfied by the Participant.

16.2 **Withholding in or Directed Sale of Shares.** The Company has the right, but not the obligation, to deduct from the shares of Stock issuable to a Participant upon the exercise or settlement of an Award, or to accept from the Participant the tender of, a number of whole shares of Stock having a Fair Market Value, as determined by the Company, equal to all or any part of the tax withholding obligations of any Participating Company. The Fair Market Value of Stock withheld or tendered to satisfy any such tax withholding obligations may not (a) be less than the amount determined by the applicable minimum statutory withholding rates; and (b) exceed the amount determined by the maximum applicable statutory withholding rates applicable to the Participant and to the particular Award or the shares acquired pursuant thereto. Any shares withheld above minimum statutory rates shall not be added back into the share authorization of Section 4.1, in accordance with Section 4.2. The Company may require a Participant to direct a broker, upon the vesting, exercise or settlement of an Award, to sell a portion of the shares subject to the Award determined by the Company in its discretion to be sufficient to cover the tax withholding obligations of any Participating Company and to remit an amount equal to such tax withholding obligations to such Participating Company in cash.

17. **Amendment, Suspension or Termination of Plan.**

The Committee may amend, suspend or terminate the Plan at any time. However, without the approval of the Company's stockholders, there shall be (a) no increase in the maximum aggregate number of shares of Stock that may be issued under the Plan (except by operation of the provisions of Sections 4.2 and 4.3), (b) no change in the class of persons eligible to receive Incentive Stock Options, and (c) no other amendment of the Plan that would require approval of the Company's stockholders under any applicable law, regulation or rule, including the rules of any stock exchange or quotation system upon which the Stock may then be listed or quoted. No amendment, suspension or termination of the Plan shall affect any then outstanding Award unless expressly provided by the Committee. Except as provided by the next sentence, no amendment, suspension or termination of the Plan may have a materially adverse effect on any then outstanding Award without the consent of the Participant. Notwithstanding any other provision of the Plan or any Award Agreement to the contrary, the Committee may, in its sole and absolute discretion and without the consent of any Participant, amend the Plan or any Award Agreement, to take effect retroactively or otherwise, as it deems necessary or advisable for the purpose of conforming the Plan or such Award Agreement to any present or future law, regulation or rule applicable to the Plan, including, but not limited to, Section 409A.

18. **Miscellaneous Provisions.**

18.1 **Repurchase Rights.** Shares issued under the Plan may be subject to one or more repurchase options, or other conditions and restrictions as determined by the Committee in its discretion at the time the Award is granted. The Company has the right to assign at any time any repurchase right it may have, whether or not such right is then exercisable, to one or more persons as may be selected by

the Company. Upon request by the Company, each Participant shall execute any agreement evidencing such transfer restrictions prior to the receipt of shares of Stock hereunder and shall promptly present to the Company any and all certificates representing shares of Stock acquired hereunder for the placement on such certificates of appropriate legends evidencing any such transfer restrictions.

18.2 **Forfeiture Events.**

(a) The Committee may specify in an Award Agreement that the Participant's rights, payments, and benefits with respect to an Award will be subject to reduction, cancellation, forfeiture, or recoupment upon the occurrence of specified events, in addition to any otherwise applicable vesting or performance conditions of an Award. Such events may include, but are not be limited to, termination of Service for Cause or any act by a Participant, whether before or after termination of Service, that would constitute Cause for termination of Service, or any accounting restatement due to material noncompliance of the Company with any financial reporting requirements of securities laws as a result of which, and to the extent that, such reduction, cancellation, forfeiture, or recoupment is required by applicable securities laws.

(b) If the Company is required to prepare an accounting restatement due to the material noncompliance of the Company, as a result of misconduct, with any financial reporting requirement under the securities laws, any Participant who knowingly or through gross negligence engaged in the misconduct, or who knowingly or through gross negligence failed to prevent the misconduct, and any Participant who is one of the individuals subject to automatic forfeiture under Section 304 of the Sarbanes-Oxley Act of 2002, shall reimburse the Company for (i) the amount of any payment in settlement of an Award received by such Participant during the twelve (12) month period following the first public issuance or filing with the United States Securities and Exchange Commission (whichever first occurred) of the financial document embodying such financial reporting requirement, and (ii) any profits realized by such Participant from the sale of securities of the Company during such twelve (12) month period.

18.3 **Provision of Information.** Each Participant will be given access to information concerning the Company equivalent to that information generally made available to the Company's common stockholders.

18.4 **Rights as Employee, Consultant or Director.** No person, even though eligible pursuant to Section 5, has a right to be selected as a Participant, or, having been so selected, to be selected again as a Participant. Nothing in the Plan or any Award granted under the Plan confers on any Participant a right to remain an Employee, Consultant or Director or interfere with or limit in any way any right of a Participating Company to terminate the Participant's Service at any time. To the extent that an Employee of a Participating Company other than the Company receives an Award under the Plan, that Award will in no event be understood or interpreted to mean that the Company is the Employee's employer or that the Employee has an employment relationship with the Company.

18.5 **Rights as a Stockholder.** A Participant has no rights as a stockholder with respect to any shares covered by an Award until the date of the issuance of such shares (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company). No adjustment will be made for dividends, distributions or other rights for which the record date is prior to the date such shares are issued, except as provided in Section 4.3 or another provision of the Plan.

18.6 **Delivery of Title to Shares.** Subject to any governing rules or regulations, the Company shall issue or cause to be issued the shares of Stock acquired pursuant to an Award and shall deliver such shares to or for the benefit of the Participant by means of one or more of the following: (a) by delivering to the Participant evidence of book entry shares of Stock credited to the account of the Participant, (b) by depositing such shares of Stock for the benefit of the Participant with any broker with which the Participant has an account relationship, or (c) by delivering such shares of Stock to the Participant in certificate form.

18.7 **Fractional Shares.** The Company is not be required to issue fractional shares upon the exercise or settlement of any Award.

18.8 **Retirement and Welfare Plans**. Neither Awards made under this Plan nor shares of Stock or cash paid pursuant to such Awards may be included as "compensation" for purposes of computing the benefits payable to any Participant under any Participating Company's retirement plans (both qualified and non-qualified) or welfare benefit plans unless such other plan expressly provides that such compensation must be taken into account in computing a Participant's benefit.

18.9 **Beneficiary Designation.** Subject to local laws and procedures, each Participant may file with the Company a written designation of a beneficiary who is to receive any benefit under the Plan to which the Participant is entitled in the event of such Participant's death before he or she receives any or all of such benefit. Each designation will revoke all prior designations by the same Participant, will be in a form prescribed by the Company, and will be effective only when filed by the Participant in writing with the Company during the Participant's lifetime. If a married Participant designates a beneficiary other than the Participant's spouse, the effectiveness of such designation may be subject to the consent of the Participant's spouse. If a Participant dies without an effective designation of a beneficiary who is living at the time of the Participant's death, the Company will pay any remaining unpaid benefits to the Participant's legal representative.

18.10 **Severability**. If any one or more of the provisions (or any part thereof) of this Plan shall be held invalid, illegal or unenforceable in any respect, such provision will be modified so as to make it valid, legal and enforceable, and the validity, legality and enforceability of the remaining provisions (or any part thereof) of the Plan will not in any way be affected or impaired thereby.

18.11 **No Constraint on Corporate Action.** Nothing in this Plan will be construed to: (a) limit, impair, or otherwise affect the Company's or another Participating Company's right or power to make adjustments, reclassifications, reorganizations, or changes of its capital or business structure, or to merge or consolidate, or dissolve, liquidate, sell, or transfer all or any part of its business or assets; or (b) limit the right or power of the Company or another Participating Company to take any action which such entity deems to be necessary or appropriate.

18.12 **Unfunded Obligation.** Participants shall have the status of general unsecured creditors of the Company. Any amounts payable to Participants pursuant to the Plan are considered unfunded and unsecured obligations for all purposes, including, without limitation, Title I of the Employee Retirement Income Security Act of 1974. No Participating Company will be required to segregate any monies from its general funds, or to create any trusts, or establish any special accounts with respect to such obligations. The Company shall retain at all times beneficial ownership of any investments, including trust investments, which the Company may make to fulfill its payment obligations hereunder. Any investments or the creation or maintenance of any trust or any Participant account will not create or constitute a trust or fiduciary relationship between the Committee or any Participating Company and a Participant, or otherwise create any vested or beneficial interest in any Participant or the Participant's creditors in any assets of any Participating Company. Participants have no claim against any Participating Company for any changes in the value of any assets which may be invested or reinvested by the Company with respect to the Plan.

18.13 **Choice of Law.** Except to the extent governed by applicable federal law, the validity, interpretation, construction and performance of the Plan and each Award Agreement shall be governed by the laws of the State of Texas, without regard to its conflict of law rules.

IN WITNESS WHEREOF, the undersigned Secretary of the Company certifies that the foregoing sets forth the PROS 2017 Equity Incentive Plan as duly adopted by the Board on March 22, 2019.

Damian Olthoff, Secretary

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

(MARK ONE)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2018

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission File Number 001-33554

PROS HOLDINGS, INC.
(Exact Name of Registrant as Specified in Its Charter)

Delaware	**76-0168604**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**
3100 Main Street, Suite 900, Houston, Texas	**77002**
(Address of Principal Executive Offices)	**(Zip code)**

Registrant's telephone number, including area code: (713) 335-5151

Securities Registered Pursuant to Section 12(b) of the Act:

Title of Each Class	**Name of Each Exchange on Which Registered**
Common Stock, par value $0.001 per share	New York Stock Exchange

Securities Registered Pursuant to Section 12(g) of the Act:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.
Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act.
Yes ☐ No ☒

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T(§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).

Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company. See definition of "large accelerated filer", "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.:

Large accelerated Filer	☒	Accelerated filer	☐
Non-accelerated Filer	☐	Smaller reporting company	☐
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act).

Yes ☐ No ☒

The aggregate market value of voting and non-voting common equity held by non-affiliates of the registrant was approximately $842.5 million as of June 30, 2018 based upon the closing price for the registrant's of the common stock on the New York Stock Exchange. This determination of affiliate status was based on publicly filed documents and is not necessarily a conclusive determination for other purposes.

As of February 11, 2019, there were outstanding 37,475,474 shares of common stock, par value $0.001, of the registrant.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement relating to its 2019 Annual Stockholders Meeting, to be filed within 120 days of the end of the fiscal year ended December 31, 2018, are incorporated by reference into Part III of this Annual Report on Form 10-K.

PROS Holdings, Inc.
Annual Report on Form 10-K
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For the Year Ended December 31, 2018

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SIGNIFICANT RELATIONSHIPS REFERENCED IN THIS ANNUAL REPORT

The terms "PROS," "we," "us," and "our" refer to PROS Holdings, Inc., a Delaware corporation, and all of its subsidiaries that are consolidated in conformity with the generally accepted accounting principles in the United States of America ("GAAP").

CAUTIONARY STATEMENT REGARDING FORWARD LOOKING STATEMENTS

This Annual Report on Form 10-K contains "forward-looking statements" within the meaning of the Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). All statements in this report other than historical facts are forward-looking and are based on current estimates, assumptions, trends, and projections. Statements which include the words "believes," "seeks," "expects," "may," "should," "intends," "likely," "targets," "plans," "anticipates," "estimates," or the negative version of those words and similar expressions are intended to identify forward-looking statements. Numerous important factors, risks and uncertainties affect our operating results, including, without limitation, those contained in this report, and could cause our actual results to differ materially, from the results implied by these or any other forward-looking statements made by us or on our behalf. You should pay particular attention to the important risk factors and cautionary statements described in the section of this report entitled "Risk Factors". You should also carefully review the cautionary statements described in the other documents we file from time to time with the Securities and Exchange Commission ("SEC"), specifically all Quarterly Reports on Form 10-Q and Current Reports on Form 8-K.

You should not rely on forward-looking statements as predictions of future events, as we cannot guarantee that future results, levels of activity, performance or achievements will meet expectations. The forward-looking statements made herein are only made as of the date hereof, and we undertake no obligation to publicly update such forward-looking statements for any reason.

Part I

Item 1. *Business*

Overview

PROS provides artificial intelligence ("AI") solutions that power commerce in the digital economy by providing fast, frictionless and personalized buying experiences. PROS cloud solutions enable dynamic buying experiences for both business-to-business ("B2B") and business-to-consumer ("B2C") companies across industry verticals. Companies can use our dynamic pricing optimization, sales effectiveness, revenue management and commerce solutions to assess their market environments in real time to deliver customized prices and offers. Our solutions enable buyers to move fluidly across our customers' direct sales, online, mobile and partner channels with personalized experiences regardless of which channel buyers choose. Our decades of data science and AI expertise are infused into our solutions and are designed to reduce time and complexity through actionable intelligence. We provide standard configurations of our solutions based on the industries we serve and offer professional services to configure our solutions to meet the specific needs of each customer.

We deliver our cloud-based solutions through the internet as a service on a subscription basis. Our subscription services are designed to achieve high levels of security, scalability, performance and availability. We believe our cloud solutions allow our customers to reduce their initial investment in third-party software, hardware, and administration requirements over traditional enterprise software, and also allow smaller customers or business units to cost-effectively leverage our enterprise class infrastructure, infrastructure management, security and other strategic services. In addition, as we manage all updates and upgrades of software deployed on the PROS cloud on behalf of our customers, we are able to provide our customers with our latest product innovations in a more uniform way. Over time, we believe that this model will require us to support fewer old versions of our software solutions, which would allow our product development team to focus more effort on creating innovative enhancements to our existing products and developing new products.

Before 2015, we primarily offered on-premise license solutions, for which our customers purchased the perpetual right to use our software within a specific license scope. The vast majority of these license customers also purchased software maintenance and support, which includes unspecified software updates and enhancements on a when-and-if-available basis, maintenance releases, and patches released during the term of the support period.

Our Industry

Data-driven decision making is an important driver of business performance in the digital economy. Rapidly changing markets and buyer expectations make it increasingly harder for companies to grow. In response to these pressures, we believe that market forces, including increasingly dynamic and complex business models, the explosion of e-commerce, and the exponential

increase in the volume of enterprise and market data will accelerate the demand for software solutions that enable companies to dynamically price, configure and sell their products and services across all their channels with speed, precision and consistency. We believe the market for solutions that can power commerce using AI and machine learning is a large, growing market that spans most major industries.

Our Solutions

Our cloud-based software solutions provide companies with AI-based predictive and prescriptive guidance on key business decisions that drive growth and profitability, including product mix optimization, price forecasting, price optimization, product configuration recommendations, new sales opportunity recommendations, cross-sell recommendations and proactive attrition detection. These insights are derived from machine learning data science based on historic customer transactions, external market inputs and other data. Our B2B cloud solutions enable a consistent buyer experience across direct, partner and eCommerce channels to support digital selling, and consist of Control (including a Real-Time Pricing Engine), Guidance, Opportunity Detection and Smart CPQ. Our B2C solutions for the travel industry include Revenue Management, Real-Time Dynamic Pricing, Group Sales, Shopping and Merchandising. Our solutions help to increase visibility, business agility and customer engagement by aligning sales and pricing strategy across go-to-market channels. As a result, our solutions make it easier for companies to configure the correct product(s), set the right price and quickly get a quote into the hands of a buyer.

Solutions for Selling Improvement

PROS selling solutions accelerate sales team's performance by automating sales processes with a rich eCommerce experience and infusing AI and machine learning insights to provide the right products and configurations, at the right price to close the deal, consistently across every sales channel:

- *PROS Smart CPQ* automates the quoting process, enabling sales teams, partners and end customers on eCommerce platforms to provide fast, error-free quotes. Infused with AI and machine learning, Smart CPQ provides personalized product and pricing recommendations to deliver targeted offers designed to win competitive business.
- *PROS Opportunity Detection* increases sales productivity, accelerating quota attainment by uncovering sales opportunities in existing accounts for sales teams, and delivers data-driven product recommendations designed to increase average cart size for eCommerce sites. By applying AI and machine learning techniques to historical transactional activity, Opportunity Detection surfaces new opportunities to help proactively increase account penetration with existing customers while preventing customer churn.

Solutions for Pricing

PROS pricing solutions enable enterprises to optimize, personalize, and harmonize pricing across the complexity of their go-to-market channels in the context of dynamic market and competitive conditions. Our pricing solutions include:

- *PROS Control* provides a comprehensive pricing platform that offers a single source of accuracy for price measurement, coordination, and strategy. This platform allows businesses to harmonize pricing across go-to-market channels while simultaneously increasing price discipline and protecting price attainment. Pricing users leverage this solution to deploy formulaic price strategies that can incorporate real-time information or conditional data to ensure that every delivered price is up-to-date with the latest market and competitive conditions. With the performance, power, and scalability of PROS Control's Real-Time Pricing Engine, even B2C organizations can replace price lists across commerce channels with dynamic calculations for price requests, ensuring that every delivered price is cognizant of conditions at the time of request. This engine allows businesses facing volatile price competition to leverage data science to systematically adjust pricing in real time.
- *PROS Guidance* leverages AI to provide market-relevant price guidance across sales channels that is dynamically refined to adapt to changing market conditions and buyer behavior. This prescriptive price guidance provides optimized pricing for each unique buying scenario, which helps businesses recover margin leakage, accelerate quote turnaround times and increase win-rates. PROS Guidance also provides businesses transparency within their pricing model via insight into the market prices behind each price recommendation.

Airline Revenue Optimization

PROS airline revenue optimization solutions enable enterprises in the travel industry, including the airline, hotel and cruise industries, to drive revenue- and profit-maximizing business strategies through the application of advanced forecasting, optimization technologies and decision-support capabilities. These solutions are designed to empower companies to quickly adapt

to changing market conditions, differentiate customers by market and sales channel, monitor pricing and revenue management performance, and increase customer loyalty by providing the right products and services to the right customer at the right time. Our Airline Revenue Optimization suite of products includes:

- *PROS Airline Revenue Management* delivers algorithmic forecasting and network optimization for the travel industry. Companies leverage our demand management and forecasting capabilities to determine overbooking levels and manage fare values as pricing updates become available.
- *PROS Airline Real-Time Dynamic Pricing*™ is a scalable solution that offers accurate availability across all channels, while keeping the rules, fares and other data in sync. The solution computes availability in real time and dynamically applies strategies to seat availability so that airlines can maximize revenue and enable offer optimization.
- *PROS Airline Group Sales* is a group revenue optimization solution powered by dynamic pricing science that enables companies to manage group bookings, contracts and policies in one location across users.

Airline eCommerce

Our Airline eCommerce solutions power airlines to become better retailers by increasing their control over how they sell and distribute offers. These solutions provide airlines with shopping and merchandising capabilities to design and distribute offers across individuals and groups. The solutions are powered by proprietary algorithms, compliant with industry pricing and distribution standards and entirely passenger service system-independent. Our Airline eCommerce suite of products includes:

- *PROS Airline Shopping* powers airlines' shopping, pricing and repricing by delivering fast, accurate and comprehensive flight offers to travelers across airlines' sales channels.
- *PROS Airline Merchandising* Increases airlines conversion and revenues per passenger by dynamically selling ancillary services, including extra baggage, legroom and other services. Airlines can upsell with personalized offers at any time in the customer journey using rich content across the airlines' sales channels.

Technology

Our high-performance software architecture supports real-time, high-volume transaction processing and enables us to handle the complex and demanding processing requirements of sophisticated global enterprises, including those who require sub-second response times for their customers. We provide the majority of our cloud services via cloud computing platform partners who offer Infrastructure-as-a-Service, including servers, storage, databases and networking, located in the U.S., Germany, United Kingdom, Australia and other countries. The use of cloud computing platform partners provides us flexibility to service customers at scale and also offer options to comply with in-country data privacy requirements. We also deliver our solutions from infrastructure designed and operated by us but secured within third-party data center facilities. We offer both single-tenant and multi-tenant cloud solutions.

Artificial Intelligence. Our robust machine learning and AI capabilities include forecasting, optimization, neural networks, segmentation and reinforcement learning and allow us to leverage our deep science and research expertise in our solutions. These capabilities are industry-independent and are validated using our proprietary verification and testing processes.

Configuration vs. Custom Coding. Our solutions can be configured to meet each customer's business needs through configuration rather than custom code. The configuration capabilities define both a business layer (including definition of user workflows, executive dashboards, analytics views, calculations, approval processes and alerts), as well as a data layer that permits configuration of data structures, including hierarchical dimensions, pricing levels and measures. We maintain our customers' configurations which allows them to use the latest version of our solutions.

Data Integration. The data needed to execute and power personalized digital buying typically resides in multiple sources, such as a company's enterprise resource planning ("ERP"), supply chain management ("SCM"), customer relationship management ("CRM"), reservations and inventory systems, external market data sources, spreadsheets and/or industry-specific transaction systems. Our data integration capabilities bring data from disparate sources together into a single cohesive database, both in real time and through scheduled batch tasks. We also provide certified content for integration with SAP as well as integration development services using industry standard tools.

Micro-services Architecture. A comprehensive web services interface is at the heart of our architecture. This interface enables extension onto other platforms and the creation of rich integrated solutions.

User Interface. Our technology provides a rich and modern, browser-based interface that supports both local and remote users. This interface supports a wide variety of interactive charts and other data views, and provides a comprehensive security model based on user role and scope of responsibility. We also offer capabilities for multiple mobile devices, tablets, CRM systems and client applications.

Subscription Services

Our subscription services provide customers access to our software via the Internet which, as compared to an on-premise software model, helps reduce their infrastructure, installation and ongoing administration requirements. We also reduce the total cost of ownership of our cloud services over the subscription term by delivering multiple feature releases per year that automatically introduce new features, while preserving previous customizations and integrations that minimize additional customer investment for compatibility. We also offer cloud-based services to allow existing customers who previously purchased licenses to our software to have access to that software within a cloud-based IT environment that we manage.

Sales and Marketing

We sell and market our software solutions primarily through our direct global sales force and indirectly through go-to-market partners, resellers and systems integrators. Our sales force is organized by our target markets, including automotive and industrial, B2B services, cargo, chemicals and energy, consumer goods, insurance, food and beverage, healthcare, high tech and travel. Our marketing activities consist of a variety of programs designed to generate sales leads, accelerate sales opportunities and build awareness of our solutions. We also use digital channels including search and content syndication to reach our target market. We host an annual customer conference, Outperform, where our customers and prospects are invited to learn about best practices from thought leaders, executives and other practitioners in using sales, pricing and revenue management to compete in the digital economy, hear about our latest innovations, and network with peers across industries. We also host other smaller conferences throughout the year, host informational web seminars and participate in and sponsor other industry and trade conferences and organizations.

Professional Services

We provide software-related professional services, including implementation and configuration services, consulting and training services. Our software solution implementations have a standardized and tested implementation process developed through years of experience implementing our software solutions in global enterprises across multiple industries. We also offer change management, process redesign, organizational design, opportunity assessment, performance management consulting, as well as an array of training on all aspects of our software solutions, from introductory on-demand mini-courses to multi-day hands-on deep technical classroom sessions. In addition to our own internal professional services team, we also work with many globally diverse partners who have been certified to implement our software.

Maintenance and Support

Customers maintaining implementations under on-premise licenses may purchase, at their discretion, maintenance and support services. Maintenance enrollment entitles a customer to solicit support through a web-based interface to submit and track issues, access our online knowledge base, and receive unspecified upgrades, maintenance releases and bug fixes during the term of the support period on a when-and-if-available basis. We invest significant resources in providing these services.

Revenue from maintenance and support services has declined as a percentage of our total revenue since we announced our cloud strategy as customers have purchased fewer on-premise licenses to our software. We expect our maintenance revenue to continue to decrease further as more existing customers migrate to our cloud solutions. Revenue from maintenance and support services comprised 33%, 41%, and 45% of our total revenue in 2018, 2017 and 2016, respectively.

Customers

We sell our software solutions to customers across many industries, including automotive and industrial, B2B services, cargo, chemicals and energy, consumer goods, insurance, food and beverage, healthcare, high tech and travel. Our customers are generally large global enterprises and medium-sized businesses, although we also have customers that are smaller in scope of operations. In each of 2018, 2017 and 2016, we had no single customer that accounted for 10% or more of our revenue. Our customers are also geographically diverse, as approximately 65%, 63%, and 63% of our total revenue came from customers outside the U.S. for the years ended December 31, 2018, 2017 and 2016, respectively.

We provide our customers with several service options including a customer success management team to help our customers accelerate the value of their investments in our solutions; a professional services ecosystem of both our professional service teams and certified third party system integrators; 24x7 support; and an online community to facilitate collaboration among our customers and our product development teams.

Competition

The markets for our products and services are competitive, fragmented and rapidly evolving. For example, we have seen consolidation in the quoting software market with large vendors acquiring smaller quoting companies as they attempt to provide end-to-end solutions to drive sales and profit. Today, we are increasingly competing in a sales ecosystem with competitors that all aim to drive effectiveness and efficiency in selling, although we believe we are unmatched in our ability to deliver sales and pricing AI with speed and precision. We face collective competition from a number of larger and smaller companies, including vendors that provide software for specific industries, vendors that compete against a portion of our pricing solutions, vendors that compete against our selling improvement solutions, and vendors that compete against a portion of our revenue management and shopping and merchandising solutions in the airline industry. To a lesser extent, we compete against large enterprise application providers that have developed offerings that include competing functionality and custom solutions developed internally by businesses, which generally include some combination of spreadsheets, manual processes, external consultants, and internally-developed software tools.

The number of companies that we compete with has increased in recent years as we expanded into adjacent technologies. We believe our customers consider the following factors when evaluating our solutions versus competitive solutions:

- product architecture, functionality, performance, reliability and scalability;
- strength of AI embedded in offerings;
- real-time capabilities;
- customer base and references;
- return on investment, total cost of ownership, and time-to-value;
- breadth and depth of product and service offerings;
- depth of expertise in data and pricing science;
- industry domain expertise;
- services and customer support quality;
- size and quality of partner ecosystem;
- existing customer relationships; and
- vendor viability.

We believe that none of our competitors can provide all of the functionality needed to support an organization interested in optimizing sales growth through AI-based omnichannel pricing, selling improvement and revenue management. Our competitors generally compete on price or by bundling their applications with other enterprise applications, and we expect that this will continue in the future. We distinguish ourselves from these vendors through our long history of providing software solutions incorporating AI, data science, and/or machine learning, the breadth and depth of the functionality we offer, the robust integration and configuration capabilities of our solutions, our ability to handle large data volumes at scale, and our proven ability to provide high-value dynamic science-based optimization software to our global customer base across industries. In the future, we believe our competition will continue to increase as more companies move into our market segment and as we expand into adjacent market segments.

Intellectual Property

Our success and ability to compete is dependent in part on our ability to develop and maintain the proprietary aspects of our technology and operate without infringing upon the proprietary rights of others. We protect our intellectual property with a combination of trade secrets, confidentiality procedures, contractual provisions, patents, trademarks, copyrights and other similar measures. We believe that reliance upon trade secrets and unpatented proprietary know-how are generally the most advantageous methods for us to protect our proprietary information.

Research and Development

We believe our software innovation is the foundation of our business and accordingly have made, and continue to make, significant investments in research and development for the enhancement of existing products and services and the development of new products and services. We also believe that our long-term investments in AI and machine learning of pricing and revenue management differentiate us from our competitors. We are committed to continuing the further development of these high-value solutions as evidenced by our continued investment in research and development. In fiscal 2018, 2017 and 2016, we incurred expenses of $55.7 million, $56.0 million and $52.8 million, respectively, in research and development, net of capitalized internal-use software cost, to enhance our existing portfolio of solutions and to develop new solutions. Our research and development expenses include costs associated with our product management, product development and science and research groups. We conduct research and development activities predominantly in Bulgaria, France and the U.S., and also utilize third-party contractors in Bolivia, Colombia and India.

We employ data scientists, most of whom are Ph.D.'s, to advance sales, pricing, and revenue management technology and its implementation in our software solutions. These scientists have specialties including, but not limited to, AI, machine learning, operations research, management science, statistics, econometrics and computational methods. Our data scientists regularly interact with our customers, product development, sales, marketing and professional services staff to help keep our science efforts relevant to real-world demands.

Employees

As of December 31, 2018, we had 1,145 full-time personnel, which included 1,011 employees and 134 outsourced personnel. We have not experienced any work stoppages and consider our employee relations to be good.

Corporate Information

We were incorporated in Texas in 1985. We reincorporated as a Delaware corporation in 1998. In 2002, we reorganized as a holding company in Delaware. Our principal executive offices are located at 3100 Main Street, Suite 900, Houston, Texas 77002. We report as one operating segment with our Chief Executive Officer acting as our chief operating decision maker. Our telephone number is (713) 335-5151. Our website is *www.pros.com*. Our website and the information that can be accessed through our website are not part of this report.

Available Information

We make available, free of charge through our website, our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, including exhibits thereto, and any amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, as soon as reasonably practicable after the reports are electronically filed with or furnished to the SEC. Our reports that are filed with, or furnished to, the SEC are also available at the SEC's website at *www.sec.gov.*

Annual CEO Certification

Pursuant to Section 303A.12(a) of the New York Stock Exchange ("NYSE") Listed Company Manual, on May 29, 2018, we submitted to the NYSE an annual certification signed by our Chief Executive Officer certifying that he was not aware of any violation by us of NYSE corporate governance listing standards.

Item 1A. *Risk Factors*

We operate in a dynamic environment that involves numerous risks and uncertainties. The following section describes some of the risks that may adversely affect our business, financial condition or results of operations, and the trading price of our common stock; these risks are not necessarily listed in terms of their importance or level of risk.

Risks relating to our business and industry

If our security measures are breached and unauthorized access is obtained to a customer's data, our data or our IT systems, our solutions may be perceived as not being secure, customers may limit or stop using our solutions and we may incur significant legal and financial exposure and liabilities.

Our solutions involve the storage, and to a more limited extent, the transmission of our customers' proprietary information, including personal and other sensitive data. We have and expect to continue to incur significant costs to maintain security measures designed to prevent, eliminate or alleviate security vulnerabilities, data theft, computer viruses, malicious software programs, attacks by third parties or similar disruptive problems (each a "Security Incident"), and obtain third-party security attestations regarding those security measures. Despite the implementation of these security measures and third-party security attestations, our systems may still be vulnerable to a Security Incident that could result in someone obtaining unauthorized access to our IT systems, customers' data or our data, including our intellectual property and other confidential business information. Because the techniques used to compromise systems change frequently and may not be recognized until launched, we may be unable to anticipate these techniques or to implement adequate preventative measures. We cannot predict the extent, frequency or impact of these problems on us. Any Security Incident could result in interruptions, delays, cessation of service and loss of existing or potential customers, as well as loss of confidence in the security of our solutions and services, damage to our reputation, negative impact to our future sales, disruption of our business, increases to our information security costs, and could lead to indemnity obligations, legal liability and other costs.

We depend on third-party data centers and other unrelated service providers and any disruption in these operations could impair the delivery of our service and negatively affect our business.

Our cloud products are dependent upon third-party hardware, software and cloud hosting vendors, including Microsoft Azure and IBM Softlayer, all of which must inter-operate for end users to achieve their computing goals. We utilize third-party data center hosting facilities, cloud platform providers, and other service providers to host and deliver our subscription services as well as for our own business operations. We host our cloud products from data centers in a variety of countries, including the United States, Germany and Australia. While we control and generally have exclusive access to our servers and all of the components of our network that are located in our external data centers, we do not control the operation of these facilities and they are vulnerable to damage or interruption from earthquakes, floods, fires, power loss, telecommunications failures and similar events. They may also be subject to Security Incidents, break-ins, sabotage, intentional acts of vandalism and similar misconduct. Despite our failover capabilities, standard protocols and other precautions taken at these facilities, the occurrence of a natural disaster or an act of terrorism, a decision to close the facilities without adequate notice or other unanticipated problems at these facilities could result in lengthy interruptions in our service.

In addition, these providers have no obligation to renew their agreements with us on commercially reasonable terms, or at all. If we are unable to renew these agreements on commercially reasonable terms, or if one of our data center operators is acquired, we may be required to transfer our servers and other infrastructure to new data center facilities, and we may incur significant costs and possible service interruption in connection with doing so. Any interruptions or delays in these hosted services, or security or privacy breaches, could damage our reputation, negatively impact our future sales, disrupt our business, and lead to legal liability and other costs.

Furthermore, certain of our applications are essential to our customers' ability to price, quote and/or sell their products and services. Any interruption in our service may affect the availability, accuracy or timeliness of pricing or other information and as a result could require us to issue service credits to our customers, could damage our reputation, cause our customers to terminate their use of our solutions, require us to indemnify our customers against certain losses, and could prevent us from gaining additional business from current or future customers.

Evolving data privacy, cyber security and data localization laws and regulations could adversely impact our business and expose us to increased liability.

We provide our cloud software solutions globally, including in countries that have stringent laws and regulations relating to data privacy, cyber security and data localization. These laws and regulations may be inconsistent across jurisdictions, and may

be subject to interpretation, particularly in the EU, where the General Data Protection Regulation ("GDPR") imposes substantial requirements regarding the handling of personal data. The GDPR, as well as other data privacy, cyber security and data localization laws and regulations, has changed in recent years and is likely to continue to evolve in the future. Although we have implemented measures designed to comply with the laws and regulations applicable to our business, our ongoing efforts to comply with the GDPR and other changes in laws and regulations (such as the California Consumer Privacy Act that will take effect January 2020) may entail substantial expenses and divert resources from other initiatives. These changes have in the past increased, and may continue to increase, our cost of providing our products and services, could limit us from offering certain solutions in certain jurisdictions, could adversely affect our sales cycles, and could impact our new technology innovation. In addition, our cloud software solutions store data on behalf of our customers, and if our customers fail to comply with contractual obligations or applicable laws and regulations, it could result in litigation or reputational harm to us. Any perceived inability to adequately address privacy, data localization or cyber security compliance or to comply with more complex and numerous laws and regulations, even if unfounded, could result in liability to us, damage our reputation, inhibit sales of our solutions and harm our business, financial condition and results of operations.

If we fail to manage our cloud operations, we may be subject to liabilities and our reputation and operating results may be adversely affected.

Since we shifted to a cloud strategy in 2015, we have experienced substantial growth in the number of customers and data volumes serviced by our cloud infrastructure. While we have designed our cloud infrastructure to meet the current and anticipated future performance and accessibility needs of our customers, we must manage our cloud operations in order to handle changes in hardware and software parameters, spikes in customer usage and new versions of our software. We have experienced, and may in the future experience, system disruptions, outages and other cloud infrastructure performance problems. These problems may be caused by a variety of factors, including infrastructure changes, human or software errors, viruses, security attacks (internal or external), fraud, spikes in customer usage and denial of service issues. In some instances, we may not be able to identify the cause or causes of these performance problems within an acceptable period of time. Our customer agreements typically provide service level commitments on a monthly basis and for certain of our products we also offer response time commitments on a monthly basis. If we are unable to meet the stated service level or response time commitments, or if we suffer extended periods of unavailability for our solutions, we may be contractually obligated to issue service credits or refunds to customers for prepaid and unused subscription services, or customers may choose to terminate contracts. Any extended service outages or other performance problems could also result in damage to our reputation or our customers' businesses, cause our customers to elect not renew or to delay or withhold payment to us, loss of future sales, or lead to customers making other claims against us that could harm our subscription revenues, result in an increase in our provision for doubtful accounts, increase collection cycles for our accounts receivable or lead to the expense and risk of litigation.

We have experienced losses since we transitioned to a cloud strategy in 2015, and may continue to incur losses for longer than we expect.

We expect our expenses to continue to exceed our revenues in the near term as we continue to make investments as part of our cloud strategy, particularly in new product development, sales, marketing, security, privacy and cloud operations. Our ability to return to profitability depends on our ability to: continue to drive subscription sales, enhance our existing products and develop new products, scale our sales and marketing and product development organizations, successfully execute our marketing and sales strategies, renew our subscription agreements with existing customers, and manage our expenses. If we are not able to execute on these actions, our business may not grow as we anticipate, our operating results could be adversely affected and we may continue to incur net losses in the future. Additionally, operating margins on our cloud-only products have been and may continue to be lower than those we have achieved on our more mature products, and our new initiatives may not generate sufficient revenue and cash flows to recoup our investments in them. If any of these events were to occur, it could adversely affect our business, results of operations and financial condition.

Failure to sustain our historical renewal rates and pricing would adversely affect our future revenue and operating results.

Our subscription agreements are typically for an initial term of three years, and maintenance and support agreements are typically for an initial term of two years. Our customers have no obligation to renew their software subscriptions after the expiration of their initial term, and some customers elect not to renew. Historically, maintenance and support revenue has represented a significant portion of our total revenue, including approximately 33%, 41% and 45% of our total revenue for the years ended December 31, 2018, 2017 and 2016, respectively. Subscription revenue has represented an increasingly significant portion of our total revenue, including approximately 48%, 36% and 25% of our total revenue for the years ended December 31, 2018, 2017 and 2016, respectively.

We may not accurately predict future customer renewal rates, which may decline or fluctuate as a result of a number of factors, including their level of satisfaction with our services, our ability to continue to regularly add functionality, the reliability (including uptime) of our subscription services, the prices of our services, the actual or perceived information security of our systems and services, mergers and acquisitions of our customers, reductions in our customers' spending levels, or declines in customer activity as a result of economic downturns or uncertainty in financial markets. If our customers choose not to renew their subscription, maintenance and support agreements with us on favorable terms or at all, our business, operating results and financial condition could be harmed.

If we fail to migrate customers with on-premise software licenses to our latest cloud software solutions, our future revenue may be limited and our costs to provide support to those customers may increase.

Customers with on-premise licenses for our legacy software may need to migrate to our current cloud solutions to take advantage of our latest features and functionality which are only available via PROS cloud. Although we intend to continue to support our legacy on-premise software customers under perpetual licenses for the foreseeable future, we are focused on migrating such customers to our cloud solutions in 2019 and beyond. Customers who purchased on-premise licenses for our solutions may have invested substantial personnel and financial resources in our legacy software. Therefore, if our migration efforts are not successful, and those legacy customers delay or decline to migrate to our cloud solutions, our internal development and customer support teams could find it increasingly difficult and costly to support both our legacy on-premise software installed by customers and our current cloud solutions. In addition, if our legacy on-premise license customers fail to migrate or delay migration to our cloud solutions, our future revenue may be limited.

Our quarterly results may vary and may not fully reflect the performance of our business.

We generally recognize revenue from customers ratably over the terms of their subscription agreements. As a result, most of the revenue we report in each quarter is the result of agreements entered into during prior quarters. Consequently, a decline in new or renewed subscriptions in any quarter may not be reflected in our revenue for that quarter. However, any such decline will negatively affect our revenue in future quarters. Accordingly, the effect of significant downturns in sales, our failure to achieve our internal sales targets, a decline in the market acceptance of our services or potential decreases in our retention rate may not be fully reflected in our operating results until future periods. Our subscription model also makes it difficult for us to rapidly increase our revenue through additional sales in any period, as revenue from additional sales must be recognized over the applicable subscription term. In addition, we may experience seasonal variations in our cash flows from operating activities, including as a result of the timing of payment of payroll taxes, performance bonuses to our employees and costs associated with annual company-wide events, each of which have historically been highest in our first fiscal quarter. Therefore, the results of any prior quarterly periods should not be relied upon as an indication of our future operating performance.

We are a multinational corporation, which subjects us to increased risks that may adversely affect our operating results.

The majority of our revenues are derived from our customers outside the U.S. For the years ended December 31, 2018, 2017 and 2016, approximately 65%, 63% and 63% of our total revenue, respectively, was derived from outside the U.S. To date, the majority of our sales have been denominated in U.S. dollars, although the majority of our expenses that we incur in our international operations are denominated in local currencies. To date, we have not used risk management techniques or "hedged" the risks associated with fluctuations in foreign currency exchange rates. Consequently, our results of operations and financial condition, including our revenue and operating margins, are subject to losses from fluctuations in foreign currency exchange rates, as well as regulatory, political, social and economic developments or instability in the foreign jurisdictions in which we operate. *For additional financial information about geographic areas, see Note 18 of the Notes to the Consolidated Financial Statements.*

Our operations outside the U.S. are subject to risks inherent in doing business internationally, requiring resources and management attention, and may subject us to new or larger levels of regulatory, economic, foreign currency exchange, tax and political risks. We have customers in over 55 countries internationally, which we service through our operations (via wholly-owned subsidiaries) in the U.S., Australia, Bulgaria, Canada, France, Germany, Ireland, United Arab Emirates and United Kingdom. We expect our international operations to continue to grow. Among the risks we believe are most likely to affect us with respect to our international sales and operations are:

- economic conditions in various parts of the world;
- differing labor and employment regulations, especially in the EU, where labor laws are generally more advantageous to employees as compared to the U.S., including hourly wage and overtime regulations and employee termination restrictions or related costs;

- the difficulty of managing and staffing our international operations and the increased travel, infrastructure and legal compliance costs associated with multiple international locations;
- different and more stringent data protection, privacy and other laws, including data localization requirements;
- unexpected changes in regulatory requirements;
- less favorable intellectual property laws;
- new and different sources of competition;
- costs of compliance and penalties for noncompliance with foreign laws and laws applicable to companies doing business in foreign jurisdictions;
- multiple, conflicting and changing tax laws and regulations that may affect both our international and domestic tax liabilities and result in increased complexity and costs;
- availability of broadband and network connectivity required for certain of our products;
- difficulties in enforcing contracts and collecting accounts receivable, especially in developing countries; and
- tariffs and trade barriers, import and export controls and other regulatory or contractual limitations on our ability to sell or develop our solutions in certain foreign markets.

If we continue to expand our business globally, our success will depend, in large part, on our ability to anticipate and effectively manage these and other risks associated with our international operations. Our failure to manage any of these risks successfully could harm our international operations and reduce our international sales, adversely affecting our business, operating results and financial condition.

As we expand our software product portfolio, we could face increased competition as part of entering new markets.

The market for our products is competitive, and we expect competition to continue to increase in the future as we expand our product portfolio and features. We may not compete successfully against future potential competitors, especially those with significantly greater financial resources or brand name recognition. For example, we compete with sales enablement, configure-price-quote, revenue management, and airline shopping and merchandising software. Large companies in these spaces may have advantages over us because of their greater brand name recognition, larger customer bases, broader product portfolios, larger distribution channels, or greater financial, technical and marketing resources. As a result, they may be able to adapt more quickly to new or emerging technologies and changes in customer requirements.

If our new products and product enhancements do not achieve sufficient market acceptance, our results of operations and competitive position could suffer.

We spend substantial amounts of time and money to enhance our existing products, as well as to research and develop new products. We introduce new products and incorporate additional features, improve functionality or add other enhancements to our existing products in order to meet our customers' demands. Our new products or enhancements could fail to attain sufficient market acceptance for many reasons, including delays in introducing new, enhanced or modified products; defects, errors or failures in any of our products; and disruptions or delays in the availability and delivery of our products. If our new products or enhancements do not achieve adequate acceptance in the market, our competitive position could be impaired, our revenue could be diminished and the effect on our operating results may be particularly acute because of the significant research and development, marketing, sales and other expenses we incurred in connection with the new product.

We focus primarily on selling improvement, pricing and revenue management software, and if the markets for this software develop more slowly than we expect, our business could be harmed.

We derive most of our revenue from providing our solutions for selling improvement, pricing and revenue management, implementation services and ongoing customer support. The selling improvement and pricing market is evolving rapidly, and it is uncertain whether this software will achieve and sustain high levels of demand and market acceptance. Our success depends on the willingness of businesses in our target markets to use selling improvement and pricing software. Some businesses may be reluctant or unwilling to implement such software for a number of reasons, including failure to understand the potential returns of improving their processes and lack of knowledge about the potential benefits that such software may provide. Some businesses may elect to improve their pricing processes through solutions obtained from their existing enterprise software providers, whose solutions are designed principally to address functional areas other than pricing. If businesses do not embrace the benefits of selling

improvement and pricing software, the market for such software may not continue to develop or may develop more slowly than we expect, either of which would significantly and adversely affect our revenue and operating results.

We have historically been subject to lengthy sales cycles, and delays or failures to complete sales may harm our business and cause our revenue and operating income to decline in the future.

While our sales cycle times have improved relative to our prior historical averages since we shifted to a cloud strategy in 2015, our sales cycles may take several months to over a year for larger enterprise customers. A large enterprise customer's decision to use our solutions typically involves a number of internal approvals, and sales to those prospective customers generally require us to provide greater levels of education about the benefits of our solutions. We expend substantial resources during our sales cycles with no assurance that a sale may ultimately result. The length of each individual sales cycle depends on many factors, a number of which we cannot control, including the prospective customer's internal evaluation and approval process requirements, as well as the prospective customer's budget and/or resource constraints. Any unexpected lengthening of the sales cycle or failure to secure anticipated orders could negatively affect our revenue. Any significant failure to generate sales after incurring costs related to our sales process could also have a material adverse effect on our business, financial condition and results of operations.

We might not generate increased business from our customers, which could limit our revenue in the future.

We sell our software solutions to both new customers and existing customers. Many of our existing customers initially purchase our software solutions for a specific business segment or a specific geographic location within their organization and later purchase additional software solutions for the same or other business segments and geographic locations within their organization. These customers might not choose to make additional purchases of our software solutions or to expand their existing software solutions to other business segments. In addition, as we deploy new applications and features for our cloud software solutions or introduce new cloud software solutions, our current customers could choose not to purchase these new offerings. If we fail to generate additional business from our existing customers, our revenue could grow at a slower rate or even decrease.

The markets in which we participate are intensely competitive, and if we do not compete effectively, our operating results could be harmed.

The markets for enterprise software applications for selling improvement, pricing, and revenue management are competitive, fragmented and rapidly evolving. We expect additional competition from other established and emerging companies to the extent the markets in which we compete continue to develop and expand, as well as through industry consolidation, including through a merger or partnership of two or more of our competitors or the acquisition of a competitor by a larger company. Some of our current and potential competitors may have larger installed bases of users, longer operating histories, broader distribution and greater name recognition than we have. In addition, many of these companies have significantly greater resources than we have. As a result, these companies may be able to respond more quickly to new or emerging technologies and changes in customer demands, and devote greater resources to the development, promotion and sale of their products.

Competition could seriously impede our ability to sell our software solutions and services on terms favorable to us. Our current and potential competitors may develop and market new technologies that render our existing or future solutions obsolete, unmarketable or less competitive. In addition, if these competitors develop solutions with similar or superior functionality to our solutions, or if they offer solutions with similar functionality at a substantially lower price than our solutions, we may need to decrease the prices for our solutions in order to remain competitive. If we are unable to maintain our current pricing due to competitive pressures, our margins could be reduced and our operating results could be adversely affected. If we do not compete successfully against current or future competitors, competitive pressures could materially and adversely affect our business, financial condition and operating results.

Any unauthorized, and potentially improper, actions of our personnel could adversely affect our business, operating results and financial condition.

The recognition of our revenue depends on, among other things, the terms negotiated in our contracts with our customers. Our personnel may act outside of their authority and negotiate additional terms without our knowledge. We have implemented policies to help prevent and discourage such conduct, but there can be no assurance that such policies would be followed. For instance, in the event that our sales personnel negotiate terms that do not appear in the contract and of which we are unaware, whether such additional terms are written or verbal, we could be prevented from recognizing revenue in accordance with our plans. Furthermore, depending on when we learn of unauthorized actions and the size of the transactions involved, we may have to restate revenue for a previously reported period, which could seriously harm our business, operating results and financial condition.

We may enter into acquisitions that may be difficult to integrate, fail to achieve our strategic objectives, disrupt our business, dilute stockholder value or divert management attention.

We have completed three acquisitions since 2013 and in the future we may continue to acquire other businesses, technologies and products that we intend to complement our existing business, solutions, services and technologies. We cannot provide assurance that the acquisitions we have made or may make in the future will provide us with the benefits or achieve the results we anticipated when entering into the transaction(s). Acquisitions are typically accompanied by a number of risks, including:

- difficulties in integrating the operations and personnel of the acquired companies;
- difficulties in maintaining acceptable standards, controls, procedures and policies, including integrating financial reporting and operating systems, particularly with respect to foreign and/or public subsidiaries;
- disruption of ongoing business and distraction of management;
- inability to maintain relationships with customers of the acquired business;
- impairment of relationships with employees and customers as a result of any integration of new management and other personnel;
- difficulties in incorporating acquired technology and rights into our solutions and services;
- unexpected expenses resulting from the acquisition; and
- potential unknown liabilities associated with the acquisition.

In addition, we may incur debt, acquisition-related costs and expenses, restructuring charges and write-offs as a result of acquisitions. Acquisitions may also result in goodwill and other intangible assets that are subject to impairment tests, which could result in future impairment charges.

We may enter into negotiations for acquisitions that are not ultimately consummated. Those negotiations could result in diversion of management time and significant out-of-pocket costs. If we fail to evaluate and execute acquisitions successfully, we may not be able to achieve our anticipated level of growth and our business and operating results could be adversely affected.

If our goodwill or amortizable intangible assets become impaired, then we could be required to record a significant charge to earnings.

Under GAAP, we review our goodwill and amortizable intangible assets for impairment when events or changes in circumstances indicate the carrying value may not be recoverable. GAAP requires us to test for goodwill impairment at least annually. Factors that may be considered a change in circumstances indicating that the carrying value of our goodwill or amortizable intangible assets may not be recoverable include declines in stock price, market capitalization or cash flows and slower growth rates in our industry. We could be required to record a significant charge to earnings in our financial statements during the period in which any impairment of our goodwill or amortizable intangible assets were determined, negatively impacting our results of operations.

Any downturn in sales to our target markets could adversely affect our operating results.

Our success is highly dependent upon our ability to sell our software solutions to customers in our target industries, including automotive and industrial, B2B services, cargo, chemicals and energy, consumer goods, insurance, food and beverage, healthcare, high tech and travel. If we are unable to sell our software solutions effectively to customers in these industries, we may not be able to grow our business. It is uncertain whether our software solutions may achieve and sustain the levels of demand and market acceptance that we anticipate. Such uncertainty is attributable to, among other factors, the following:

- it may be more difficult than we currently anticipate to implement our software solutions in certain sub-verticals within our target industries;
- it may be more difficult than we currently anticipate to increase our customer base in our target industries; and
- our experience implementing our software solutions in certain sub-verticals may be limited within our target industries.

Our revenue growth has historically been derived from customers in many major industries. Our revenue growth is highly dependent upon continued growth of market acceptance in these industries, and there can be no assurance our solutions may

achieve or sustain widespread acceptance among customers in these industries. Failure to expand market acceptance of our solutions or maintain sales in these industries could adversely affect our operating results and financial condition.

Certain of our software solutions require implementation projects that are subject to significant risks and delays, which if any occurred could negatively impact the effectiveness of our software, resulting in harm to our reputation, business and financial performance.

The implementation of certain of our software solutions by our large enterprise customers across their entire business may involve complex, large-scale projects that require substantial support operations, significant resources and reliance on factors that are beyond our control. For example, the success of our implementation projects is dependent upon the quality of data used by our software solutions, and the commitment of customers' resources and personnel to the projects. We may not be able to correct or compensate for weaknesses or problems in data, or any lack of our customers' commitment and investment in personnel and resources. If we are unable to successfully manage the implementation of our software solutions, and as a result those products do not meet customer needs or expectations, we may become involved in disputes with our customers and our business reputation and financial performance may be significantly harmed. If an implementation project for a large customer or a number of customers is substantially delayed or canceled, our ability to recognize the associated revenue and our operating results could be adversely affected.

If our executives and other key personnel are unable to effectively manage our business, or if we fail to attract additional qualified sales, marketing, professional services, product development and other personnel, our revenue and operating results could be adversely affected.

Our future success depends upon the performance and service of our executive officers and other key sales, marketing, development, science and professional services staff. The failure of our executives and key personnel to effectively manage our business or the loss of the services of our executive officers and other key personnel would harm our operations. In addition, our future success could depend in large part on our ability to attract and retain a sufficient number of highly qualified sales, marketing, professional services, product development and other personnel, and there can be no assurance that we may be able to do so. We have continued to add a significant number of new personnel to support our continued growth, and their ability to learn our business and manage it effectively could be important to our continued growth and expansion. In addition, given the highly sophisticated data science included in our solutions, the pool of data scientists and software developers qualified to work on our solutions is limited. The implementation of certain of our software solutions requires highly-qualified personnel, and hiring and retaining such personnel to support our growth may be challenging. Competition for such qualified personnel is intense, and we compete for these individuals with other companies that have greater financial, technical, marketing, service and other resources than we do. If our key personnel are unable to effectively manage our business, or if we fail to attract additional qualified personnel, our operating results could be adversely affected.

If we cannot maintain our corporate culture, we could lose the innovation, teamwork and passion that we believe contribute to our success, and our business may be harmed.

If we cannot maintain our corporate culture, we could lose the innovation, teamwork and passion that we believe contribute to our success, and our business may be harmed. We invest substantial time and resources in building and maintaining our culture. Any failure to preserve our culture could negatively affect our future success, including our ability to retain and recruit personnel and to effectively pursue our strategic objectives.

We incurred indebtedness by issuing the 2019 and 2047 convertible notes, and our debt repayment obligations may adversely affect our financial condition and cash flows from operations in the future.

In June 2017, we issued $106.3 million principal amount of 2.0% convertible senior notes ("2047 Notes") due June 1, 2047, unless earlier redeemed, purchased or converted in accordance with their terms prior to such date. Each holder of the 2047 Notes has the right to require us to repurchase for cash, such holder's 2047 Notes on June 1, 2022 on the terms set forth in the note indenture. Interest is payable semi-annually in arrears on June 1 and December 1 of each year. In December 2014, we issued $143.8 million principal amount of 2.0% convertible senior notes ("2019 Notes" and collectively with the 2047 Notes, the "Notes") due December 1, 2019, unless earlier purchased or converted. Interest is payable semi-annually in arrears on June 1 and December 1 of each year.

Our indebtedness could have important consequences because it may impair our ability to obtain additional financing in the future for working capital, capital expenditures, acquisitions and general corporate or other purposes, and a portion of our cash flows from operations may have to be dedicated to repaying the principal beginning in 2019. Our ability to meet our debt obligations will depend on our future performance, which will be affected by financial, business, economic, regulatory and other factors. We

cannot control many of these factors. Our future operations may not generate sufficient cash to enable us to repay our debt. If we fail to make a payment on our debt, we could be in default on such debt. If we are at any time unable to pay our indebtedness when due, we may be required to renegotiate the terms of the indebtedness, seek to refinance all or a portion of the indebtedness or obtain additional financing. There can be no assurance that, in the future, we will be able to successfully renegotiate such terms, that any such refinancing would be possible or that any additional financing could be obtained on terms that are favorable or acceptable to us.

Changes in accounting principles or standards, or in the way they are applied, could result in unfavorable accounting charges or effects and unexpected financial reporting fluctuations, and could adversely affect our reported operating results.

We prepare our consolidated financial statements in conformity with GAAP. These principles are subject to interpretation by the SEC and various bodies formed to interpret and create appropriate accounting principles and guidance. A change in existing principles, standards or guidance, in particular those related to revenue recognition, can have a significant effect on our reported results, may retroactively affect previously reported results, could cause unexpected financial reporting fluctuations, and may require us to make costly changes to our operational processes and accounting systems.

The Financial Accounting Standards Board ("FASB") is currently working with the International Accounting Standards Board ("IASB") to converge certain accounting principles and to facilitate more comparable financial reporting between companies that are required to follow GAAP and those that are required to follow International Financial Reporting Standards ("IFRS"). These projects may result in different accounting principles under GAAP, which may have a material impact on the way in which we report financial results in areas including, but not limited to, principles for recognizing revenue, lease accounting, and financial statement presentation.

In addition, the SEC may make a determination in the future regarding the incorporation of IFRS into the financial reporting system for U.S. companies. Changes in accounting principles from GAAP to IFRS, or to converged accounting principles, may have a material impact on our financial statements and may retroactively affect the accounting treatment of previously reported transactions.

If we fail to develop or acquire new functionality to enhance our existing software solutions, we may not be able to grow our business and it could be harmed.

The markets in which we compete are characterized by:

- rapid technological developments;
- newly emerging and changing customer requirements; and
- frequent solution introductions, updates and functional enhancements.

We must introduce enhancements to our existing software solutions in order to meet our business plan, maintain or improve our competitive position, keep pace with technological developments, satisfy increasing customer requirements and increase awareness of software for sales, pricing, configure-price-quote, revenue management, shopping and merchandising generally and of our modern commerce software solutions in particular. Any new functionality we develop may not be introduced in a timely manner and may not achieve market acceptance sufficient to generate material revenue. Furthermore, certain of our competitors could be heavily investing in research and development, and may develop and market new solutions that may compete with, and may reduce the demand for, our software solutions. We cannot provide assurance that we could be successful in developing or otherwise acquiring, marketing and selling new functionality, or delivering updates and upgrades that meet changing industry standards and customer demands. In addition, we may experience difficulties that could delay or prevent the successful development, marketing and selling of such functionality. If we are unable to develop or acquire new functionality, enhance our existing software solutions or adapt to changing industry requirements to meet market demand, we may not be able to grow our business and our revenue and operating results would be adversely affected.

In addition, because our software solutions are intended to operate on a variety of technology platforms, we must continue to modify and enhance our software solutions to keep pace with changes in these platforms, as well as develop and maintain relationships with platform providers. Any inability of our software solutions to operate effectively with existing or future platforms, or our inability to develop or maintain relationships with significant platform providers, could reduce the demand for our software solutions, result in customer dissatisfaction and limit our revenue.

Defects or errors in our software solutions could harm our reputation, impair our ability to sell our solutions and result in significant costs to us.

Our software solutions are complex and may contain undetected defects or errors. Several of our solutions have recently been developed and may therefore be more likely to contain undetected defects or errors. In addition, we frequently develop enhancements to our software solutions that may contain defects. We have not suffered significant harm from any defects or errors to date. We have in the past issued, and may in the future need to issue, corrective releases of our solutions to correct defects or errors, but we may not be able to detect and correct any such defects or errors before the final implementation of our software solutions. The occurrence of any defects or errors could result in:

- delayed market acceptance and lost sales of our software solutions;
- delays in payment to us by customers;
- damage to our reputation;
- diversion of our resources;
- legal claims, including product liability claims, against us;
- increased maintenance and support expenses; and
- increased insurance costs.

Our agreements with our customers typically contain provisions designed to limit our liability for defects and errors in our software solutions and damages relating to such defects and errors, but these provisions may not be enforced by a court or otherwise effectively protect us from legal claims. Our liability insurance may not be adequate to cover all of the costs resulting from these legal claims. Moreover, we cannot provide assurance that our current liability insurance coverage would continue to be available on acceptable terms. In addition, the insurer may deny coverage on any future claims. The successful assertion against us of one or more large claims that exceeds available insurance coverage, or the occurrence of changes in our insurance policies, including premium increases or the imposition of large deductible or co-insurance requirements, could have a material adverse effect on our business and operating results. Furthermore, even if we prevail in any litigation, we are likely to incur substantial costs and our management's attention may be diverted from our operations.

If we fail to protect our intellectual property adequately, our business may be harmed.

Our success and ability to compete depends in part on our ability to protect our intellectual property. We rely upon a combination of trade secrets, confidentiality policies, nondisclosure and other contractual arrangements, and patent, copyright and trademark laws to protect our intellectual property rights. We cannot, however, be certain that steps we take to protect our intellectual property are adequate.

We may be required to spend significant resources to protect our intellectual property rights. Litigation brought to protect and enforce our intellectual property rights could be costly, time-consuming, and distracting to management and could result in the impairment or loss of portions of our intellectual property. Furthermore, our efforts to enforce our intellectual property rights may be met with defenses, counterclaims, and countersuits attacking the validity and enforceability of our intellectual property rights. The procurement and enforcement of certain intellectual property rights involves complex legal and factual considerations, and the associated legal standards are not always applied predictably or uniformly, can change, and not provide adequate remedies. As a result, we may not be able to obtain or adequately enforce our intellectual property rights, and other companies may be better able to develop products that compete with ours. Our failure to secure, protect, and enforce our intellectual property rights could seriously adversely affect our brand, competitive business position, business prospects, operating results and financial condition.

Intellectual property litigation and infringement claims may cause us to incur significant expense or prevent us from selling our software solutions.

Our industry is characterized by the existence of a large number of patents, trademarks and copyrights, and by frequent litigation based on allegations of infringement or other violations of intellectual property rights. A third-party may assert that our technology violates its intellectual property rights, or we may become the subject of a material intellectual property dispute. Sales, pricing, configure-price-quote, revenue management, shopping and merchandising solutions may become increasingly subject to infringement claims as the number of such commercially available solutions increases and the functionality of these solutions overlaps. In addition, changes in patent laws in the U.S. may affect the scope, strength and enforceability of our patent rights or the nature of proceedings which may be brought by us related to our patent rights. Future litigation may involve patent holding companies or other adverse patent owners who have no relevant product revenue and against whom our own potential patents may

therefore provide little or no deterrence. Regardless of the merit of any particular claim that our technology violates the intellectual property rights of others, responding to such claims may require us to:

- incur substantial expenses and expend significant management efforts to defend such claims;
- pay damages, potentially including treble damages, if we are found to have willfully infringed such parties' patents or copyrights;
- cease making, selling or using products that are alleged to incorporate the intellectual property of others;
- distract management and other key personnel from performing their duties for us;
- enter into potentially unfavorable royalty or license agreements in order to obtain the right to use necessary technologies; and
- expend additional development resources to redesign our solutions.

Any licenses required as a result of litigation under any patent may not be made available on commercially acceptable terms, if at all. In addition, some licenses may be nonexclusive, and therefore our competitors may have access to the same technology licensed to us. If we fail to obtain a required license or are unable to design around a patent, we may be unable to effectively develop or market our solutions, which could limit our ability to generate revenue or maintain profitability.

Contract terms generally obligate us to defend and hold our customers harmless, and to a lesser extent to indemnify our customers for their use of the intellectual property associated with our software or for other third-party products that are incorporated into our solutions and that infringe the intellectual property rights of others. If we are unable to resolve our legal obligations by settling or paying an infringement claim or a related indemnification claim as described above, we may be required to compensate our customers under the contractual arrangement with such customers. Our intellectual property defense and indemnification obligations are generally contractually either capped at a very high amount or not capped at all.

We use open source software in our solutions that may subject our software solutions to general release or require us to re-engineer our solutions, which may cause harm to our business.

We use open source software in our solutions and may use more open source software in the future. From time to time, there have been claims challenging the ownership of open source software against companies that incorporate open source software into their products. As a result, we could be subject to lawsuits by parties claiming ownership of what we believe to be open source software. Some open source licenses contain requirements that we make available source code for modifications or derivative works we create based upon the open source software and that we license such modifications or derivative works under the terms of a particular open source license or other license granting third parties certain rights of further use. If we combine our proprietary software solutions with open source software in a certain manner, we could, under certain of the open source licenses, be required to release the source code of our proprietary software solutions. In addition to risks related to license requirements, usage of open source software can lead to greater risks than use of third-party commercial software, as open source licensors generally do not provide warranties or controls on origin of the software. In addition, open source license terms may be ambiguous and many of the risks associated with usage of open source cannot be eliminated, and could, if not properly addressed, negatively affect our business. If we were found to have inappropriately used open source software, we may be required to seek licenses from third parties in order to continue offering our software, to re-engineer our solutions, to discontinue the sale of our solutions in the event re-engineering cannot be accomplished on a timely basis or take other remedial action that may divert resources away from our development efforts, any of which could adversely affect our business, operating results and financial condition.

We utilize third-party software that we incorporate into our software solutions, and impaired relations with these third parties, defects in third-party software or a third party's inability or failure to enhance their software over time could adversely affect our operating performance and financial condition.

We incorporate and include third-party software into our software solutions. If our relations with any of these third parties are impaired, or if we are unable to obtain or develop a replacement for the software, our business could be harmed. The operation of our solutions could be impaired if errors occur in the third-party software that we utilize. It may be more difficult for us to correct any defects in third-party software because the software is not within our control. Accordingly, our business could be adversely affected in the event of any errors in this software. There can be no assurance that these third parties may continue to invest the appropriate levels of resources in their products and services to maintain and enhance the capabilities of their software.

Catastrophic events may disrupt our operations.

Our headquarters are located in Houston, Texas, and we conduct business in other domestic and international locations. We also rely on our network and third-party infrastructure and enterprise applications for our sales, marketing, development, operational support, and hosted services. Although we have contingency and business continuity plans in effect for natural disasters or other catastrophic events (including terrorist attacks, power loss, telecommunications failure, cyber-attacks and hurricanes), these events could disrupt our operations. Even though we carry business interruption insurance and typically have provisions in our contracts that protect us in certain events, we might suffer losses as a result of business interruptions that exceed the coverage available under our insurance policies or for which we do not have coverage. Any natural disaster or other catastrophic event could create a negative perception in the marketplace, delay our product innovations, or lead to lengthy interruptions in our services, breaches of data security, and losses of critical data, all of which could have an adverse effect on our operating results.

We incur significant costs as a result of operating as a public company, and our management is required to devote substantial time to compliance initiatives.

As a public company, we incur significant legal, accounting and other expenses. The Sarbanes-Oxley Act of 2002 ("Sarbanes-Oxley") and the Dodd-Frank Wall Street Reform and Consumer Protection Act, and rules currently proposed or subsequently implemented by the SEC and NYSE impose heightened requirements on public companies. Our management and other personnel devote a substantial amount of time to these compliance initiatives. We may also need to hire additional personnel to support our compliance requirements. Moreover, these rules and regulations increase our legal and financial costs and make some activities more time-consuming.

If we fail to continue to maintain internal controls over financial reporting in accordance with Section 404 of the Sarbanes-Oxley Act, our market price may be adversely affected.

Section 404 of Sarbanes-Oxley requires our management to assess the effectiveness of our internal control over financial reporting and to provide a report by our registered independent public accounting firm addressing the effectiveness of our internal control over financial reporting. If we are unable to continue to assert that our internal controls over financial reporting are effective, or if a material weakness is identified in our internal controls over financial reporting, or if we are unable to implement internal controls over financial reporting for our acquisitions, our financial results may be adversely affected and we could lose investor confidence in the reliability of our financial statements. Accordingly failure to maintain effective controls over financial reporting may have an adverse effect on the market price of our common stock.

Risks relating to ownership of our common stock, the 2019 Notes and 2047 Notes

Market volatility may affect our stock price and the value of your investment.

The market price for our common stock, and the software industry generally, has been and is likely to continue to be volatile. Volatility could make it difficult to trade shares of our common stock at predictable prices or times. Many factors could cause the market price of our common stock to be volatile, including the following:

- variations in our quarterly or annual operating results;
- decreases in market valuations of comparable companies;
- fluctuations in stock market prices and volumes;
- decreases in financial estimates by equity research analysts;
- announcements by our competitors of significant contracts, new solutions or enhancements, acquisitions, distribution partnerships, joint ventures or capital commitments;
- departure of key personnel;
- changes in governmental regulations and standards affecting the software industry and our software solutions;
- sales of common stock or other securities by us in the future;
- damages, settlements, legal fees and other costs related to litigation, claims and other contingencies;
- deterioration of the general U.S. and global economic condition; and
- other risks described elsewhere in this section.

In the past, securities class action litigation often has been initiated against a company following a period of volatility in the market price of the company's securities. If class action litigation is initiated against us, we may incur substantial costs and our management's attention could be diverted from our operations. All of these factors could cause the market price of our stock to decline, and you may lose some or all of your investment.

Historically, shares of our common stock have been relatively illiquid and trading of our shares could adversely affect the market price of our common stock.

Our common stock has historically been thinly traded, and we have a relatively small public float. Our common stock may be less liquid than the stock of companies with a broader public ownership. In addition, sales of a large volume of our common stock by us or our current or future stockholders, or the perception that sales could occur, may also have a significant impact on its trading price.

Our directors, executive officers, and certain significant stockholders hold a significant portion of our outstanding shares.

Our directors and executive officers collectively control approximately 13% of our issued and outstanding common shares, and together with certain significant stockholders, including investment funds associated with Brown Capital Management, PRIMECAP Management Company, D.F. Dent, Conestoga Capital Advisors, BlackRock and Riverbridge Partners, control approximately 62% of our issued and outstanding common shares. In the event that these stockholders each independently decided to vote for or against matters requiring stockholder approval, they could influence such matters in ways that may not align with your specific interests as a stockholder, including the election of directors and approval of significant corporate transactions. This concentration of ownership could affect the market price of our shares if there is a sale by this group of stockholders, and could also have the effect of delaying or preventing a change in control of us even if such change of control could be beneficial to you as a stockholder.

If equity research analysts cease to publish research or reports about us or if they issue inaccurate or unfavorable commentary or downgrade our common stock, the price and trading volume of our common stock could decline.

The trading market for our common stock relies in part on the research and reports that equity research analysts publish about us and our business. The price of our stock could decline if one or more equity research analysts downgrade our stock or if those analysts issue other inaccurate or unfavorable commentary or cease publishing reports about our business. If one or more of these analysts cease coverage of us or fail to publish reports on us regularly, demand for our securities could decrease, which might cause the price and trading volume of our securities to decline.

Anti-takeover provisions in our Certificate of Incorporation and Bylaws and under Delaware law could make an acquisition of us more difficult and may prevent attempts by our stockholders to replace or remove our current management.

Our Certificate of Incorporation and Bylaws and Section 203 of the Delaware General Corporation Law contain provisions that might enable our management to resist a takeover of our company. These provisions include the following:

- the division of our board of directors into three classes to be elected on a staggered basis, one class each year;
- a prohibition on actions by written consent of our stockholders;
- the elimination of the right of stockholders to call a special meeting of stockholders;
- a requirement that stockholders provide advance notice of any stockholder nominations of directors or any proposal of new business to be considered at any meeting of stockholders;
- a requirement that a supermajority vote be obtained to amend or repeal certain provisions of our certificate of incorporation; and
- the ability of our board of directors to issue preferred stock without stockholder approval.

In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which limits the ability of stockholders owning in excess of 15% of our outstanding voting stock to merge or combine with us. Although we believe these provisions collectively provide for an opportunity to obtain higher bids by requiring potential acquirors to negotiate with our board of directors, they would apply even if an offer were considered beneficial by some stockholders. In addition, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, which is responsible for appointing the members of our management.

We do not intend to pay dividends for the foreseeable future.

We do not currently anticipate paying any cash dividends on our common stock in the foreseeable future. We currently anticipate that we will retain all of our available cash, if any, for use as working capital, repayment of debt and for other general corporate purposes. Consequently, stockholders must rely on sales of their common stock after price appreciation as the only way to realize any future gains on their investment.

The accounting method for convertible debt securities that may be settled in cash, such as the 2019 Notes and 2047 Notes, could have a material effect on our reported financial results.

In May 2008, FASB, issued FASB Staff Position No. APB 14-1, Accounting for Convertible Debt Instruments That May Be Settled in Cash Upon Conversion (Including Partial Cash Settlement), which has subsequently been codified as Accounting Standards Codification 470-20, Debt with Conversion and Other Options, which we refer to as ASC 470-20. Under ASC 470-20, an entity must separately account for the liability and equity components of the convertible debt instruments (such as the Notes) that may be settled entirely or partially in cash upon conversion in a manner that reflects the issuer's economic interest cost. The effect of ASC 470-20 on the accounting for the Notes is that the equity component is required to be included in the additional paid-in capital section of stockholders' equity on our consolidated balance sheet and the value of the equity component would be treated as original issue discount for purposes of accounting for the debt component of the Notes. As a result, we will be required to record a greater amount of non-cash interest expense in current periods presented as a result of the amortization of the discounted carrying value of the Notes to their face amount over the term of the Notes. We will report lower net income in our financial results because ASC 470-20 will require interest to include both the current period's amortization of the debt discount and the instrument's coupon interest, which could adversely affect our reported or future financial results, the trading price of our common stock and the trading price of the Notes. In addition, under certain circumstances, convertible debt instruments (such as the Notes) that may be settled entirely or partly in cash are currently accounted for utilizing the treasury stock method, the effect of which is that any shares issuable upon conversion of the Notes are not included in the calculation of diluted earnings per share except to the extent that the conversion value of the Notes exceeds their principal amount. Under the treasury stock method, for diluted earnings per share purposes, the transaction is accounted for as if the number of shares of common stock that would be necessary to settle such excess, if we elected to settle such excess in shares, are issued. We cannot be sure that the accounting standards in the future will continue to permit the use of the treasury stock method. If we are unable to use the treasury stock method in accounting for the shares issuable upon conversion of the Notes, then our diluted earnings per share would be adversely affected.

Item 1B. *Unresolved Staff Comments*

None.

Item 2. *Properties*

Our headquarters are located in Houston, Texas, where we lease approximately 98,000 square feet of office space. In November 2018, we entered into a new lease for approximately 118,000 square feet of office space and we plan to relocate our headquarters to this new location in Houston, Texas. We also lease a number of smaller regional offices, including, but not limited to London, England; Toulouse, France; Sofia, Bulgaria; and San Francisco, California, which range from 3,000 to 23,000 square feet. We believe our existing facilities are sufficient for our current needs. We may add new facilities and expand our existing facilities as we add employees, and we believe that suitable additional or substitute space will be available as needed to accommodate any such expansion of our operations.

Item 3. *Legal Proceedings*

In the ordinary course of our business, we may be involved in various legal proceedings and claims. The outcomes of these matters are inherently unpredictable. We are not currently involved in any outstanding litigation that we believe, individually or in the aggregate, will have a material adverse effect on our business, results of operations or financial condition.

Item 4. *Mine Safety Disclosures*

Not applicable.

Part II

Item 5. *Market for Registrant's Common Equity, Related Stockholders Matters and Issuer Purchases of Equity Securities*

Market Information, Holders and Dividends

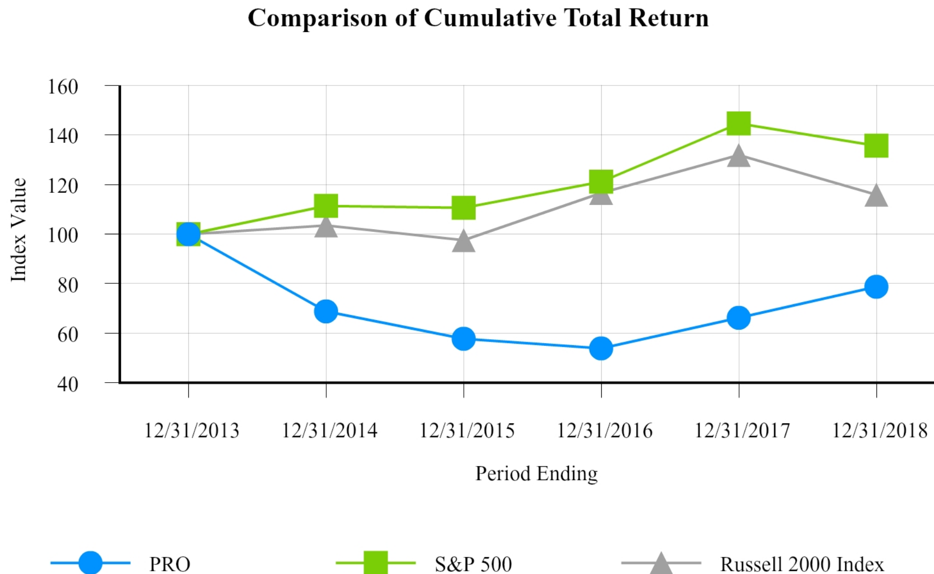
Our common stock is listed on the NYSE under the symbol "PRO". On February 11, 2019 there were 53 stockholders of record of our common stock. Since 2007, we have not declared or paid any dividends on our common stock. We currently expect to retain all remaining available funds and any future earnings for use in the operation and development of our business. Accordingly, we do not anticipate declaring or paying cash dividends on our common stock in the foreseeable future.

Performance Graph

The following shall not be deemed "soliciting material" or "filed" with the SEC, or incorporated by reference into any future filing under the Securities Act or Exchange Act, except to the extent that we specifically incorporate it by reference into such filing.

The graph below presents a five-year comparison of the relative investment performance of our common stock, the Standard & Poor's 500 Stock Index ("S&P 500"), and the Russell 2000 Index for the period commencing on December 31, 2013, and ending December 31, 2018. The graph is not meant to be an indication of our future performance.

Comparison of Cumulative Total Return



(1) The graph assumes that $100 was invested on December 31, 2013 in our common stock, the S&P 500 and the Russell 2000 Index and further assumes all dividends were reinvested. No cash dividends have been paid on our common stock for the periods presented above.

Company/Index	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018
PRO	$ 100.00	$ 68.87	$ 57.74	$ 53.93	$ 66.29	$ 78.70
S&P 500	$ 100.00	$ 111.39	$ 110.58	$ 121.13	$ 144.65	$ 135.63
Russell 2000 Index	$ 100.00	$ 103.53	$ 97.62	$ 116.63	$ 131.96	$ 115.89

Issuer Purchase of Equity Securities

On August 25, 2008, we announced that the Board of Directors authorized a stock repurchase program for the purchase of up to $15.0 million of our common stock. Under the board-approved repurchase program, share purchases may be made from time to time in the open market or through privately negotiated transactions depending on market conditions, share price, trading volume and other factors, and such purchases, if any, will be made in accordance with applicable insider trading and other securities laws and regulations. These repurchases may be commenced or suspended at any time or from time to time without prior notice.

During 2018, we did not make any purchases of our common stock under this program. As of December 31, 2018, $10.0 million remains available under the stock repurchase program.

Recent Sales of Unregistered Securities

There were no unregistered sales of equity securities for the year ended December 31, 2018.

Item 6. *Selected Financial Data*

The following selected consolidated financial data presented under the captions "Selected consolidated statement of operations data" and "Selected consolidated balance sheet data" are derived from our Consolidated Financial Statements. The selected consolidated financial data set forth below should be read in conjunction with, and is qualified by reference to, "Management's Discussion and Analysis of Financial Condition and Result of Operations" and our Consolidated Financial Statements and the related notes included elsewhere in this report. As presented in the table, amounts are in thousands (except per share data).

	Year Ended December 31,				
	2018	2017	2016	2015	2014
Selected consolidated statement of operations data:					
Total revenue	$ 197,024	$ 168,816	$ 153,276	$ 168,246	$ 185,829
Gross profit	119,845	100,250	89,923	106,836	127,743
Loss from operations	(49,215)	(64,943)	(65,398)	(55,497)	(22,407)
Net loss	(64,246)	(77,926)	(75,225)	(65,811)	(37,551)
Net loss attributable to common stockholders	$ (64,246)	$ (77,926)	$ (75,225)	$ (65,811)	$ (36,644)
Net loss attributable to common stockholders per share:					
Basic and diluted	(1.86)	(2.46)	(2.47)	(2.23)	(1.27)
Weighted average number of shares:					
Basic and diluted	34,465	31,627	30,395	29,578	28,915
Selected consolidated balance sheet data:					
Cash and cash equivalents, unrestricted	$ 295,476	$ 160,505	$ 118,039	$ 161,770	$ 161,019
Working capital	71,393	100,031	76,936	124,571	151,903
Total assets	436,967	288,683	227,654	263,211	300,125
Long-term obligations	107,318	233,637	134,327	121,443	112,740
Total stockholders' equity	$ 54,899	$ (46,979)	$ (3,394)	$ 55,414	$ 98,999

Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*

Overview

PROS provides AI solutions that power commerce in the digital economy by providing fast, frictionless and personalized buying experiences. PROS solutions enable dynamic buying experiences for both B2B and B2C companies across industry verticals. Companies can use our dynamic pricing optimization, sales effectiveness, revenue management and commerce solutions to assess their market environments in real time to deliver customized prices and offers. Our solutions enable buyers to move fluidly across our customers' direct sales, online, mobile and partner channels with personalized experiences regardless of which channel those customers choose. Our decades of data science and AI expertise are infused into our solutions and are designed to reduce time and complexity through actionable intelligence. We provide standard configurations of our software based on the industries we serve and offer professional services to configure these solutions to meet the specific needs of each customer.

Executive Summary

In 2018, we continued to achieve important milestones in our cloud transformation efforts which began in 2015, while continuing to enable our customers to leverage our AI-driven solutions to help them compete in modern commerce. In 2018, we surpassed our pre-cloud transition total revenue and approached free cash flow breakeven. Other notable items for the year included:

- Subscription revenue increased by 57% in 2018 over 2017, and accounted for 48%, 36% and 25% of total revenue for the years ended December 31, 2018, 2017 and 2016, respectively;
- Recurring revenue, which consists of maintenance and subscription revenue, accounted for 81% of our total revenue and grew by 23% in 2018 over 2017;
- Annual recurring revenue ("ARR") was $190.5 million on a constant currency basis ($189.3 on an as reported basis) as of December 31, 2018, up 19% (18% as reported) year-over-year; and
- Completed a follow-on public offering of 4,370,000 primary shares of common stock generating $142.0 million in net proceeds.

ARR is one of our key performance metrics to assess the health and trajectory of our overall business. ARR, a non-GAAP financial measure, is defined, as of a specific date, as contracted recurring revenue, including contracts with a future start date, together with annualized overage fees incurred above contracted minimum transactions, and excluding perpetual and term license agreements recognized as license revenue in accordance with GAAP. ARR should be viewed independently of revenue, deferred revenue and other GAAP measures, and is not intended to be combined with any of these items. We adjust our reported ARR on an annual basis to reflect any material exchange rate changes. Our constant currency ARR is based on currency rates set at the start of the year and held constant throughout the year. Total ARR on a constant currency basis as of December 31, 2018 was $190.5 million, up from $160.6 million as of December 31, 2017, an increase of 19%. Total ARR on an as reported basis as of December 31, 2018 was $189.3 million, or approximately $1.2 million lower than our constant currency ARR.

Cash provided by operating activities was $5.7 million for the year ended December 31, 2018, as compared to cash used in operating activities of $25.3 million for the year ended December 31, 2017. The improvement in net cash provided by operating activities was primarily due to the net impact of working capital changes and an improvement in our operating results. The change in the working capital was mainly attributable to higher recurring deferred revenue driven by our sales of subscription services.

Free cash flow is another key metric to assess the strength of our business. We define free cash flow, a non-GAAP financial measure, as net cash provided by (used in) operating activities minus capital expenditures (excluding expenditures for PROS new headquarters), purchases of other (non-acquisition-related) intangible assets and capitalized internal-use software development costs. We believe free cash flow may be useful to investors and other users of our financial information in evaluating the amount of cash generated by our business operations. Free cash flow used for the year ended December 31, 2018 was $0.5 million, compared to $29.5 million for the year ended December 31, 2017. The improvement was primarily attributable to a $31.0 million increase in net cash provided by operating activities primarily due to the net impact of working capital changes and an improvement in our operating results. The following is a reconciliation of free cash flow to the most comparable GAAP measure, net cash provided by (used in) operating activities:

	Year Ended December 31,	
	2018	2017
Net cash provided by (used in) operating activities	$ 5,703	$ (25,313)
Purchase of property and equipment	(1,475)	(1,286)
Purchase of intangible asset	(125)	(125)
Capitalized internal-use software development costs	(4,613)	(2,797)
Free cash flow	$ (510)	$ (29,521)

Financial Performance Summary

Recurring revenue, which is comprised of our subscription and maintenance revenue, accounted for 81% of our total revenue for the year ended December 31, 2018. Total recurring revenue was $160.0 million for the year ended December 31, 2018 as compared to $129.9 million for the year ended December 31, 2017, an increase of approximately $30.0 million, or 23%. This increase in recurring revenue was primarily attributable to a 57% increase in subscription revenue from new and existing customers.

Total revenue for the year ended December 31, 2018, increased approximately $28.2 million to $197.0 million from $168.8 million for the year ended December 31, 2017, representing a 17% increase. This increase in total revenue was primarily attributable to an increase of 57% in subscription revenue.

Total deferred revenue was $117.2 million as of December 31, 2018, as compared to $95.2 million as of December 31, 2017, an increase of $22.0 million, or 23%, primarily due to an increase in our subscription deferred revenue. Recurring deferred revenue, which includes both subscription and maintenance deferred revenue, was $100.0 million as of December 31, 2018 and increased 25% as compared to December 31, 2017.

Revenue by Geography

The following geographic information is presented for the years ended December 31, 2018, 2017 and 2016. PROS categorizes geographic revenues based on the location of our customers' headquarters.

	Year Ended December 31,					
	2018		2017		2016	
	Revenue	Percent	Revenue	Percent	Revenue	Percent
United States of America	$ 68,482	35%	$ 63,097	37%	$ 56,774	37%
Europe	60,947	31%	51,273	30%	44,655	29%
The rest of the world	67,595	34%	54,446	32%	51,847	34%
Total revenue	$ 197,024	100%	$ 168,816	100%	$ 153,276	100%

Secondary Offering

In August 2018, we completed a follow-on public offering of 3,800,000 shares of our common stock at an offering price of $34 per share (the "Secondary Offering"). Additionally, as part of the Secondary Offering the underwriters exercised, in full, their over-allotment option to purchase an additional 570,000 shares of our common stock at the offering price of $34 per share. The aggregate gross proceeds from the Secondary Offering, including the exercise of the over-allotment, were $148.6 million, and net proceeds received after underwriting fees and offering expenses were approximately $142.0 million.

Acquisitions

Acquisitions are an element of our long-term corporate strategy. On August 3, 2017, we acquired Vayant, a privately held company based in Sofia, Bulgaria, for total cash consideration, net of cash acquired, of approximately $34.1 million. We believe future acquisitions could strengthen our competitive position, enhance the products and services that we can offer to customers, expand our customer base, grow our revenues and increase our overall value.

Backlog

We have aligned our backlog definition with the concepts and requirements of Accounting Standards Update No. 2014-09, "*Revenue from Contracts with Customers (Topic 606)*". *See Note 10 of our Notes to Consolidated Financial Statements* for additional information regarding our performance obligations.

Factors Affecting Our Performance

Key factors and trends that have affected and we believe will continue to affect our operating results include:

- *Buying Preferences Driving Technology Adoption*. Buyers are increasingly demanding the same type of digital buying experience that they enjoy as consumers. For example, buyers increasingly prefer to buy online when they have already decided what to buy, and often prefer not to interact with a sales representative as their primary source of research. In response, we believe that businesses are increasingly looking to modernize their sales process to compete in digital commerce by adopting technologies which provide fast, frictionless, and personalized buying experiences across sales channels. We believe we are uniquely positioned to help power these buying experiences with our AI-powered solutions that enable buyers to move fluidly across our customers' direct sales, online, mobile and partner channels and have personalized experiences however they choose to buy.

- *Continued Investments*. We are focused on creating awareness for our solutions, expanding our customer base and growing our recurring revenues. While we incurred losses in 2018, we believe our market is large and underpenetrated and therefore we intend to continue investing to expand our ability to sell our and renew subscription offerings globally through investments in sales, marketing, customer success, cloud support, security, privacy, infrastructure and other long-term initiatives. We also plan to continue to invest in product development to enhance our existing technologies and develop new applications and technologies.

- *Cloud Transition*. In 2015, we began our transition to a cloud business to help accelerate adoption of our solutions and drive recurring revenue. Our cloud strategy has resulted in more sales of subscription-based solutions and very few on-premise license sales since we began our transition in 2015, and we expect this trend to continue. This increase in the sales of subscription-based solutions has resulted in an increase in our subscription revenue.

- *Cloud Migrations*. We expect that over time, additional sales of our cloud-based solutions will result in a decrease in our maintenance and support revenue, particularly as existing customers continue to migrate from our licensed solutions to our cloud solutions.

- *Sales Mix Impacts Subscription Revenue Recognition Timing*. The mix of subscription services and professional services can create revenue variability in given periods based on the nature and scope of services sold together. Professional services that are deemed to be distinct from the subscription services are accounted for as a separate performance obligation and revenue is recognized as the services are performed. If determined that the professional services are not considered distinct, the professional services and the subscription services are determined to be a single performance obligation and all revenue is recognized over the contractual term of the subscription beginning on the date that subscription services are made available to the customer, resulting in a deferral of revenue and revenue recognized over a shorter period of time, which would have a negative near-term financial impact.

Description of Key Components of our Operating Results

Revenue

We derive our revenues primarily from recurring revenue, which includes subscription and maintenance and support services. Recurring revenues accounted for 81% of our total revenue in 2018.

Subscription services. Subscription services revenue primarily consists of fees that give customers access to one or more of our cloud applications with routine customer support. Subscription services revenue is generally recognized ratably over the contractual term of the arrangement beginning on the date that our service is made available to the customer. Our subscription contracts do not provide customers with the right to take possession of the software supporting the applications and, as a result, are accounted for as service contracts. Our subscription contracts are generally two to five years in length, billed annually in advance, and are generally non-cancelable.

Maintenance and support. Maintenance and support revenue includes post-implementation customer support for our on-premise software and the right to unspecified software updates and enhancements. We recognize revenue from maintenance arrangements ratably over the period in which the services are provided. Our maintenance and support contracts are generally one year in length, billed annually in advance, and non-cancelable.

License. Licenses for on-premise software provide the customer with a right to use the software as it exists when made available to the customer. License revenue from distinct on-premises licenses is recognized at the point in time when the software is made available to the customer. For customer contracts that contain license and professional services that are not considered distinct, the license and professional services are determined to be a single performance obligation and recognized over time based upon our efforts to satisfy the performance obligation.

Professional services. Professional services revenue primarily consists of fees for deployment and configuration services, as well as training. Professional services revenues are generally recognized as the services are rendered for time and material contracts, or on a proportional performance basis for fixed price contracts. The majority of our professional services contracts are on a fixed fee basis. Training revenues are recognized as the services are rendered.

Significant judgments are required in determining whether professional services that are contained in customer subscription services contracts are considered distinct, including whether the professional services are capable of being distinct and whether they are separately identifiable in the customer contract. Professional services that are deemed to be distinct are accounted for as a separate performance obligation and revenue is recognized as the services are performed. If determined that the professional services are not considered distinct, the professional services and the subscription services are determined to be a single performance obligation and revenue is recognized over the contractual term of the subscription beginning on the date that subscription services are made available to the customer.

Cost of Revenue

Cost of subscription. Cost of subscription includes those costs related to supporting our subscription services, principally (a) personnel costs, which include our employees and employee benefits, third-party contractors and noncash share-based compensation expense, (b) expenses related to operating our cloud infrastructure, (c) amortization of capitalized software for internal use, and (d) an allocation of depreciation, amortization of intangibles, facilities and information technology ("IT") support costs, including data center costs, and other costs incurred in providing subscription services to our customers.

Cost of maintenance and support. Cost of maintenance and support consists largely of personnel related expenses and an allocation of depreciation, amortization of intangibles, facilities and IT support costs and other costs incurred in providing maintenance and support services to our customers.

Cost of license. Cost of license consists of third-party fees for our licensed software and an allocation of the amortization of intangibles.

Cost of services. Cost of services includes those costs related to professional services and implementation of our solutions, principally (a) personnel costs, which include our employees and employee benefits, third-party contractors and noncash share-based compensation expense, (b) billable and non-billable travel, (c) amortization of capitalized software for internal use, and (d) an allocation of depreciation, facilities and IT support costs and other costs incurred in providing professional services to our customers. Cost of providing professional services may vary from quarter to quarter depending on a number of factors, including the amount of professional services required to implement and configure our solutions.

Operating Expenses

Selling and marketing. Selling and marketing expenses principally consist of (a) personnel costs, which include our employees and employee benefits, third-party contractors, sales commissions related to selling and marketing personnel and noncash share-based compensation expense, (b) sales and marketing programs such as lead generation programs, company awareness programs, our annual Outperform conference, hosting and participation in industry trade shows, and other sales and marketing programs, (c) travel and other out-of-pocket expenses, (d) amortization expenses associated with acquired intangible assets, and (e) an allocation of depreciation, facilities and IT support costs and other costs.

General and administrative. General and administrative expenses consist primarily of expenditures for executive, accounting and finance, legal, IT and human resources support functions. General and administrative expenses principally consist of (a) personnel costs, which include our employees and employee benefits, third-party contractors and noncash share-based compensation expense, (b) travel and other out-of-pocket expenses, (c) accounting, legal and other professional fees, and (d) an allocation of depreciation, facilities and IT support costs and other costs.

Research and development. Research and development expenses principally consist of (a) personnel costs, which include our employees and employee benefits and third-party contractors, that are comprised of software developers, scientists and product

managers working on enhancements of existing solutions, the development of new solutions, scientific research, quality assurance and testing and noncash share-based compensation expense, net of capitalized internal-use software cost and associated amortization, and (b) an allocation of depreciation, facilities and IT support costs and other costs.

Results of Operations

Comparison of year ended December 31, 2018 with year ended December 31, 2017

Revenue:

	For the Year Ended December 31,					
	2018		2017			
(Dollars in thousands)	Amount	Percentage of total revenue	Amount	Percentage of total revenue	Variance $	Variance %
Subscription	$ 95,192	48%	$ 60,539	36%	$ 34,653	57 %
Maintenance and support	64,760	33%	69,408	41%	(4,648)	(7)%
Total subscription, maintenance and support	159,952	81%	129,947	77%	30,005	23 %
License	3,516	2%	5,562	3%	(2,046)	(37)%
Services	33,556	17%	33,307	20%	249	1 %
Total revenue	$ 197,024	100%	$ 168,816	100%	$ 28,208	17 %

Subscription revenue. Subscription revenue increased primarily due to an increase in the number of subscriptions purchased by new and existing customers for the year ended December 31, 2018. The increase in subscription revenue also included an increase of $6.2 million from our acquisition of Vayant for the year ended December 31, 2018, as compared to the same period in 2017. We continued to invest in customer programs and initiatives which helped keep our customer attrition rate fairly consistent as compared to the prior year. Our ability to maintain consistent customer attrition rates will play a role in our ability to continue to grow our subscription revenue.

Maintenance and support revenue. The decrease in maintenance and support revenue was principally a result of customer maintenance churn and converting existing maintenance contracts to the cloud during the year ended December 31, 2018. The decrease in 2018 was also impacted by the timing of certain cash collections from maintenance contracts that we only recognize on a cash basis during the same period in 2017. We expect maintenance revenue to continue to decline over time as we sell fewer licenses and related maintenance and support, sell more subscription services and migrate existing maintenance customers to our cloud solutions.

License revenue. License revenue decreased primarily due to a smaller number of customers licensing our software as a result of our strategy to sell fewer licenses and more subscription services and due to the completion of several large perpetual license projects related to agreements executed prior to our cloud transition, which were recognized over time based upon our efforts to satisfy the performance obligation.

Services revenue. Services revenue remained relatively consistent during the year ended December 31, 2018 as compared to the same period in 2017. Services revenue varies from period to period depending on different factors, including the level of professional services required to implement our solutions, the timing of services revenue recognition on certain subscription contracts and any additional professional services requested by our customers during a particular period.

Cost of revenue and gross profit.

(Dollars in thousands)	2018 Amount	2018 Percentage of total revenue	2017 Amount	2017 Percentage of total revenue	Variance $	Variance %
Cost of subscription	$ 35,368	18%	$ 27,858	17%	$ 7,510	27 %
Cost of maintenance and support	11,602	6%	11,693	7%	(91)	(1)%
Total cost of subscription, maintenance and support	46,970	24%	39,551	23%	7,419	19 %
Cost of license	251	—%	282	—%	(31)	(11)%
Cost of services	29,958	15%	28,733	17%	1,225	4 %
Total cost of revenue	$ 77,179	39%	$ 68,566	41%	$ 8,613	13 %
Gross profit	$ 119,845	61%	$ 100,250	59%	$ 19,595	20 %

Cost of subscription. Cost of subscription increased primarily as a result of an increase in infrastructure cost to support our current and anticipated subscription customer base, which included $4.3 million related to the acquisition of Vayant. Our subscription gross profit percentage was 63% and 54%, respectively, for the years ended December 31, 2018 and 2017.

Cost of maintenance and support. The cost of maintenance and support declined primarily due to a decrease in personnel cost mainly due to efficiencies in employee related costs. Maintenance and support gross profit percentages for the years ended December 31, 2018 and 2017, were 82% and 83%, respectively.

Cost of license. Cost of license consists of third-party fees for licensed software and remained relatively consistent year-over-year. License gross profit percentages for the years ended December 31, 2018 and 2017, were 93% and 95%, respectively.

Cost of services. The increase in cost of services was primarily attributable to a $1.5 million increase in personnel cost to staff our customer implementation engagements, partially offset by a $0.3 million decrease in travel, facility, IT-related and other costs. Services gross profit percentages for the years ended December 31, 2018 and 2017, were 11% and 14%, respectively. Services gross profit percentages vary period to period depending on different factors, including the level of professional services required to implement our solutions, our effective man-day rates and the utilization of our professional services personnel. We plan to add additional employees in our professional services organization to support our anticipated growth in the number of customers purchasing our subscription services.

Gross profit. The increase in overall gross profit for the year ended December 31, 2018 was principally attributable to an increase of 17% in total revenue as compared to the same period in 2017 mainly due to an increase in our subscription revenue.

Operating expenses:

(Dollars in thousands)	2018 Amount	2018 Percentage of total revenue	2017 Amount	2017 Percentage of total revenue	Variance $	Variance %
Selling and marketing	$ 72,006	37%	$ 68,116	40%	$ 3,890	6 %
General and administrative	41,302	21%	40,336	24%	966	2 %
Research and development	55,657	28%	56,021	33%	(364)	(1)%
Acquisition-related	95	—%	720	—%	(625)	(87)%
Total operating expenses	$ 169,060	86%	$ 165,193	98%	$ 3,867	2 %

Selling and marketing. The increase was primarily attributable to a $3.1 million increase in personnel cost mainly due to our continued investments in sales and marketing as we focus on adding new customers and increasing penetration within our existing customer base. In addition, there was an increase of $0.8 million in non-personnel cost, which included $0.9 million intangible amortization related to our acquisition of Vayant and an increase of $0.6 million for sales and marketing events, partially offset by a decrease of $0.7 million in travel expenses.

General and administrative expenses. The increase in general and administrative expenses was primarily attributable to a $0.5 million increase associated with the acquisition of Vayant, a $0.3 million increase in other personnel cost and a $0.2 million increase in bad debt expense.

Research and development expenses. The decrease in research and development expenses was mainly attributable to an increase in capitalized internal-use software cost of $2.1 million and a decrease of share-based compensation cost of $0.7 million. The decrease was partially offset by an increase of $2.0 million in personnel cost primarily due to higher headcount associated with the Vayant acquisition and a $0.4 million increase in facility and other non-personnel cost.

Acquisition-related expenses. Acquisition-related expenses were $0.1 million and $0.7 million, respectively, for the years ended December 31, 2018 and 2017, consisting primarily of advisory, legal, accounting and other professional fees, and retention bonuses related to our acquisition and integration of Vayant.

Other income, net:

	For the Year Ended December 31,					
	2018		2017			
(Dollars in thousands)	**Amount**	**Percentage of total revenue**	**Amount**	**Percentage of total revenue**	**Variance $**	**Variance %**
Convertible debt interest and amortization	$ (16,986)	(9)%	$ (13,218)	(8)%	$ (3,768)	29%
Other income, net	$ 2,155	1 %	$ 384	— %	$ 1,771	461%

Convertible debt interest and amortization. Convertible debt interest and amortization expense for each of the years ended December 31, 2018 and 2017 relates to coupon interest and amortization of debt discount and issuance costs attributable to our 2019 Notes and our 2047 Notes. The increase in convertible debt interest and amortization primarily relates to our 2047 Notes issued in June 2017.

Other income, net. The increase in other income, net during the year ended December 31, 2018, was primarily due to an increase in interest income partially offset by foreign currency exchange rate fluctuations during the periods.

Income tax provision:

	For the Year Ended December 31,			
(Dollars in thousands)	**2018**	**2017**	**Variance $**	**Variance %**
Effective tax rate	— %	— %	n/a	—%
Income tax provision	$ 200	$ 149	$ 51	34%

Our tax provision for the year ended December 31, 2018 primarily consisted of foreign taxes and state taxes not based on income offset by additional release of the valuation allowance related to the Vayant acquisition.

Our 2018 and 2017 effective tax rates had an unusual relationship to pretax loss from operations due to a valuation allowance on our net deferred tax assets. Our income tax provisions in 2018 and 2017 only included foreign taxes and state taxes not based on pre-tax income, resulting in an effective tax rate of 0% for both periods. The difference between the effective tax rates and the federal statutory rate of 34% for the years ended December 31, 2018 and 2017 was primarily due to the increase in our valuation allowance of $20.4 million and $5.9 million, respectively.

As of December 31, 2018 and 2017, we had a valuation allowance on our net deferred tax assets of $94.2 million and $74.2 million, respectively. The increase in the valuation allowance was principally attributable to an additional valuation allowance recorded on our current year's tax loss and our non-deductible interest of $17.0 million.

Comparison of year ended December 31, 2017 with year ended December 31, 2016

Revenue:

	For the Year Ended December 31,					
	2017		2016			
(Dollars in thousands)	Amount	Percentage of total revenue	Amount	Percentage of total revenue	Variance $	Variance %
Subscription	$ 60,539	36%	$ 38,158	25%	$ 22,381	59 %
Maintenance and support	69,408	41%	68,565	45%	843	1 %
Total subscription, maintenance and support	129,947	77%	106,723	70%	23,224	22 %
License	5,562	3%	11,814	8%	(6,252)	(53)%
Services	33,307	20%	34,739	23%	(1,432)	(4)%
Total revenue	$ 168,816	100%	$ 153,276	100%	$ 15,540	10 %

Subscription revenue. Subscription revenue increased primarily due to an increase in the number of subscriptions purchased by new and existing customers for the year ended December 31, 2017. The increase in subscription revenue also included $3.3 million from our acquisition of Vayant.

Maintenance and support. The modest increase in maintenance and support revenue was principally a result of the timing of certain cash collections.

License revenue. License revenue decreased primarily due to the completion of several large perpetual license projects related to agreements executed prior to our cloud transition, and our strategy to sell fewer licenses and more subscription services.

Services revenue. Services revenue declined primarily as a result of large customer implementations completed in 2016 and fewer similar large implementations completed in 2017. The decrease was also due to lower levels of professional services required on our new subscription sales as well as on certain subscription contracts where subscription and services revenue is deferred until the customer commences use of the subscription because the professional services were deemed to not have stand-alone value.

Cost of revenue and gross profit:

	For the Year Ended December 31,					
	2017		2016			
(Dollars in thousands)	Amount	Percentage of total revenue	Amount	Percentage of total revenue	Variance $	Variance %
Cost of subscription	$ 27,858	17%	$ 17,379	11%	$ 10,479	60 %
Cost of maintenance and support	11,693	7%	13,681	9%	(1,988)	(15)%
Total cost of subscription, maintenance and support	39,551	23%	31,060	20%	8,491	27 %
Cost of license	282	—%	246	—%	36	15 %
Cost of services	28,733	17%	32,047	21%	(3,314)	(10)%
Total cost of revenue	$ 68,566	41%	$ 63,353	41%	$ 5,213	8 %
Gross profit	$ 100,250	59%	$ 89,923	59%	$ 10,327	11 %

Cost of subscription. Cost of subscription increased primarily as a result of a $9.7 million increase in infrastructure cost to support our current and anticipated subscription customer base, and includes $2.5 million related to the acquisition of Vayant. The remaining increase of $0.8 million was related to personnel cost to support our subscription customer base, which included $0.2 million related to the Vayant acquisition. Our subscription gross profit percentage was 54% for each of the years ended December 31, 2017 and 2016.

Cost of maintenance and support. The cost of maintenance and support declined primarily due to a decrease in personnel cost mainly due to efficiencies in employee related costs. Maintenance and support gross profit percentages for the years ended December 31, 2017 and 2016, were 83% and 80%, respectively.

Cost of license. Cost of license consists of third-party fees for licensed software and remained relatively consistent year-over-year. License gross profit percentages for the years ended December 31, 2017 and 2016, were 95% and 98%, respectively.

Cost of services. The decrease in cost of services was generally commensurate with our decline in services revenue, and was primarily attributable to decreases in both personnel cost for our software implementations of $2.7 million, and in overhead expenses of $0.6 million. Services gross profit percentages for the years ended December 31, 2017 and 2016, were 14% and 8%, respectively.

Gross profit. The increase in overall gross profit for the year ended December 31, 2017 was principally attributable to an increase of 10% in total revenue as compared to the same period in 2016.

Operating expenses:

	For the Year Ended December 31,					
	2017		2016			
(Dollars in thousands)	Amount	Percentage of total revenue	Amount	Percentage of total revenue	Variance $	Variance %
Selling and marketing	$ 68,116	40%	$ 63,980	42%	$ 4,136	6%
General and administrative	40,336	24%	38,537	25%	1,799	5%
Research and development	56,021	33%	52,804	34%	3,217	6%
Acquisition-related	720	—%	—	—%	720	—%
Total operating expenses	$ 165,193	98%	$ 155,321	101%	$ 9,872	6%

Selling and marketing expenses. Our personnel cost increased by $2.1 million primarily due to our continued investments in sales and marketing as we focus on adding new customers and increasing penetration within our existing customer base. This was partially offset by a decrease of $1.2 million in severance expense associated with the change in employment status of our former Chief Operating Officer in July 2016. In addition, there was an increase of $3.2 million in non-personnel cost, which included $1.1 million intangible amortization related to our acquisition of Vayant, an increase of $0.8 million for sales and marketing events, an increase of $0.7 million in travel expenses, an increase of $0.5 million of recruiting expense, and an increase of $0.1 million for facility and other overhead expense.

General and administrative expenses. The increase in general and administrative expenses was primarily attributable to an increase of $2.1 million in noncash share-based compensation expense and $0.7 million of personnel and other general and administrative costs related to our acquisition of Vayant. This increase was partially offset by a decrease of $0.4 million in our use of contract labor, a decrease of $0.4 million in other overhead expenses, and a decrease of $0.2 million in bad debt expense.

Research and development expenses. Personnel cost increased $3.4 million, which included $1.0 million related to our acquisition of Vayant. Personnel cost increased primarily due to our continued investment in headcount to develop new and improve existing technologies, partially offset by an $1.5 million increase in capitalized internal-use software development costs. The remaining increase of $1.3 million was attributable to non-personnel cost and related overhead expenses associated with higher personnel cost.

Acquisition-related expenses. Acquisition-related expenses were $0.7 million for the year ended December 31, 2017 consisting primarily of advisory, legal, accounting and other professional fees, and retention bonuses related to our acquisition and integration of Vayant.

Other income (expense), net:

	For the Year Ended December 31,					
	2017		2016			
(Dollars in thousands)	Amount	Percentage of total revenue	Amount	Percentage of total revenue	Variance $	Variance %
Convertible debt interest and amortization	$ (13,218)	(8)%	$ (9,319)	(6)%	$ (3,899)	42 %
Other income (expense), net	$ 384	— %	$ (38)	— %	$ 422	(1,111)%

Convertible debt interest and amortization. Convertible debt interest and amortization expense for each of the years ended December 31, 2017 and 2016 relates to coupon interest and amortization of debt discount and issuance costs attributable to our 2019 Notes and our 2047 Notes. The increase in convertible debt interest and amortization primarily relates to our 2047 Notes issued in June 2017.

Other income (expense), net. Other income (expense), net increased during the year ended December 31, 2017, primarily due to the higher impact of movements in foreign currency exchange rates during the period.

Income tax provision:

	For the Year Ended December 31,			
(Dollars in thousands)	**2017**	**2016**	**Variance $**	**Variance %**
Effective tax rate	— %	(1)%	n/a	1 %
Income tax provision	$ 149	$ 470	$ (321)	(68)%

Income tax provision. Our tax provision for the year ended December 31, 2017 primarily consisted of foreign taxes and state taxes not based on income.

Our 2017 and 2016 effective tax rates had an unusual relationship to pretax loss from operations as a result of the presence of a valuation allowance on our net deferred tax assets. Our income tax provisions in 2017 and 2016 only included foreign taxes and state taxes not based on pre-tax income, resulting in an effective tax rate of 0% and (1)%, respectively. The difference between the effective tax rates and the federal statutory rate of 34% for the years ended December 31, 2017 and 2016 was primarily due to the increase in our valuation allowance of $5.9 million and $26.6 million, respectively.

On December 22, 2017, the U.S. enacted the Tax Cuts and Jobs Act. The Act significantly changes U.S. corporate income tax laws by, among other things, reducing the U.S. corporate income tax rate to 21% effective January 1, 2018 and creating a territorial tax system with a one-time mandatory repatriation tax on previously deferred foreign earnings of U.S. subsidiaries. *See Note 14 of our Notes to Consolidated Financial Statements for additional information.*

As of December 31, 2017 and 2016, we had a valuation allowance on our net deferred tax assets of $74.2 million and $69.0 million, respectively. The increase was principally attributed to an additional valuation allowance recorded on our current year's tax loss and increases in our noncash share-based compensation of $39.9 million partially offset by a downward adjustment to our valuation allowance related to global tax reform of $34.0 million.

Liquidity and Capital Resources

At December 31, 2018, we had $295.5 million of cash and cash equivalents and $71.4 million of working capital as compared to $160.5 million of cash and cash equivalents and $100.0 million of working capital at December 31, 2017.

Our principal sources of liquidity are our cash and cash equivalents, cash flows generated from operations and potential borrowings under our secured Credit Agreement ("Revolver") with the lenders party thereto and Wells Fargo Bank, National Association as agent for the lenders party thereto. We issued the 2019 Notes in December 2014, the 2047 Notes in June 2017 and completed our Secondary Offering in August 2018 to supplement our overall liquidity position. Our material drivers or variants of operating cash flow are net income (loss), noncash expenses (principally share-based compensation, intangible amortization and amortization of debt discount and issuance costs) and the timing of periodic invoicing and cash collections related to licenses, subscriptions and support for our software and related services. Our operating cash flows are also impacted by the timing of payments to our vendors and the payments of our other liabilities. We generally pay our vendors and service providers in accordance with the invoice terms and conditions.

We believe our existing cash and cash equivalents, including funds provided by the issuance of our Notes and our Secondary Offering, funds available under our Revolver and our current estimates of future operating cash flows, will provide adequate liquidity and capital resources to meet our operational requirements, anticipated capital expenditures and principal and coupon payments for our Notes for the next twelve months. Our future working capital requirements will depend on many factors, including the operations of our existing business, potential growth of our subscription services, future acquisitions we might undertake, and expansion into complementary businesses. If such need arises, we may raise additional funds through equity or debt financings.

The following table presents key components of our Consolidated Statements of Cash Flows for the years ended December 31, 2018, 2017 and 2016:

	For the Year Ended December 31,		
(Dollars in thousands)	**2018**	**2017**	**2016**
Net cash provided by (used in) operating activities	$ 5,703	$ (25,313)	$ (14,345)
Net cash used in investing activities	(6,258)	(22,346)	(25,404)
Net cash provided by (used in) financing activities	135,352	90,654	(3,684)
Cash and cash equivalents (beginning of period)	160,505	118,039	161,770
Cash and cash equivalents (end of period)	$ 295,476	$ 160,505	$ 118,039

Operating Activities

Cash provided by operating activities in 2018 was $5.7 million. The $31.0 million increase as compared to 2017 was primarily attributable to a $13.1 million increase in working capital and a $13.7 million improvement in our operating results. The working capital change was primarily attributable to higher recurring deferred revenue driven by our sales of subscription services.

Cash used in operating activities for 2017 was $25.3 million. The increase in the cash used in operating activities was primarily due to a $13.8 million decrease in working capital as a result of a decrease in accrued payroll and other employee benefits, and an increase in our prepaid assets for advance payments on our cloud infrastructure.

Cash used in operating activities for 2016 was $14.3 million. The increase in the cash used in operating activities was primarily due to the decrease in our operating results as a result of our transition to the cloud, as on-premise software sales were replaced with subscription services, and the net impact of working capital changes, primarily driven by reduced cash generated from accounts receivable, partially offset by an increase in cash associated with deferred revenue.

Investing Activities

Cash used in investing activities for 2018 was $6.3 million, which was primarily related to cash outflow of $4.6 million related to capitalized internal-use software development costs on our subscription service solutions, capital expenditures of $1.5 million and $0.1 million for an intangible (non-acquisition) asset.

Cash used in investing activities for 2017 was $22.3 million, which was primarily related to our acquisition of Vayant, partially offset by the cash inflow from the maturities of short-term investments. In addition, we incurred capitalized internal-use software development costs on our subscription service solutions of $2.8 million, capital expenditures of $1.3 million and we paid $0.1 million for an intangible (non-acquisition) asset.

Cash used in investing activities for 2016 was $25.4 million, which was primarily the result of the timing of purchases and maturities of short-term investments and capital expenditures of $7.2 million. During 2016, we also paid $2.0 million for a cost method investment, paid $1.6 million for an intangible (non-acquisition) asset and incurred capitalized internal-use software development costs on our subscription service solutions of $1.0 million.

Financing Activities

Cash provided by financing activities for 2018 was $135.4 million, which was attributable to the proceeds of $142.0 million from our Secondary Offering, proceeds from the exercise of employee stock plans and stock options of $1.7 million and $1.1 million, respectively, partially offset by a payment of $9.4 million for tax withholdings on vesting of employee share-based awards and a $0.1 million payment of notes payable.

Cash provided by financing activities for 2017 was $90.7 million, which was attributable to the proceeds of $93.5 million from the issuance of our 2047 Notes, proceeds from the exercise of stock options and employee stock plans of $6.3 million and $1.5 million, respectively, partially offset by a payment of $7.4 million for tax withholdings on vesting of employee share-based awards, a $3.0 million payment of debt issuance cost on our 2047 Notes, a payment of $0.2 million in debt issuance costs on the Revolver renewal and a payment of notes payable of $0.2 million.

Cash used in financing activities for 2016 was $3.7 million, which was attributable to tax withholdings on vesting of employee share-based awards of $5.5 million and a payment of notes payable of $0.2 million, partially offset by the proceeds from employee stock plans and the exercises of stock options of $2.0 million.

Stock Repurchases

In August 2008, our Board of Directors authorized a stock repurchase program for the purchase of up to $15.0 million of our common stock. No shares were repurchased during the years ended December 31, 2018, 2017 and 2016, respectively. As of December 31, 2018, $10.0 million remained available in the stock repurchase program. The repurchase of stock, if continued, will be funded primarily with existing cash balances. The timing of any repurchases will depend upon various factors including, but not limited to, market conditions, the market price of our common stock and management’s assessment of our liquidity and cash flow needs. *For additional information on the stock repurchase program see "Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities."*

Off-Balance Sheet Arrangements and Contractual Obligations

We do not have any relationships with unconsolidated entities or financial partnerships, such as variable interest entities, which would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes. Our principal commitments as of December 31, 2018 consist of obligations under operating leases and various service agreements. *See Note 17 of our Notes to Consolidated Financial Statements for additional information regarding our contractual commitments.*

Contractual Obligations

The following table sets forth our contractual obligations as of December 31, 2018:

	Payment due by period				
(Dollars in thousands)	**Total**	**Less than 1 year**	**1-3 years**	**3-5 years**	**More than 5 years**
Notes, including interest	$ 260,318	$ 148,750	$ 4,250	$ 1,068	$ 106,250
Operating leases	80,153	4,164	6,764	11,860	57,365
Purchase and contractual commitments	21,250	10,598	9,797	855	—
Total contractual obligations	$ 361,721	$ 163,512	$ 20,811	$ 13,783	$ 163,615

Notes

As of December 31, 2018, our outstanding notes consist of the 2019 Notes and the 2047 Notes. Interest on these notes is payable semi-annually, in arrears on June 1 and December 1 of each year. At December 31, 2018, our maximum commitment for interest payments under the Notes was $10.3 million for the remaining duration of the Notes.

Covenants

Our credit facility contains affirmative and negative covenants, including covenants which restrict our ability to, among other things, create liens, incur additional indebtedness and engage in certain other transactions, in each case subject to certain exclusions. In addition, our credit facility contains certain financial covenants which become effective in the event our liquidity falls below $50 million or upon the occurrence of an event of default. As of December 31, 2018, we were in compliance with all financial covenants in the credit facility.

Critical Accounting Policies and Estimates

Our consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, costs and expenses, and related disclosures. On an ongoing basis, we evaluate our estimates and assumptions. Actual results could differ from those estimates.

We believe the critical accounting policies listed below affect significant judgment and estimates used in the preparation of our Consolidated Financial Statements.

Revenue Recognition

We derive our revenues primarily from subscription services, professional services, the perpetual licensing of our software products and associated software maintenance and support services.

We determine revenue recognition through the following steps:

- Identification of the contract, or contracts, with a customer
- Identification of the performance obligations in the customer contract(s)
- Determination of the transaction price
- Allocation of the transaction price to each performance obligation in the customer contract(s)
- Recognition of revenue when, or as, we satisfy a performance obligation

Subscription services revenue

Subscription services primarily include a customer's access to one or more of our cloud applications and associated customer support. Subscription services revenue is generally recognized ratably over the contractual subscription term, beginning on the date that our subscription service is made available to the customer. Our subscription contracts do not provide customers with the right to take possession of the software supporting the service and, as a result, are accounted for as service contracts. Our subscription contracts are generally two to five years in length, billed annually in advance, and non-cancelable.

Maintenance and support revenue

Maintenance and support revenue includes post-implementation customer support for on-premise licenses and the right to unspecified software updates and enhancements. We recognize revenue from maintenance and support arrangements ratably over the period in which the services are provided. Our maintenance and support contracts are generally one year in length, billed annually in advance, and non-cancelable.

License revenue

Licenses to on-premise software provide the customer with a right to use, in the customer's environment, our software as it exists when made available to the customer. License revenue from customer contracts with distinct on-premises licenses is recognized at the point in time when the software is made available to the customer. For customer contracts that contain license and professional services that are not considered distinct, both the license and professional services are determined to be a single performance obligation and the revenue is recognized over time based upon our efforts to satisfy the performance obligation.

Professional services revenue

Professional services revenue primarily consists of fees for deployment and configuration services, as well as training services. Professional services revenues are generally recognized as the services are rendered for time and material contracts, or on a proportional performance basis for fixed fee contracts. The majority of our professional services contracts are on a fixed fee basis. Training revenues are recognized as the services are rendered.

Significant judgment is required in determining whether professional services contained in a customer subscription services contract are capable of being distinct and are separately identifiable in the customer contract. Professional services determined to be distinct are accounted for as a separate performance obligation and revenue is recognized as the services are performed. If the professional services are not determined to be distinct, the professional services and the subscription services are accounted for as a single performance obligation and revenue is recognized over the contractual term of the subscription beginning on the date that subscription services are made available to the customer.

Customer contracts with multiple performance obligations

A portion of our customer contracts contain multiple performance obligations. Significant judgment is required in determining whether multiple performance obligations contained in a single customer contract are capable of being distinct and are separately identifiable. An obligation determined to be distinct is accounted for as a separate performance obligation and revenue for that separate performance obligation is recognized when, or as, we satisfy the performance obligation. If obligations

are not determined to be distinct, those obligations are accounted for as a single, combined performance obligation. The transaction price is allocated to each performance obligation on a relative standalone selling price basis.

Allowance for Doubtful Accounts

In addition to our initial credit evaluations upon entering into a new customer contract, we regularly assess our ability to collect outstanding customer invoices. To do so, we make estimates of the collectability of accounts receivable. We provide an allowance for doubtful accounts when we determine that the collection of an outstanding customer receivable is not probable. We also analyze accounts receivable and historical bad debt experience, customer creditworthiness, changes in customer payment history and industry concentration on an aggregate basis. If any of these factors change, our estimates may also change, which could affect the level of our future provision for doubtful accounts.

Deferred Costs

Sales commissions earned by our sales representatives are considered incremental and recoverable costs of obtaining a customer contract. Sales commissions are deferred and amortized on a straight-line basis over the period of benefit, which we have determined to be five to eight years. We determined the period of benefit by taking into consideration our customer contracts, expected renewals of those customer contracts (as we currently do not pay an incremental sales commission), the our technology and other factors. We also defer amounts earned by employees other than sales representatives who earn incentive payments under compensation plans that are also tied to the value of customer contracts acquired.

Deferred Implementation Costs

We capitalize certain contract fulfillment costs, including personnel and other costs (such as hosting, employee salaries, benefits and payroll taxes), that are associated with arrangements where professional services are not distinct from other undelivered obligations in our customer contracts. We analyze implementation costs and capitalize those costs that are directly related to customer contracts, that are expected to be recoverable and that enhance the resources which will be used to satisfy the undelivered performance obligations in those contracts. Deferred implementation costs are amortized ratably over the remaining contract term once the revenue recognition criteria for the respective performance obligation has been met and revenue recognition commences.

Deferred Revenue

Deferred revenue primarily consists of customer invoicing in advance of revenues being recognized. We generally invoice our customers annually in advance for subscription services and maintenance and support services. Deferred revenue that is anticipated to be recognized during the next twelve-month period is recorded as current deferred revenue and the remaining portion is recorded as noncurrent.

Noncash Share-Based Compensation

We have two noncash share-based compensation plans, the 2007 equity incentive plan and the 2017 equity incentive plan which authorize the discretionary granting of various types of stock awards to key employees, officers, directors and consultants. Our 2007 equity incentive plan expired in March 2017, and in May 2017, we adopted our 2017 equity incentive plan which serves as the successor to our 2007 equity incentive plan. Under the 2017 equity incentive plan, we may provide noncash share-based compensation through the grant of: (i) restricted stock awards; (ii) restricted stock unit awards - time and market-based ("RSUs"); (iii) stock options; (iv) stock appreciation rights ("SARs"); (v) phantom stock; and (vi) performance awards, such as market stock units ("MSUs"). As of December 31, 2018, we have granted stock options, SARs, RSUs and MSUs.

Noncash share-based compensation expense is measured at the grant date based on the fair value of the award and is recognized as expense on a straight-line basis over the requisite service period, which is generally the vesting period.

The fair value of the RSUs (time-based) is based on the closing price of our stock on the date of grant. The fair value and the derived service period of the market-based RSUs is estimated on the date of grant using a Monte Carlo simulation model. The model requires the use of a number of assumptions including the expected volatility of our stock, our risk-free interest rate and expected dividends. Our expected volatility at the date of grant is based on our historical volatility over the performance period.

We estimate the fair value of stock options and SARs using the Black-Scholes option pricing model, which requires us to use significant judgment to make estimates regarding the expected life of the award, volatility of our stock price, the risk-free interest rate and the dividend yield of our stock over the life of the award. The expected life of the award is a historical weighted average of the expected lives of similar securities of comparable public companies. We estimate volatility using our historical

volatility. The risk-free interest rate assumption is based on observed interest rates appropriate for the terms of our awards. The dividend yield assumption is based on our expectation of paying no dividends.

As we issue stock options and SARs, we evaluate the assumptions used to value our stock option awards and SARs. If factors change and we employ different assumptions, noncash share-based compensation expense may differ significantly from what we have recorded in the past. If there are any modifications or cancellations of the underlying unvested securities, we may be required to accelerate, increase or cancel any remaining unearned noncash share-based compensation expense. Future noncash share-based compensation expense and unearned noncash share-based compensation will increase to the extent that we grant additional equity awards to employees.

We estimate the number of awards that will be forfeited and recognize expense only for those awards that ultimately are expected to vest. Significant judgment is required in determining the adjustment to noncash share-based compensation expense for estimated forfeitures. Noncash share-based compensation expense in a period could be impacted, favorably or unfavorably, by differences between forfeiture estimates and actual forfeitures.

MSUs are performance-based awards that cliff vest based on our shareholder return relative to the total shareholder return of the Russell 2000 Index ("Index") over the three year periods ending December 31, 2017, March 2, 2018, February 28, 2019, February 28, 2020, October 9, 2020 and December 31, 2020 ("Performance Period"), respectively. The MSUs vested on January 1, 2018 and March 3, 2018, and are scheduled to vest on March 1, 2019, March 1, 2020, October 9, 2020 and January10, 2021, respectively. The maximum number of shares issuable upon vesting is 200% of the MSUs initially granted based on the average price of our common stock relative to the Index during the Performance Period. We estimate the fair value of MSUs on the date of grant using a Monte Carlo simulation model. The determination of fair value of the MSUs is affected by our stock price and a number of assumptions including the expected volatilities of our stock and the Index, the risk-free interest rate and expected dividends. Our expected volatility at the date of grant was based on the historical volatilities of our stock and the Index over the Performance Period.

We record deferred tax assets for share-based compensation awards that will result in future deductions on our income tax returns, based on the amount of share-based compensation recognized at the statutory tax rate in the jurisdiction in which we will receive a tax deduction. Because the deferred tax assets we record are based upon the share-based compensation expenses in a particular jurisdiction, the aforementioned inputs that affect the fair values of our stock awards may also indirectly affect our income tax expense. In addition, differences between the deferred tax assets recognized for financial reporting purposes and the actual tax deduction reported on our income tax returns are recorded in our income tax (expense) income.

At December 31, 2018, we had $33.3 million of total unrecognized compensation costs related to noncash share-based compensation arrangements for stock options, SARs, RSUs and MSUs granted. These costs will be recognized over a weighted-average period of 2.4 years.

Accounting for Income Taxes

We estimate our income taxes based on the various jurisdictions where we conduct business and we use estimates in determining our provision for income taxes. We estimate separately our deferred tax assets, related valuation allowances, current tax liabilities and deferred tax liabilities. The calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax rules and the potential for future adjustment of our uncertain tax positions by the U.S. Internal Revenue Service or other taxing jurisdictions. We estimate our current tax liability and assess temporary differences that result from differing treatments of certain items for tax and accounting purposes. These differences result in deferred tax assets and liabilities, which we show on our balance sheet. At December 31, 2018, our deferred tax assets consisted primarily of temporary differences related to noncash share-based compensation, R&E tax credit carryforwards and net operating losses.

We review the realizability of our deferred tax asset on a quarterly basis, or whenever events or changes in circumstances indicate that a review is required. In determining the requirement for a valuation allowance, the historical and projected financial results of the legal entity or consolidated group recording the net deferred tax asset are considered, along with any other positive or negative evidence. Since future financial results may differ from previous estimates, periodic adjustments to our valuation allowances may be necessary. We continually perform an analysis related to the realizability of our deferred tax assets. As a result, and after considering tax planning initiatives and other positive and negative evidence, we determine that it is more likely than not that our net deferred tax assets will not be realized. During 2018, there was not sufficient positive evidence to outweigh the current and historic negative evidence to determine that it was more likely than not that our net deferred tax assets would not be realized. Therefore, we continue to have a valuation allowance against net deferred tax assets as of December 31, 2018.

We account for uncertain income tax positions recognized in our financial statements in accordance with the Income Tax Topic of the Accounting Standards Codification ("ASC"), issued by the FASB. This interpretation requires companies to use a prescribed model for assessing the financial recognition and measurement of all tax positions taken or expected to be taken in their tax returns. This guidance provides clarification on recognition, classification, interest and penalties, accounting in interim periods, disclosures and transition. *Please see Note 14 to the Consolidated Financial Statements for more information.*

Business Combinations

We record tangible and intangible assets acquired and liabilities assumed in business combinations under the purchase method of accounting. Amounts paid for each acquisition are allocated to the assets acquired and liabilities assumed based on their fair values at the date of acquisition. We then allocate the purchase price in excess of net tangible assets acquired to identifiable intangible assets based on detailed valuations that use information and assumptions provided by management. We allocate any excess purchase price over the fair value of the net tangible and intangible assets acquired and liabilities assumed to goodwill. If the fair value of the assets acquired exceeds our purchase price, the excess is recognized as a gain.

Significant management judgments and assumptions are required in determining the fair value of acquired assets and liabilities, particularly acquired intangible assets. The valuation of purchased intangible assets is based upon estimates of the future performance and cash flows from the acquired business. Each asset is measured at fair value from the perspective of a market participant.

If different assumptions are used, it could materially impact the purchase price allocation and adversely affect our results of operations, financial condition and cash flows.

Intangible Assets, Goodwill and Long-Lived Assets

When we acquire a business, a portion of the purchase consideration is typically allocated to acquired technology and other identifiable intangible assets, such as customer relationships. The excess of the purchase consideration over the net of the acquisition-date fair value of identifiable assets acquired and liabilities assumed is recorded as goodwill. We estimate fair value primarily utilizing the market approach, which calculates fair value based on the market values of comparable companies or comparable transactions. The amounts allocated to acquired technology and other intangible assets represent our estimates of their fair values at the acquisition date. We amortize our intangible assets that have finite lives using either the straight-line method or, if reliably determinable, the pattern in which the economic benefit of the asset is expected to be consumed utilizing expected undiscounted future cash flows. Amortization is recorded over the estimated useful lives ranging from two to eight years.

We review our intangible assets subject to amortization to determine if any adverse conditions exist or a change in circumstances has occurred that would indicate impairment or a change in the remaining useful life. If the carrying value of an asset exceeds its undiscounted cash flows, we will write down the carrying value of the intangible asset to its fair value in the period identified. In assessing recoverability, we must make assumptions regarding estimated future cash flows and discount rates. If these estimates or related assumptions change in the future, we may be required to record impairment charges. If the estimate of an intangible asset's remaining useful life is changed, we will amortize the remaining carrying value of the intangible asset prospectively over the revised remaining useful life.

We assess goodwill for impairment as of November 30 of each fiscal year, or more frequently if events or changes in circumstances indicate that the fair value of our reporting unit has been reduced below its carrying value. When conducting our annual goodwill impairment assessment, we use a three step process. The first step is to perform an optional qualitative evaluation as to whether it is more likely than not that the fair value of our reporting unit is less than its carrying value, using an assessment of relevant events and circumstances. In performing this assessment, we are required to make assumptions and judgments including but not limited to an evaluation of macroeconomic conditions as they relate to our business, industry and market trends, as well as the overall future financial performance of our reporting unit and future opportunities in the markets in which it operates. If we determine that it is not more likely than not that the fair value of our reporting unit is less than its carrying value, we are not required to perform any additional tests in assessing goodwill for impairment. However, if we conclude otherwise or elect not to perform the qualitative assessment, we perform a second step for our reporting unit, consisting of a quantitative assessment of goodwill impairment. This quantitative assessment requires us to estimate the fair value of our reporting unit and compare the estimated fair value to its respective carrying value (including goodwill) as of the date of the impairment test. The third step, employed for our reporting unit if it fails the second step, is used to measure the amount of any potential impairment and compares the implied fair value of our reporting unit with the carrying amount of goodwill.

Recent Accounting Pronouncements

See Note 2 - Summary of Significant Accounting Policies to the Consolidated Financial Statements included in this report, regarding the impact of certain recent accounting pronouncements on our Consolidated Financial Statements.

Item 7A. *Quantitative and Qualitative Disclosures About Market Risk*

Foreign Currency Exchange Risk

Our contracts are predominately denominated in U.S. dollars; however, we have contracts denominated in foreign currencies and therefore a portion of our revenue is subject to foreign currency risks. The primary market risk we face is from foreign currency exchange rate fluctuations. Our cash flows are subject to fluctuations due to changes in foreign currency exchange rates. The effect of an immediate 10% adverse change in exchange rates on foreign denominated receivables as of December 31, 2018, would have resulted in a $0.3 million loss. We are also exposed to foreign currency risk due to our operating subsidiaries in France, United Kingdom, Canada, Germany, Ireland, Australia, Bulgaria and United Arab Emirates. A hypothetical 10% adverse change in the value of the U.S. dollar in relation to the Euro, which is our single most significant foreign currency exposure, would have changed revenue for the year ended December 31, 2018 by approximately $0.9 million. However, due to the relatively low volume of payments made and received through our foreign subsidiaries, we do not believe that we have significant exposure to foreign currency exchange risks. Fluctuations in foreign currency exchange rates could harm our financial results in the future.

We currently do not use derivative financial instruments to mitigate foreign currency exchange risks. We continue to review this issue and may consider hedging certain foreign exchange risks through the use of currency futures or options in future years.

Exposure to Interest Rates

Our exposure to market risk for changes in interest rates relates to the variable interest rate on borrowings under our Revolver. As of December 31, 2018, we had no borrowings under the Revolver.

As of December 31, 2018, we had an outstanding principal amount of $143.8 million and $106.3 million, respectively, of 2019 Notes and 2047 Notes, which are fixed rate instruments. Therefore, our results of operations are not subject to fluctuations in interest rates. The fair value of the Notes may change when the market price of our stock fluctuates.

We believe that we do not have any material exposure to changes in the fair value as a result of changes in interest rates due to the short term nature of our cash equivalents.

Item 8. *Financial Statements and Supplementary Data*

The consolidated financial statements required to be filed are indexed on page F-1 and are incorporated herein by reference. *See Item 15(a)(1) and (2).*

Item 9. *Changes in and Disagreements with Accountants on Accounting and Financial Disclosure*

None.

Item 9A. *Controls and Procedures*

Evaluation of Disclosure Controls and Procedures

As of the end of the period covered by this report, we carried out an evaluation, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act. Based on that evaluation as of the period covered by this Annual Report on Form 10-K, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective to ensure that information we are required to disclose in reports that we file or submit under the Exchange Act (i) is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, and (ii) is accumulated and communicated to our management, including our Chief Executive Officer and our Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting that occurred during the most recent fiscal quarter that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act). Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. Our internal control over financial reporting is a framework that includes policies and procedures that: (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of our assets that could have a material effect on the financial statements.

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, has assessed the effectiveness of our internal control over financial reporting as of December 31, 2018, based on the criteria in Internal Control — Integrated Framework (2013) issued by COSO. Based on this evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2018 based upon the COSO criteria.

The effectiveness of our internal control over financial reporting as of December 31, 2018 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report, which is included herein.

Item 9B. *Other Information*

None.

Part III

Item 10. *Directors, Executive Officers and Corporate Governance*

The information required by this item is incorporated by reference from our proxy statement in connection with our 2019 Annual Meeting of Stockholders, which proxy statement will be filed with the SEC not later than 120 days after the close of our fiscal year ended December 31, 2018.

Item 11. *Executive Compensation*

The information required by this item is incorporated by reference from our proxy statement in connection with our 2019 Annual Meeting of Stockholders, which proxy statement will be filed with the SEC not later than 120 days after the close of our fiscal year ended December 31, 2018.

Item 12. *Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters*

The information required by this item is incorporated by reference from our proxy statement in connection with our 2019 Annual Meeting of Stockholders, which proxy statement will be filed with the SEC not later than 120 days after the close of our fiscal year ended December 31, 2018.

Item 13. *Certain Relationships, Related Transactions and Director Independence*

The information required by this item is incorporated by reference from our proxy statement in connection with our 2019 Annual Meeting of Stockholders, which proxy statement will be filed with the SEC not later than 120 days after the close of our fiscal year ended December 31, 2018.

Item 14. *Principal Accountant Fees and Services*

The information required by this item is incorporated by reference from our proxy statement in connection with our 2019 Annual Meeting of Stockholders, which proxy statement will be filed with the SEC not later than 120 days after the close of our fiscal year ended December 31, 2018.

Part IV

Item 15. ***Exhibits and Financial Statements Schedules***

(a)(1) Financial Statements

Reference is made to the Index to Financial Statements in the section entitled "Financial Statements and Supplementary Data" in Part II, Item 8 of this Annual Report on Form 10-K.

(a)(2) Financial Statement Schedules

Reference is made to Schedule II, Valuation and Qualifying Accounts, as indexed on page F-37.

Schedules not listed above have been omitted because they are not applicable or are not required or the information required to be set forth therein is included in the Consolidated Financial Statements or Notes thereto.

(a)(3) Exhibits

Exhibits are as set forth in the section entitled "Exhibit Index" which follows the section entitled "Signatures" in this Annual Report on Form 10-K. Exhibits which are incorporated herein by reference can be inspected and copied at the public reference rooms maintained by the SEC in Washington, D.C., New York, New York, and Chicago, Illinois, and are also available to the public from commercial document retrieval services and at the website maintained by the SEC at http://www.sec.gov.

PROS Holdings, Inc.
Index to the Consolidated Financial Statements

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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of PROS Holdings, Inc.:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of PROS Holdings, Inc. and its subsidiaries as of December 31, 2018 and 2017, and the related consolidated statements of comprehensive income (loss), cash flows, and stockholders' equity for each of the three years in the period ended December 31, 2018, including the related notes and financial statement schedule listed in the accompanying index (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for revenues from contracts with customers in 2018.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable

assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP

San Jose, California
February 15, 2019

We have served as the Company's auditor since 2002.

PROS Holdings, Inc.
Consolidated Balance Sheets
(In thousands, except share and per share amounts)

	December 31,	
	2018	2017
Assets:		
Current assets:		
Cash and cash equivalents	$ 295,476	$ 160,505
Trade and other receivables, net of allowance of $978 and $760, respectively	41,822	32,484
Deferred costs	4,089	3,137
Prepaid and other current assets	4,756	5,930
Total current assets	346,143	202,056
Property and equipment, net	14,676	14,007
Deferred costs, noncurrent	13,373	3,194
Intangibles, net	19,354	26,929
Goodwill	38,231	38,458
Other assets, noncurrent	5,190	4,039
Total assets	$ 436,967	$ 288,683
Liabilities and Stockholders' Equity:		
Current liabilities:		
Accounts payable and other liabilities	$ 6,934	$ 2,976
Accrued liabilities	9,506	6,733
Accrued payroll and other employee benefits	22,519	16,712
Deferred revenue	99,262	75,604
Current portion of convertible debt, net	136,529	—
Total current liabilities	274,750	102,025
Deferred revenue, noncurrent	17,903	19,591
Convertible debt, net, noncurrent	88,661	213,203
Other liabilities, noncurrent	754	843
Total liabilities	382,068	335,662
Commitments and contingencies (Note 17)		
Stockholders' equity:		
Preferred stock, $0.001 par value, 5,000,000 shares authorized none issued	—	—
Common stock, $0.001 par value, 75,000,000 shares authorized; 41,573,491 and 36,356,760 shares issued, respectively; 37,155,906 and 31,939,175 shares outstanding, respectively	42	36
Additional paid-in capital	364,877	207,924
Treasury stock, 4,417,585 common shares, at cost	(13,938)	(13,938)
Accumulated deficit	(292,708)	(238,185)
Accumulated other comprehensive loss	(3,374)	(2,816)
Total stockholders' equity	54,899	(46,979)
Total liabilities and stockholders' equity	$ 436,967	$ 288,683

The accompanying notes are an integral part of these consolidated financial statements.

PROS Holdings, Inc.
Consolidated Statements of Comprehensive Income (Loss)
(In thousands, except per share data)

	For the Year Ended December 31,		
	2018	2017	2016
Revenue:			
Subscription	$ 95,192	$ 60,539	$ 38,158
Maintenance and support	64,760	69,408	68,565
Total subscription, maintenance and support	159,952	129,947	106,723
License	3,516	5,562	11,814
Services	33,556	33,307	34,739
Total revenue	197,024	168,816	153,276
Cost of revenue:			
Subscription	35,368	27,858	17,379
Maintenance and support	11,602	11,693	13,681
Total cost of subscription, maintenance and support	46,970	39,551	31,060
License	251	282	246
Services	29,958	28,733	32,047
Total cost of revenue	77,179	68,566	63,353
Gross profit	119,845	100,250	89,923
Operating expenses:			
Selling and marketing	72,006	68,116	63,980
General and administrative	41,302	40,336	38,537
Research and development	55,657	56,021	52,804
Acquisition-related	95	720	—
Loss from operations	(49,215)	(64,943)	(65,398)
Convertible debt interest and amortization	(16,986)	(13,218)	(9,319)
Other income (expense), net	2,155	384	(38)
Loss before income tax provision	(64,046)	(77,777)	(74,755)
Income tax provision	200	149	470
Net loss	(64,246)	(77,926)	(75,225)
Net loss per share:			
Basic and diluted	(1.86)	(2.46)	(2.47)
Weighted average number of shares:			
Basic and diluted	34,465	31,627	30,395
Other comprehensive (loss) income, net of tax:			
Foreign currency translation adjustment	(558)	2,107	(594)
Unrealized gain on short-term investments	—	(13)	6
Other comprehensive loss, net of tax	(558)	2,094	(588)
Comprehensive (loss) income	(64,804)	(75,832)	(75,813)

The accompanying notes are an integral part of these consolidated financial statements.

PROS Holdings, Inc.
Consolidated Statements of Cash Flows
(In thousands)

	Year Ended December 31,		
	2018	2017	2016
Operating activities:			
Net loss	$ (64,246)	$ (77,926)	$ (75,225)
Adjustments to reconcile net loss to net cash provided by operating activities:			
Depreciation and amortization	13,055	10,531	9,507
Amortization of debt discount and issuance costs	12,027	9,264	6,439
Share-based compensation	21,453	22,796	20,466
Deferred income tax, net	(463)	(520)	40
Provision for doubtful accounts	212	—	174
Loss on disposal of assets	37	59	19
Changes in operating assets and liabilities:			
Accounts and unbilled receivables	(9,550)	2,022	5,671
Deferred costs	(4,086)	—	—
Prepaid expenses and other assets	87	(3,715)	(915)
Accounts payable and other liabilities	3,931	700	(2,905)
Accrued liabilities	2,764	(1,055)	2,801
Accrued payroll and other employee benefits	5,830	(2,344)	5,195
Deferred revenue	24,652	14,875	14,388
Net cash provided by (used in) operating activities	5,703	(25,313)	(14,345)
Investing activities:			
Purchase of property and equipment	(1,475)	(1,286)	(7,241)
Purchase of equity securities	(45)	—	(2,000)
Acquisition of Vayant, net of cash acquired	—	(34,130)	—
Capitalized internal-use software development costs	(4,613)	(2,797)	(1,048)
Purchase of intangible asset	(125)	(125)	(1,625)
Purchases in short-term investment	—	—	(154,990)
Proceeds from maturities of short-term investments	—	15,992	141,500
Net cash used in investing activities	(6,258)	(22,346)	(25,404)
Financing activities:			
Exercise of stock options	1,142	6,331	889
Proceeds from employee stock plans	1,720	1,535	1,090
Tax withholding related to net share settlement of stock awards	(9,410)	(7,375)	(5,467)
Proceeds from Secondary Offering, net	141,954	—	—
Payments of notes payable	(54)	(209)	(196)
Proceeds from issuance of convertible debt, net	—	93,500	—
Debt issuance costs related to convertible debt	—	(2,978)	—
Debt issuance costs related to revolver	—	(150)	—
Net cash provided by (used in) financing activities	135,352	90,654	(3,684)
Effect of foreign currency rates on cash	174	(529)	(298)
Net increase (decrease) in cash and cash equivalents	134,971	42,466	(43,731)
Cash and cash equivalents:			
Beginning of period	160,505	118,039	161,770
End of period	$ 295,476	$ 160,505	$ 118,039

PROS Holdings, Inc.
Consolidated Statements of Cash Flows
(In thousands)

Supplemental disclosure of cash flow information:			
Cash (paid) refund during period for:			
Taxes	$ (262)	$ (271)	$ 968
Interest	$ (5,252)	$ (4,013)	$ (3,182)
Noncash investing activities:			
Purchase of property and equipment accrued but not paid	$ 247	$ 38	$ 378

The accompanying notes are an integral part of these consolidated financial statements.

PROS Holdings, Inc.
Consolidated Statements of Stockholders' Equity
(In thousands, except share data)

	Common Stock			Treasury Stock		Accumulated (Deficit) Retained Earnings	Accumulated other comprehensive loss	Total Stockholders' Equity
	Shares	Amount	Additional Paid-In Capital	Shares	Amount			
Balance at December 31, 2015	29,738,976	$ 34	$ 158,674	4,417,585	$ (13,938)	$ (85,034)	$ (4,322)	$ 55,414
Exercise of stock options	96,870	—	889	—	—	—	—	889
Restricted and market stock net settlement	682,112	1	(5,467)	—	—	—	—	(5,466)
Proceeds from employee stock plans	65,693	—	1,090	—	—	—	—	1,090
Noncash share-based compensation	—	—	20,492	—	—	—	—	20,492
Other comprehensive loss	—	—	—	—	—	—	(588)	(588)
Net loss	—	—	—	—	—	(75,225)	—	(75,225)
Balance at December 31, 2016	30,583,651	$ 35	$ 175,678	4,417,585	$ (13,938)	$ (160,259)	$ (4,910)	$ (3,394)
Exercise of stock options	651,607	1	6,330	—	—	—	—	6,331
Restricted and market stock net settlement	611,708	—	(7,375)	—	—	—	—	(7,375)
Proceeds from employee stock plans	92,209	—	1,535	—	—	—	—	1,535
Equity component of the convertible notes issuance, net	—	—	8,846	—	—	—	—	8,846
Noncash share-based compensation	—	—	22,910	—	—	—	—	22,910
Other comprehensive loss	—	—	—	—	—	—	2,094	2,094
Net loss	—	—	—	—	—	(77,926)	—	(77,926)
Balance at December 31, 2017	31,939,175	$ 36	$ 207,924	4,417,585	$ (13,938)	$ (238,185)	$ (2,816)	$ (46,979)
Exercise of stock options	161,997	1	1,141	—	—	—	—	1,142
Restricted and market stock net settlement	609,188	1	(9,411)	—	—	—	—	(9,410)
Proceeds from employee stock plans	75,546	—	1,720	—	—	—	—	1,720
Proceeds from Secondary Offering, net	4,370,000	4	141,950	—	—	—	—	141,954
Noncash share-based compensation	—	—	21,553	—	—	—	—	21,553
Cumulative effect of adoption of section 606	—	—	—	—	—	9,723	—	9,723
Other comprehensive loss	—	—	—	—	—	—	(558)	(558)
Net loss	—	—	—	—	—	(64,246)	—	(64,246)
Balance at December 31, 2018	37,155,906	$ 42	$ 364,877	4,417,585	$ (13,938)	$ (292,708)	$ (3,374)	$ 54,899

The accompanying notes are an integral part of these consolidated financial statements.

PROS Holdings, Inc.
Notes to Consolidated Financial Statements

1. Organization and Nature of Operations

PROS Holdings, Inc., a Delaware corporation, through its operating subsidiaries (collectively, the "Company"), provides artificial intelligence ("AI") solutions that power commerce in the digital economy by providing fast, frictionless and personalized buying experiences. PROS solutions enable dynamic buying experiences for both business-to-business ("B2B") and business-to-consumer ("B2C") companies across industry verticals. Companies can use the Company's dynamic pricing optimization, sales effectiveness, revenue management and commerce solutions to assess their market environments in real time to deliver customized prices and offers. The Company's solutions enable buyers to move fluidly across its customers' direct sales, online, mobile and partner channels with personalized experiences regardless of which channel those customers choose. The Company's decades of data science and AI expertise are infused into its solutions and are designed to reduce time and complexity through actionable intelligence. The Company provides standard configurations of its software based on the industries it serves and offers professional services to configure these solutions to meet the specific needs of each customer.

2. Summary of Significant Accounting Policies

Principles of Consolidation and Basis of Presentation

These Consolidated Financial Statements include the accounts of the Company and its wholly-owned subsidiaries. All significant intercompany transactions and balances have been eliminated in consolidation. The Consolidated Financial Statements have been prepared in accordance with generally accepted accounting principles in the United States of America ("GAAP").

Changes in Accounting Policies

The Company has consistently applied the accounting policies described in this Note 2 to all periods presented in these Consolidated Financial Statements, except for the Company's adoption of certain accounting standards described in more detail under "*Recently adopted accounting pronouncements*" in this Note 2 below.

Dollar Amounts

The dollar amounts presented in the tabular data within these footnote disclosures are stated in thousands of dollars, except per share amounts, or as noted within the context of each footnote disclosure.

Use of Estimates

The preparation of these Consolidated Financial Statements in conformity with GAAP requires the Company to make certain estimates, judgments and assumptions that affect the reported amounts of assets, liabilities, revenues, costs and expenses during the reporting period. These estimates include, but are not limited to, unbilled receivables and deferred revenue, the determination of the period of benefit for deferred commissions, receivables, allowance for doubtful accounts, useful lives of assets, depreciation and amortization, the fair value of assets acquired and liabilities assumed for business combinations, income taxes and deferred tax asset valuation, valuation of stock options, other current liabilities and accrued liabilities. Actual results could differ from those estimates and such differences could be material to the Company's consolidated financial position and results of operations.

Cash and Cash Equivalents

The Company considers all highly liquid investments with an original maturity of three months or less at the time of purchase, or the ability to be settled in cash within a period of three months, to be cash equivalents, except for commercial paper which is classified as short-term investments, if any. The Company has a cash management program that provides for the investment of excess cash balances, primarily in short-term money market instruments.

Trade and Other Receivables

Trade and other receivables are primarily comprised of trade receivables, net of allowance for doubtful accounts, contract assets and unbilled receivables. The Company's standard billing terms require payment within thirty to sixty days from the date

of invoice. The carrying value of such receivables, net of the allowance for doubtful accounts, represents their estimated net realizable value. The Company estimates its allowance for doubtful accounts for specific trade receivable balances based on historical collection trends, the age of outstanding trade receivables, existing economic conditions, and any financial security associated with the receivables.

Contract assets represent conditional rights to consideration that have been recognized as revenue in advance of billing the customer. Unbilled receivables represent unconditional rights to consideration arising from contingent revenue, that have been recognized as revenue in advance of billing the customer.

Equity Investments

Investments in equity securities of privately held companies without readily determinable fair value, where the Company does not exercise significant influence over the investee, are recorded at cost, less impairment and adjusted for subsequent observable price changes obtained from orderly transactions for identical or similar investments issued by the same investee. Adjustments resulting from impairment, fair value, or observable price changes are accounted for in the Consolidated Statements of Comprehensive Income (Loss).

Financial Instruments

The carrying amount of the Company’s financial instruments, which include cash equivalents, receivables and accounts payable, and cost method investment approximates their fair values at December 31, 2018 and 2017. *For additional information on the Company’s fair value measurements, see Note 9 to the Consolidated Financial Statements.*

Prepaid Expenses and Other Assets

Prepaid expenses and other assets consist primarily of prepaid third-party cloud infrastructure costs and license fees, deferred project costs and prepaid income taxes.

Property and Equipment, Net

Property and equipment are recorded at cost, less accumulated depreciation. Maintenance, repairs and minor replacements are charged to expense as incurred. Significant renewals and betterments are capitalized. Depreciation on property and equipment, with the exception of leasehold improvements, is recorded using the straight-line method over the estimated useful lives of the assets. Depreciation on leasehold improvements is recorded using the shorter of the lease term or useful life. When property is retired or disposed of, the cost and related accumulated depreciation are removed from the accounts and any resulting gains or losses are reflected in the Consolidated Statements of Comprehensive Income (Loss) in the period of disposal.

Internal-Use Software

Costs incurred to develop internal-use software during the application development stage are capitalized, stated at cost, and depreciated using the straight-line method over the estimated useful lives of the assets. Application development stage costs generally include salaries and personnel costs and third-party contractor expenses associated with internal-use software development, configuration and coding. Capitalization of such costs begins when the preliminary project stage is complete and ceases at the point in which the project is substantially complete and is ready for its intended purpose. Capitalized internal-use software is included in property and equipment, net in the Consolidated Balance Sheets.

Deferred Costs

Sales commissions earned by the Company's sales representatives are considered incremental and recoverable costs of obtaining a customer contract. Sales commissions are deferred and amortized on a straight-line basis over the period of benefit, which the Company has determined to be five to eight years. The Company determined the period of benefit by taking into consideration its customer contracts, expected renewals of those customer contracts (as the Company currently does not pay an incremental sales commission), the Company's technology and other factors. The Company also defers amounts earned by employees other than sales representatives who earn incentive payments under compensation plans that are also tied to the value of customer contracts acquired.

Deferred Implementation Costs

The Company capitalizes certain contract fulfillment costs, including personnel and other costs (such as hosting, employee salaries, benefits and payroll taxes), that are associated with arrangements where professional services are not distinct from other undelivered obligations in its customer contracts. The Company analyzes implementation costs and capitalizes those costs that are directly related to customer contracts, that are expected to be recoverable, and that enhance the resources which will be used to satisfy the undelivered performance obligations in those contracts. Deferred implementation costs are amortized ratably over the remaining contract term once the revenue recognition criteria for the respective performance obligation has been met and revenue recognition commences. Deferred implementation costs are included in prepaid and other current assets and other assets, noncurrent in the Consolidated Balance Sheets. Amortization of deferred implementation costs is included in cost of subscription and cost of services revenues in the Consolidated Statements of Comprehensive Income (Loss).

Deferred Revenue

Deferred revenue primarily consists of customer invoicing in advance of revenues being recognized. The Company generally invoices its customers annually in advance for subscription services and maintenance and support services. Deferred revenue that is anticipated to be recognized during the next twelve-month period is recorded as current deferred revenue and the remaining portion is recorded as noncurrent deferred revenue.

Impairment of Long-Lived Assets

Long-lived assets are reviewed for impairment whenever an event or change in circumstances indicates that the carrying amount of an asset or group of assets may not be recoverable. The impairment review includes comparison of future cash flows expected to be generated by the asset or group of assets with the associated assets' carrying value. If the carrying value of the asset or group of assets exceeds its expected future cash flows (undiscounted and without interest charges), an impairment loss is recognized to the extent that the carrying amount of the asset exceeds its fair value. The Company recorded no impairment charges in the year ended December 31, 2018, 2017 and 2016.

Intangible Assets and Goodwill

Intangible assets that have finite lives are amortized over their useful lives and are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. During this review, the Company reevaluates the significant assumptions used in determining the original cost and estimated lives of long-lived assets. Although the assumptions may vary from asset to asset, they generally include operating results, changes in the use of the asset, cash flows and other indicators of value. Management then determines whether the remaining useful life continues to be appropriate or whether there has been an impairment of long-lived assets based primarily upon whether expected future undiscounted cash flows are sufficient to support the assets' recovery. If impairment exists, the Company would adjust the carrying value of the asset to fair value, generally determined by a discounted cash flow analysis.

Goodwill represents the excess of the purchase consideration over the net of the acquisition-date fair value of identifiable assets acquired, including identifiable intangible assets, and liabilities assumed in connection with business combinations. Goodwill is not amortized, but is assessed for impairment as of November 30 of each fiscal year, or more frequently if events or changes in circumstances indicate that the fair value of the Company's sole reporting unit has been reduced below its carrying value. When conducting the annual goodwill impairment assessment, a three step process is used. The first step is to perform an optional qualitative evaluation as to whether it is more likely than not that the fair value of the Company's sole reporting unit is less than its carrying value, using an assessment of relevant events and circumstances. In performing this assessment, the Company is required to make assumptions and judgments including but not limited to an evaluation of macroeconomic conditions as they relate to the business, industry and market trends, as well as the overall future financial performance of the reporting unit and future opportunities in the markets in which it operates. If it is determined that it is not more likely than not that the fair value of the reporting unit is less than its carrying value, no additional tests are required to be performed in assessing goodwill for impairment. However, if the Company concludes otherwise or elects not to perform the qualitative assessment, the Company performs a second step, consisting of a quantitative assessment of goodwill impairment. This quantitative assessment requires us to estimate the fair value of the reporting unit and compare the estimated fair value to its respective carrying value (including goodwill) as of the date of the impairment test. The third step, employed for the reporting unit failing the second step, is used to measure the amount of any potential impairment and compares the implied fair value of the reporting unit with the carrying amount of goodwill. Based on the results of the qualitative review of goodwill performed as of November 30, 2018, the Company did not identify any indicators of impairment. As such, the second and third steps described above were not necessary.

Research and Development

Research and development costs for software sold to customers are expensed as incurred. These costs include salaries and personnel costs, including employee benefits, third-party contractor expenses, software development tools, an allocation of facilities and depreciation expenses and other expenses in developing new solutions and upgrading and enhancing existing solutions.

Software Development Costs

Capitalization of software development costs for software to be sold, leased, or otherwise marketed begins upon the establishment of technological feasibility, which is generally the completion of a working prototype that has been certified as having no critical bugs and is a release candidate. Amortization begins once the software is ready for its intended use, generally based on the pattern in which the economic benefits will be consumed. To date, software development costs incurred between completion of a working prototype and general availability of the related product have not been material.

Treasury Stock

The Company is authorized to make treasury stock purchases in the open market pursuant to the share repurchase program, which was approved by its Board of Directors on August 28, 2008. The Company accounts for the purchase of treasury stock under the cost method. *For additional information on the Company's stock repurchase program, see Note 11 to the Consolidated Financial Statements.* There were no treasury stock repurchases for the years ended December 31, 2018, 2017 and 2016.

Revenue Recognition

The Company derives its revenues primarily from subscription services, professional services, perpetual licensing of its software products and associated software maintenance and support services.

The Company determines revenue recognition through the following steps:

- Identification of the contract, or contracts, with a customer;
- Identification of the performance obligations in the customer contract(s);
- Determination of the transaction price;
- Allocation of the transaction price to each performance obligation in the customer contract(s); and
- Recognition of revenue when, or as, the Company satisfies a performance obligation.

Subscription services revenue

Subscription services primarily include customer access to one or more of the Company's cloud applications and associated customer support. Subscription services revenue is generally recognized ratably over the contractual subscription term, beginning on the date that the Company's subscription service is made available to the customer. The Company's subscription contracts do not provide customers with the right to take possession of the software supporting the service and, as a result, are accounted for as service contracts. The Company's subscription contracts are generally two to five years in length, billed annually in advance, and non-cancelable.

Maintenance and support revenue

Maintenance and support revenue includes post-implementation customer support for on-premise licenses and the right to unspecified software updates and enhancements. The Company recognizes revenue from maintenance and support arrangements ratably over the period in which the services are provided. The Company's maintenance and support contracts are generally one to three years in length, billed annually in advance, and non-cancelable.

License revenue

Licenses to on-premise software provide the customer with a right to use, in the customer's environment, the Company's software as it exists when made available to the customer. License revenue from customer contracts with distinct on-premises licenses is recognized at the point in time when the software is made available to the customer. For customer contracts that contain license and professional services that are not considered distinct, both the license and professional services are determined to be

a single performance obligation and the revenue is recognized over time based upon the Company's efforts to satisfy the performance obligation.

Professional services revenue

Professional services revenue primarily consists of fees for deployment and configuration services, as well as training services. Professional services revenues are generally recognized as the services are rendered for time and material contracts, or on a proportional performance basis for fixed fee contracts. The majority of the Company's professional services contracts are on a fixed fee basis. Training revenues are recognized as the services are rendered.

Significant judgment is required in determining whether professional services contained in a customer subscription services contract are capable of being distinct and are separately identifiable in the customer contract. Professional services determined to be distinct are accounted for as a separate performance obligation and revenue is recognized as the services are performed. If the professional services are not determined to be distinct, the professional services and the subscription services are accounted for as a single performance obligation and revenue is recognized over the contractual term of the subscription beginning on the date that subscription services are made available to the customer.

Customer contracts with multiple performance obligations

A portion of the Company's customer contracts contain multiple performance obligations. Significant judgment is required in determining whether multiple performance obligations contained in a single customer contract are capable of being distinct and are separately identifiable. An obligation determined to be distinct is accounted for as a separate performance obligation and revenue for that separate performance obligation is recognized when, or as, the Company satisfies the performance obligation. If obligations are not determined to be distinct, those obligations are accounted for as a single, combined performance obligation. The transaction price is allocated to each performance obligation on a relative standalone selling price basis.

Disaggregation of revenue

The Company categorizes revenue from external customers by geographic area based on the location of the customer's headquarters. *For additional information regarding the Company's revenue by geography, see Note 18 to the Consolidated Financial Statements.*

Foreign Currency

The Company has contracts denominated in foreign currencies and therefore a portion of the Company's revenue is subject to foreign currency risks. Gains and losses from foreign currency transactions, such as those resulting from the settlement of receivables, are classified in other income (expense), net included in the accompanying Consolidated Statements of Comprehensive Income (Loss).

The functional currency of PROS France SAS ("PROS France") is the Euro. The financial statements of this subsidiary are translated into U.S. dollars using period-end rates of exchange for assets and liabilities, historical rates of exchange for equity, and average rates of exchange for the period for revenue and expenses. Translation gains (losses) are recorded in accumulated other comprehensive income (loss) as a component of stockholders' equity.

Noncash Share-Based Compensation

The Company has two noncash share-based compensation plans, the 2007 Equity Incentive Plan ("2007 Stock Plan") and the 2017 Equity Incentive Plan ("2017 Stock Plan"), which authorize the discretionary granting of various types of stock awards to key employees, officers, directors and consultants. The 2007 Stock Plan expired in March 2017. The 2017 Stock Plan serves as the successor to the 2007 Stock Plan and was adopted in May 2017. The Company may provide noncash share-based compensation through the grant of: (i) restricted stock awards; (ii) restricted stock unit awards - time and market-based ("RSUs"); (iii) stock options; (iv) stock appreciation rights ("SARs"); (v) phantom stock; and (vi) performance awards, such as market stock units ("MSUs").

To date, the Company has granted stock options, SARs, RSUs, time-based and market-based, and MSUs. The Company issues common stock from its pool of authorized stock upon exercise of stock options, settlement of SARs and MSUs or upon vesting of RSUs.

The following table presents the number of awards outstanding for each award type as of December 31, 2018 and 2017 (in thousands):

	Year Ended December 31,	
Award type	**2018**	**2017**
Stock options	—	135
Restricted stock units (time-based)	1,969	2,133
Restricted stock units (market-based)	215	345
Stock appreciation rights	287	356
Market stock units	419	387

Stock options. The Company did not grant stock options during 2018 and 2017. The fair value of each stock option was estimated on the date of grant using the Black-Scholes option pricing model.

Restricted stock units. The fair value of the RSUs (time-based and performance-based) is based on the closing price of the Company's stock on the date of grant and is amortized over the vesting period. RSUs include (i) time-based awards, and (ii) market-based awards in which the number of shares that vest are based upon attainment of target average per share closing price over a requisite trading period. Market-based RSUs vest if the average trailing closing price of the Company's common stock meets certain minimum performance hurdles for at least 105 calendar days prior to September 9, 2020, with 25% vesting at $27, an additional 25% vesting at $33, and the remaining 50% vesting at $41. The Company estimates the fair value and the derived service period of the market-based RSUs on the date of grant using a Monte Carlo simulation model. The model requires the use of a number of assumptions including the expected volatility of the Company's stock, its risk-free interest rate and expected dividends. The Company's expected volatility at the date of grant is based on the historical volatility of the Company over the performance period.

Stock appreciation rights. SARs will be settled in stock at the time of exercise and vest over four years from the date of grant. The Company used the Black-Scholes option pricing model to estimate the fair value of its SARs. The determination of the fair value of SARs utilizing the Black-Scholes model is affected by the Company's stock price and a number of assumptions, including expected volatility, expected life, delivery of risk-free interest rate and expected dividends. The Company estimates the expected volatility of common stock at the date of grant based on a combination of its historical volatility and the average volatility of comparable companies. The expected life of the SARs noncash share-based payment awards is a historical weighted average of the expected lives of similar securities of comparable public companies. The risk-free interest rate assumption is based on observed interest rates appropriate for the terms of the Company's awards. The dividend yield assumption is based on the Company's expectation of paying no dividends.

Market stock units. MSUs are performance-based awards that vest based upon the Company's relative shareholder return. The actual number of MSUs that will be eligible to vest is based on the total shareholder return of the Company relative to the total shareholder return of the Russell 2000 Index ("Index") over a three year period ending December 31, 2017, March 2, 2018, February 28, 2019, February 28, 2020, October 9, 2020 and December 31, 2020 ("Performance Period"), respectively. The MSUs vested on January 1, 2018 and March 3, 2018, and will vest on March 1, 2019, March 1, 2020, October 9, 2020 and January 10, 2021, respectively. The maximum number of shares issuable upon vesting is 200% of the MSUs initially granted based on the average price of the Company's common stock relative to the Index during the Performance Period. The Company estimates the fair value of MSUs on the date of grant using a Monte Carlo simulation model. The determination of fair value of the MSUs is affected by the Company's stock price and a number of assumptions including the expected volatility of the Company's stock and the Index, its risk-free interest rate and expected dividends. The Company's expected volatility at the date of grant was based on the historical volatilities of the Company and the Index over the Performance Period.

As the Company issues stock options and SARs, it evaluates the assumptions used to value its stock option awards and SARs. If factors change and the Company employs different assumptions, noncash share-based compensation expense may differ significantly from what has been recorded in the past. If there are any modifications or cancellations of the underlying unvested securities, the Company may be required to accelerate, increase or cancel any remaining unearned noncash share-based compensation expense. Future noncash share-based compensation expense and unearned noncash share-based compensation will increase to the extent that the Company grants additional equity awards to employees.

At December 31, 2018, there were an estimated $33.3 million of total unrecognized compensation costs related to noncash share-based compensation arrangements. These costs will be recognized over a weighted average period of 2.4 years. *For further discussion of the Company's noncash share-based compensation plans, see Note 13 to the Consolidated Financial Statements.*

Product Warranties

For software-as-a-service application subscriptions, the Company generally issues a product warranty for the subscription term, depending on the contract. For on-premise software licenses, the Company generally issues a product warranty for 90 days following the first use of the software in a production environment, depending on the contract. In the Company's experience, warranty costs have been insignificant.

Income Taxes

The Company uses the asset and liability method to account for income taxes, including recognition of deferred tax assets and liabilities for the anticipated future tax consequences attributable to differences between financial statement amounts and their respective tax basis. The Company reviews its deferred tax assets for recovery. A valuation allowance is established when the Company believes that it is more-likely than not that some portion of its deferred tax assets will not be realized. Changes in the valuation allowance from period to period are included in the Company's tax provision in the period of change.

The Company accounts for uncertain income tax positions recognized in an enterprise's financial statements in accordance with the income tax topic of the ASC issued by the FASB. This interpretation requires companies to use a prescribed model for assessing the financial recognition and measurement of all tax positions taken or expected to be taken in its tax returns. This guidance provides clarification on recognition, classification, interest and penalties, accounting in interim periods, disclosures and transition. The Company recognized accrued interest and penalties related to income taxes as a component of income tax expense. *For additional information regarding the Company's income taxes, see Note 14 to the Consolidated Financial Statements.*

Segment Reporting

The Company reports as one operating segment with the Chief Executive Officer ("CEO") acting as the Company's chief operating decision maker. The Company's CEO reviews financial information presented on a consolidated basis for purposes of allocating resources and evaluating financial performance. The Company has a single reporting unit, and there are no segment managers who are held accountable for operations, operating results or components below the consolidated unit level.

Earnings Per Share

The Company computes basic earnings (loss) per share by dividing net income (loss) attributable to common stockholders by the weighted average number of common shares outstanding. Diluted earnings (loss) per share is computed by dividing net income (loss) attributable to common stockholders by the weighted average number of common shares and dilutive potential common shares then outstanding. Diluted earnings per share reflect the assumed conversion of all dilutive securities, using the treasury stock method. Dilutive potential common shares consist of shares issuable upon the exercise of stock options, shares of unvested RSUs, and settlement of SARs. When the Company incurs a net loss, the effect of the Company's outstanding stock options, SARs, RSUs and MSUs are not included in the calculation of diluted earnings (loss) per share as the effect would be anti-dilutive. Accordingly, basic and diluted net loss per share are identical.

Recently Adopted Accounting Pronouncements

Topic 606

In May 2014, the FASB issued Accounting Standards Update ("ASU") No. 2014-09, "*Revenue from Contracts with Customers (Topic 606)*" ("Topic 606"). Topic 606 replaces the prior revenue recognition requirements in ASC 605, *"Revenue Recognition"* ("Topic 605" or "Prior Guidance") with a comprehensive revenue measurement and recognition standard, and expanded disclosure requirements. The new standard also provides guidance on the recognition of costs related to obtaining customer contracts. Topic 606 took effect in the first quarter of 2018, including interim periods within that reporting period. The Company adopted Topic 606 and applied Topic 606 to those contracts which were not complete as of January 1, 2018 using the modified retrospective method by recognizing the cumulative effect of initially applying the new standard as an adjustment to the opening balance of accumulated deficit, while prior period amounts are not adjusted and continue to be reported in accordance with the Company's historic accounting under the Prior Guidance.

The most significant impact of Topic 606 relates to the Company's accounting for arrangements that include term-based software licenses bundled with maintenance and support, the deferral of incremental costs of obtaining a contract with a customer (including the period of amortization of such costs), and additional disclosures. Under the Prior Guidance, revenue attributable to term-based software licenses was recognized ratably over the term of the arrangement when vendor-specific objective evidence ("VSOE") did not exist for the undelivered maintenance and support element because it was not sold separately. Topic 606 does

not require VSOE for undelivered elements to separate revenue for the delivered software licenses. Accordingly, under the new standard, the Company is required to recognize as revenue a portion of the arrangement fee upon delivery of the software license. As a result of applying Topic 606, the adjustment to the Company's opening balance sheet of the accumulated deficit for all revenue-related items was a decrease of approximately $2.7 million.

Topic 606 also requires the Company to capitalize and amortize the costs to obtain a contract over the expected period of customer benefit. The Company previously capitalized and amortized only direct and incremental commission costs over the term of the related contract. The expected period of customer benefit determined under Topic 606 is longer than the typical two to five year term of the Company's contracts as required under the Prior Guidance. As a result of applying Topic 606, the Company recorded a decrease to the opening balance sheet of the accumulated deficit for costs to obtain a contract of approximately $7.0 million.

Impact to previous reported results

The Company applied Topic 606 using the modified retrospective method by recognizing the cumulative effect of initially applying Topic 606 as an adjustment to the opening balance sheet at January 1, 2018. Therefore, the comparative information has not been adjusted and continues to be reported under Topic 605. The differences between amounts reported under Topic 606 and what would have been reported Topic 605 are detailed below:

	December 31, 2018		
(in thousands)	As Reported	Adjustments	Balances Under Topic 605
Balance Sheets			
Trade and other receivables, net of allowance	$ 41,822	$ (232)	$ 41,590
Deferred costs, current	4,089	(30)	4,059
Deferred costs, noncurrent	13,373	(8,278)	5,095
Deferred revenue, current	99,262	2,120	101,382
Deferred revenue, noncurrent	17,903	1,088	18,991
Accumulated deficit	$ (292,708)	$ (11,748)	$ (304,456)

	Year Ended December 31, 2018		
(in thousands, except per share amounts)	As Reported	Adjustments	Balances Under Topic 605
Income Statements			
Total revenue	$ 197,024	$ (761)	$ 196,263
Total cost of revenue	77,179	369	77,548
Selling and marketing	72,006	1,453	73,459
General and administrative	41,302	(318)	40,984
Research and development	55,657	(234)	55,423
Net loss	(64,246)	(2,031)	(66,277)
Basic and diluted loss per share	$ (1.86)	$ (0.06)	$ (1.92)

Topic 230

In August 2016, the FASB issued ASU 2016-15, "*Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments*" which is intended to reduce the diversity in practice on classification of certain transactions in the statement of cash flows. The Company adopted this standard on January 1, 2018 and the adoption had no impact on its Consolidated Financial Statements and related disclosures.

In November 2016, the FASB issued ASU 2016-18, "*Statement of Cash Flows (Topic 230): Restricted Cash (a consensus of the FASB Emerging Issues Task Force*" which is intended to define the presentation and related disclosures of restricted cash balances. The Company adopted this standard on January 1, 2018 and the adoption had no impact on its Consolidated Financial Statements and related disclosures.

Recent Accounting Pronouncements

In February 2016, the FASB issued ASU 2016-02, "*Leases (Topic 842)*" ("Topic 842"), which requires the lessee to recognize most leases on the balance sheet thereby resulting in the recognition of right-of-use ("ROU") lease assets and liabilities for those leases currently classified as operating leases. Lessor accounting remains largely unchanged from current guidance, however, Topic 842 provides improvements that are intended to align lessor accounting with the lessee model and with updated revenue recognition guidance. This standard is effective for interim and annual reporting periods beginning after December 15, 2018. The Company plans to adopt the standard as of January 1, 2019.

The Company will elect the package of practical expedients permitted under the transition guidance within the new Topic 842 standard, which among other things, allows the Company to carryforward the historical lease classification. The Company will also elect the hindsight practical expedient to determine the reasonably certain lease term for existing leases. The Company will make an accounting policy election to keep leases with an initial term of 12 months or less off of the balance sheet and will recognize those lease payments on a straight-line basis over the lease term. The adoption of the standard will have a material impact on the Company’s Consolidated Balance Sheet as a result of the increase in assets and liabilities from recognition of ROU assets and lease liabilities. The Company does not believe the standard will have a material impact on the its Consolidated Statement of Comprehensive Income (Loss).

In January 2017, the FASB issued ASU 2017-04, "*Intangibles - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment*" ("Topic 350"), which eliminates step two from the goodwill impairment test. Under the amendments in this standard, an entity should recognize an impairment charge for the amount by which the carrying amount of a reporting unit exceeds its fair value; however, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. The standard is effective for interim and annual reporting periods beginning after December 15, 2019; earlier adoption is permitted for goodwill impairment tests performed on testing dates after January 1, 2017. The Company is currently assessing the impact of Topic 350 on its Consolidated Financial Statements.

With the exception of the new standards discussed above, there have been no other recent accounting pronouncements or changes in accounting pronouncements during the year ended December 31, 2018, that are of significance or potential significance to the Company.

3. Business Combination

On August 3, 2017, the Company acquired 100% of the issued and outstanding stock of Vayant Travel Technologies, Inc. ("Vayant"), a privately held company based in Sofia, Bulgaria, for total cash consideration, net of cash acquired, of approximately $34.1 million. Vayant is a cloud software company that provides advanced shopping, merchandising and inspirational travel solutions. The acquisition of Vayant strengthens the Company's modern commerce solutions for the travel industry and positions it to deliver greater value to its travel customers through an end-to-end offer optimization solution designed to help travel companies deliver personalized offers and expanded choices that drive loyalty and growth.

For the year ended December 31, 2018, the Company included $9.5 million of revenue and $4.8 million of net loss related to Vayant in its Consolidated Statement of Comprehensive Income (Loss). During the years ended December 31, 2018 and 2017, the Company incurred acquisition-related costs of $0.1 million and $0.7 million, respectively, primarily related to advisory and legal fees, accounting and professional fees, and retention of key employees.

All of the assets acquired and the liabilities assumed in the transaction have been recognized at their acquisition date fair values at August 3, 2017.

The final allocation of the total purchase price for Vayant is as follows (in thousands):

Cash	$ 1,822
Other current assets	1,235
Noncurrent assets	86
Intangibles	18,600
Goodwill	17,052
Accounts payable and accrued liabilities	(1,668)
Deferred revenue	(600)
Deferred tax liability	(526)
Noncurrent liabilities	(49)
Net assets acquired	$ 35,952

The following are the identifiable intangible assets acquired (in thousands) and their respective useful lives:

	Amount	Useful Life (years)
Developed technology	$ 11,600	7
Customer relationships	7,000	5
Total	$ 18,600	

In performing the Vayant purchase price allocation, the Company considered, among other factors, its anticipated future use of the acquired assets, analysis of historical financial performance, and estimates of future cash flows from Vayant's products and services. The allocation resulted in acquired intangible assets of $18.6 million. The acquired intangible assets consisted of developed technology and customer relationships and were valued using the income approach in which the after-tax cash flows are discounted to present value. The cash flows are based on estimates used to price the transaction, and the discount rates applied were benchmarked with reference to the implied rate of return from the transaction model as well as the weighted average cost of capital. Additionally, the Company assumed certain liabilities in the Vayant acquisition, including deferred revenue to which a fair value of $0.6 million was ascribed using a cost-plus profit approach.

The Company made a preliminary determination that $0.5 million of net deferred tax liabilities were assumed on the Vayant acquisition date. During the year ended December 31, 2018, the Company made a final determination upon filing of the pre-acquisition period tax return that $0.8 million of net deferred tax liabilities were assumed on the Vayant acquisition date. The measurement period adjustment of $0.3 million to the deferred tax liabilities recorded during the year ended December 31, 2018 resulted in an increase to the goodwill, a release of additional valuation allowance and a benefit to the income tax provision.

The excess of the purchase price over the estimated amounts of net assets as of the effective date of the acquisition was allocated to goodwill. The factors contributing to the recognition of the amount of goodwill are based on several strategic and synergistic benefits that are expected to be realized from the Vayant acquisition. These benefits include the expectation that the combined company's complementary products will strengthen the Company's modern commerce solutions for the travel industry. The Company believes the combined company will benefit from a broader global presence and, with the Company's direct sales force and larger channel coverage, significant cross-selling opportunities. None of the goodwill is expected to be currently deductible for tax purposes. In accordance with applicable accounting standards, goodwill will not be amortized but instead will be tested for impairment at least annually, or more frequently if certain indicators are present. In the event that the management of the combined company determines that the value of goodwill has become impaired, the combined company will incur a charge for the amount of the impairment during the fiscal quarter in which the impairment occurs.

Pro Forma Financial Information

The unaudited financial information in the table below summarizes the combined results of operations of the Company and Vayant, on a pro forma basis, as though the Company had acquired Vayant on January 1, 2016. The pro forma information for all periods presented also includes the effect of business combination accounting resulting from the acquisition, including amortization charges from acquired intangible assets.

(in thousands, except earnings per share)	Year Ended December 31, 2017	Year Ended December 31, 2016
Total revenue	$ 173,866	$ 160,696
Net loss	(81,476)	(81,652)
Earnings per share - basic and diluted	$ (2.58)	$ (2.69)

4. Trade and Other Receivables, Net

Accounts receivable at December 31, 2018 and 2017, consists of the following (in thousands):

	December 31, 2018	December 31, 2017
Accounts receivable	$ 38,876	$ 30,689
Unbilled receivables and contract assets	3,924	2,555
Total receivables	42,800	33,244
Less: Allowance for doubtful accounts	(978)	(760)
Trade and other receivables, net	$ 41,822	$ 32,484

The bad debt expense reflected in general and administrative expenses in the accompanying Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2018, 2017 and 2016, totaled approximately $0.2 million, zero and $0.2 million, respectively.

5. Deferred Costs

Deferred costs, which primarily consist of deferred sales commissions, were $17.5 million and $6.3 million as of December 31, 2018 and December 31, 2017, respectively. Amortization expense for the deferred costs was $3.0 million and $2.5 million for the year ended December 31, 2018 and 2017, respectively. There was no impairment loss in relation to the costs capitalized for the periods presented.

6. Deferred Implementation Costs

Deferred implementation costs, which related to certain customer contract fulfillment costs, were $3.9 million and $2.2 million as of December 31, 2018 and December 31, 2017, respectively. Amortization expense for the deferred implementation costs was $0.6 million and $0.3 million for the year ended December 31, 2018 and 2017, respectively. Deferred implementation costs are included in prepaid and other current assets and other assets, noncurrent in the Consolidated Balance Sheets. Amortization of deferred implementation costs is included in cost of subscription and cost of services revenues in the Consolidated Statements of Comprehensive Income (Loss). There was no impairment loss in relation to the costs capitalized for the periods presented.

7. Property and Equipment, Net

Property and equipment, net as of December 31, 2018 and 2017 consists of the following:

	Estimated useful life	December 31, 2018	December 31, 2017
Furniture and fixtures	5-10 years	$ 3,208	$ 2,958
Computers and equipment	3-5 years	19,644	18,950
Software	3-6 years	5,432	5,430
Capitalized internal-use software development costs	3 years	8,775	4,102
Leasehold improvements	Shorter of lease term or useful life	5,587	5,650
Construction in progress		20	19
Property and equipment, gross		42,666	37,109
Less: Accumulated depreciation and amortization		(27,990)	(23,102)
Property and equipment, net		$ 14,676	$ 14,007

Depreciation and amortization was approximately $5.5 million, $5.4 million and $6.4 million for the years ended December 31, 2018, 2017 and 2016, respectively. During the years ended December 31, 2018, 2017 and 2016, the Company disposed of approximately $0.5 million, $1.8 million and $2.3 million, respectively, of fully depreciated assets. During the years ended December 31, 2018, 2017 and 2016, the Company recognized immaterial amounts of loss on disposal of certain non-fully depreciated assets, respectively. As of December 31, 2018 and 2017, the Company had approximately $14.0 million and $11.1 million, respectively, of fully depreciated assets in use.

During the years ended December 31, 2018 and 2017, the Company capitalized internal-use software development costs of approximately $4.7 million and $3.0 million, respectively, related to its subscription solutions. As of December 31, 2018 and 2017, $2.8 million and $1.0 million, respectively, of capitalized internal-use software development costs were subject to amortization and $1.1 million and $0.1 million, respectively, of capitalized internal-use software development costs were included in accumulated depreciation and amortization for the years ended December 31, 2018 and 2017.

No impairment was recorded for the years ended December 31, 2018, 2017 and 2016.

8. Goodwill and Intangible Assets

The change in the carrying amount of goodwill for the years ended December 31, 2018 and 2017, was as follows (in thousands):

Balance as of December 31, 2016	$	20,096
Goodwill acquired		17,052
Foreign currency translation adjustments		1,310
Balance as of December 31, 2017		38,458
Purchase accounting adjustments		252
Foreign currency translation adjustments		(479)
Balance as of December 31, 2018	$	38,231

The goodwill balance related to PROS France is denominated in Euro and the goodwill balance related to Vayant is denominated in the U.S. dollar.

Intangible assets consisted of the following as of December 31, (in thousands):

		December 31, 2018		
	Weighted average useful life (years)	Gross Carrying Amount	Accumulated Amortization*	Net Carrying Amount
Developed technology	7	$ 25,584	$ 13,890	$ 11,694
Maintenance relationships	8	3,485	2,488	997
Customer relationships	6	11,802	6,884	4,918
Acquired technology	2	1,925	180	1,745
Total		$ 42,796	$ 23,442	$ 19,354

*Cumulative foreign currency translation adjustments, reflecting movement in the currencies of the underlying entities, decreased total intangible assets by approximately $0.2 million as of December 31, 2018.

		December 31, 2017		
	Weighted average useful life (years)	Gross Carrying Amount	Accumulated Amortization*	Net Carrying Amount
Developed technology	7	$ 26,023	$ 9,560	$ 16,463
Maintenance relationships	8	3,565	2,207	1,358
Customer relationships	6	11,840	4,482	7,358
Acquired technology	3	1,750	—	1,750
Total		$ 43,178	$ 16,249	$ 26,929

*Cumulative foreign currency translation adjustments, reflecting movement in the currencies of the underlying entities, increased total intangible assets by approximately $0.7 million as of December 31, 2017.

Customer relationships are amortized over five or eight years.

In December 2016, the Company purchased a technology-based intangible asset in connection with the equity securities investment made during the same period. The Company estimates that the intangible will be amortized over approximately a 2-year period. During the second half of 2017 and 2018, the Company purchased an additional technology-based intangible asset which is expected to be amortized over approximately a 1-year period.

Intangible asset amortization expense for the years ended December 31, 2018, 2017 and 2016 was $7.6 million, $5.2 million and $3.0 million, respectively. As of December 31, 2018, the expected future amortization expense for the acquired intangible assets for each of the five succeeding years and thereafter was as follows (in thousands):

Year Ending December 31,	Amount
2019	$ 6,575
2020	5,791
2021	3,021
2022	1,921
2023	1,292
2024 and thereafter	754
Total amortization expense	$ 19,354

9. Fair Value Measurements

The Company adopted fair value measurements guidance for financial and nonfinancial assets and liabilities. The guidance defines fair value, establishes a framework for measuring fair value in GAAP and expands disclosures about fair value measurements.

The guidance defines fair value as the price that would be received to sell an asset, or paid to transfer a liability, in an orderly transaction between market participants. The guidance establishes a fair value hierarchy for valuation inputs that gives the highest priority to quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs. The fair value hierarchy is as follows:

Level 1: Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;

Level 2: Quoted prices for similar assets or liabilities in markets that are not active or inputs which are observable, either directly or indirectly, for substantially the full term of the asset or liability; and

Level 3: Prices or valuation techniques that require inputs that are both significant to the fair value measurement and unobservable (i.e., supported by little or no market activity).

A portion of the Company’s existing cash and cash equivalents are invested in short-term interest bearing obligations with original maturities less than 90 days, principally various types of money market funds. The Company does not enter into investments for trading or speculative purposes.

At December 31, 2018 and 2017, the Company had approximately $268.6 million and $131.4 million invested in treasury money market funds. The fair value of the treasury money market funds is determined based on quoted market prices, which represents level 1 in the fair value hierarchy as defined by Accounting Standard Codification ("ASC") 820, "*Fair Value Measurement and Disclosure*."

The fair value of the Company's Notes is classified in the level 2 hierarchy. *See Note 15 for further detail regarding the Notes.*

In December 2016, the Company purchased $2.0 million equity securities in a privately held company. This investment is accounted for at cost, less impairment and adjusted for subsequent observable price changes obtained from orderly transactions for identical or similar investments issued by the same investee. The Company estimates fair value of its equity investment considering available information such as pricing in recent rounds of financing, current cash positions, earnings and cash flow

forecasts, recent operational performance and any other readily available market data, which represents level 3 in the fair value hierarchy. An impairment charge to current earnings is recorded when the cost of the investment exceeds its fair value and this condition is determined to be other-than-temporary. As of December 31, 2018 and 2017, the Company determined there were no other-than-temporary impairments on its equity investment.

10. Deferred Revenue and Performance Obligations

Deferred Revenue

For the year ended December 31, 2018 and 2017, the Company recognized approximately $74.6 million and $65.6 million, respectively, in each case of revenue that was included in the deferred revenue balances at the beginning of the respective periods and primarily related to subscription services, maintenance and support, and other services.

Performance Obligations

As of December 31, 2018, the Company expects to recognize approximately $336.5 million of revenue from remaining performance obligations. The Company expects to recognize revenue on approximately $162.2 million of these performance obligations over the next 12 months, with the balance recognized thereafter.

11. Stockholders’ equity

Equity Offering

In August 2018, the Company completed a follow-on public offering of 3,800,000 shares of the Company's common stock at an offering price of $34 per share (the "Secondary Offering"). Additionally, as part of the Secondary Offering the underwriters exercised, in full, their over-allotment option to purchase an additional 570,000 shares of the Company's common stock at the offering price of $34 per share. The aggregate gross proceeds from the Secondary Offering, including the exercise of the over-allotment, were $148.6 million, and net proceeds received after underwriting fees and offering expenses were approximately $142.0 million.

Stock Repurchase

On August 25, 2008, the Company’s Board of Directors approved a stock repurchase program that authorized the Company to purchase up to $15.0 million of the Company’s outstanding shares of common stock. Under the board-approved repurchase program, share purchases may be made from time to time in the open market or through privately negotiated transactions depending on market conditions, share price, trading volume and other factors, and such purchases, if any, will be made in accordance with applicable insider trading and other securities laws and regulations. These repurchases may be commenced or suspended at any time or from time to time without prior notice.

The Company did not repurchase any shares under this plan for the years ended December 31, 2018 and 2017. The remaining amount available to purchase common stock under this plan was $10.0 million as of December 31, 2018.

12. Earnings Per Share

The following table sets forth the computation of basic and diluted earnings per share:

	For the Year Ended December 31,		
	2018	2017	2016
Numerator:			
Net loss	$ (64,246)	$ (77,926)	$ (75,225)
Denominator:			
Weighted average shares (basic)	34,465	31,627	30,395
Dilutive effect of stock options, restricted stock units and stock appreciation rights	—	—	—
Weighted average shares (diluted)	34,465	31,627	30,395
Basic earnings per share	$ (1.86)	$ (2.46)	$ (2.47)
Diluted earnings per share	$ (1.86)	$ (2.46)	$ (2.47)

Dilutive potential common shares consist of shares issuable upon the exercise of stock options, settlement of SARs, and the vesting of RSUs and MSUs. Potential common shares determined to be antidilutive and excluded from diluted weighted average shares outstanding were approximately 2.1 million, 2.0 million and 1.8 million for the years ended December 31, 2018, 2017 and 2016, respectively.

Since the Company has the intention and ability to settle the principal amount of its Notes (*see Note 15*) in cash, the treasury stock method is expected to be used for calculating any potential dilutive effect of the conversion spread on diluted net income per share, if applicable. The conversion spread will have a dilutive impact on diluted net income per share of common stock when the average market price of common stock for a given period exceeds the conversion price of $33.79 and $48.63 per share, for the 2019 Notes and 2047 Notes, respectively, and when the Company has net income.

13. Noncash Share-Based Compensation

Employee Noncash Share-based Compensation Plans

The Company has two noncash share-based compensation plans, the 2007 Stock Plan and the 2017 Stock Plan (collectively the "Stock Plans"). These plans authorize the discretionary granting of various types of stock awards to key employees, officers, directors and consultants. The discretionary issuance of stock awards generally contains vesting provisions ranging from one to four years.

2007 Stock Plan. The Company's 2007 Stock Plan expired in March 2017 for purposes of granting future equity awards. As of December 31, 2018, the Company had outstanding equity awards to acquire 1,908,003 shares of its common stock held by the Company's employees, directors and consultants under the 2007 Stock Plan (assuming MSU performance at 100% of the MSUs initially granted), and inclusive of zero stock options, 1,358,819 RSUs, 286,584 SARs and 262,600 MSUs.

2017 Stock Plan. The Company's 2017 Stock Plan provides for the issuance of awards to employees, officers, directors and certain other individuals providing services to the Company are eligible to receive awards. The 2017 Stock Plan reserved an aggregate amount of 2,500,000 shares for issuance. The Company may provide these incentives through the grant of: (i) restricted stock awards; (ii) RSUs; (iii) stock options; (iv) SARs; (v) phantom stock; and (vi) performance awards, such as MSUs.

As of December 31, 2018, the Company had outstanding equity awards to acquire 981,746 shares of its common stock held by the Company's employees, directors and consultants under the 2017 Stock Plan (assuming MSU performance at 100% of the MSUs initially granted), and inclusive of 825,178 RSUs and 156,568 MSUs. As of December 31, 2018, 1,347,240 shares remain available for grant under the 2017 Stock Plan. As of December 31, 2018, there were no options, SARs, restricted stock awards or phantom stock issued under the 2017 Stock Plan.

Noncash share-based compensation expense for all noncash share-based payment awards granted is determined based on the grant date fair value of the award. The Company recognizes compensation expense, net of estimated forfeitures, which represents noncash share-based awards expected to vest on a straight-line basis over the requisite service period of the award, which is generally the vesting term. Noncash share-based awards typically vest over four years. Stock options are generally granted for a ten-year term. The Company estimates forfeiture rates based on its historical experience for grant years where the majority

of the vesting terms have been satisfied. Changes in estimated forfeiture rates are recognized through a cumulative catch-up adjustment in the period of change and thus impact the amount of noncash share-based compensation expense to be recognized in future periods.

Noncash share-based compensation expense is allocated to expense categories on the Consolidated Statements of Comprehensive Income (Loss). The following table summarizes noncash share-based compensation expense, net of amounts capitalized, for the years ended December 31, 2018, 2017 and 2016 (in thousands).

	For the Year Ended December 31,		
	2018	2017	2016
Share-based compensation:			
Cost of revenue	$ 1,721	$ 1,971	$ 2,267
Operating expenses:			
Selling and marketing	4,396	4,348	3,824
General and administrative	10,717	11,163	9,040
Research and development	4,619	5,314	5,335
Total included in operating expenses	19,732	20,825	18,199
Total share-based compensation expense	$ 21,453	$ 22,796	$ 20,466

At December 31, 2018, there was an estimated $33.3 million of total unrecognized compensation costs related to noncash share-based compensation arrangements. These costs will be recognized over a weighted average period of 2.4 years.

Stock Options

The following table summarizes the Company's stock option activity for the year ended December 31, 2018 (number of shares and intrinsic value in thousands):

	Number of shares under option	Weighted average exercise price	Weighted average remaining contractual term (year)	Aggregate intrinsic value (1)
Outstanding, December 31, 2017	135	$ 12.52		
Granted	—	—		
Exercised	(135)	12.52		
Forfeited	—	—		
Expired	—	—		
Outstanding, December 31, 2018	—	$ —	0	$ —
Vested and exercisable at December 31, 2018	—	$ —	0	$ —

(1) The aggregate intrinsic value was calculated based on the positive difference between the estimated fair value of the Company's common stock on December 31, 2018 of $31.40 and the grant date fair value.

For the years ended December 31, 2018 and 2017, respectively, the Company did not grant any stock options. The total intrinsic value of stock options exercised for the years ended December 31, 2018, 2017 and 2016 was $2.5 million, $7.2 million and $1.0 million, respectively.

RSUs (time-based)

The Company has granted RSUs under the Stock Plans. Time-based RSUs granted to employees, directors and consultants vest in equal annual installments over a one to four year period from the grant date.

The following table summarizes the Company's unvested time-based RSUs as of December 31, 2018, and changes during the year then ended (number of shares and intrinsic value in thousands):

	Number of shares	Weighted average grant date fair value	Weighted average remaining contractual term (year)	Aggregate intrinsic value (1)
Unvested at December 31, 2017	2,133	$ 18.90		
Granted	829	27.61		
Vested	(792)	20.49		
Forfeited	(201)	20.45		
Unvested at December 31, 2018	1,969	$ 21.77	2.02	$ 61,827
Expected to vest at December 31, 2018	1,902	$ 21.65	2.00	$ 59,731

(1) The aggregate intrinsic value was calculated based on the fair value of the Company’s common stock on December 31, 2018 of $31.40.

The weighted average grant-date fair value of the time-based RSUs granted during the years ended December 31, 2018, 2017 and 2016 was $27.61, $21.63 and $11.69, respectively.

RSUs (market-based)

During 2016, under the 2007 Stock Plan, the Company granted 460,000 RSUs with a market-based vesting condition to certain executive employees. These market-based RSUs will vest if the average trailing closing price of the Company's Common Stock meets certain minimum performance hurdles for at least 105 calendar days prior to September 9, 2020, with 25% vesting at $27, an additional 25% vesting at $33, and the remaining 50% vesting at $41.

The following table summarizes the Company's unvested market-based RSUs as of December 31, 2018, and changes during the year then ended (number of shares and intrinsic value in thousands):

	Number of shares	Weighted average grant date fair value	Weighted average remaining contractual term (year)	Aggregate intrinsic value (1)
Unvested at December 31, 2017	345	$ 10.86		
Granted	—	—		
Vested	(115)	12.61		
Forfeited	(15)	9.98		
Unvested at December 31, 2018	215	$ 9.98	1.69	$ 6,751
Expected to vest at December 31, 2018	211	$ 9.98	1.69	$ 6,611

(1) The aggregate intrinsic value was calculated based on the fair value of the Company’s common stock on December 31, 2018 of $31.40.

The Company estimates the fair value and the derived service period of the market-based RSUs on the date of grant using a Monte Carlo simulation model. The model requires the use of a number of assumptions including the expected volatility of the Company's stock, its risk-free interest rate and expected dividends. The Company's expected volatility at the date of grant was based on the historical volatility of the Company over the performance period.

The assumptions used to value the market-based RSUs granted in 2016 were as follows:

	December 31, 2016
Volatility	44.98%
Risk-free interest rate	1.08%
Dividend yield	—

The fair value of the market-based RSUs is expensed over the derived service period for each separate vesting tranche. The derived service period for the vesting tranches of the market-based RSUs ranges between 1.01 and 1.98 years.

SARs

The Company has granted SARs under the 2007 Stock Plan. The SARs will be settled in stock at the time of exercise and vest four years from the date of grant subject to the recipient's continued employment with the Company. The number of shares issued upon the exercise of the SARs is calculated as the difference between the share price of the Company's stock on the date of exercise and the date of grant multiplied by the number of SARs divided by the share price on the exercise date.

The following table summarizes the Company's SARs activity for the year ended December 31, 2018 (number of shares and intrinsic value in thousands):

	Stock appreciation rights	Weighted average exercise price	Weighted average remaining contractual term (year)	Aggregate intrinsic value (1)
Outstanding, December 31, 2017	356	$ 10.97		
Granted	—	—		
Exercised	(69)	11.17		
Forfeited	—	—		
Expired	—	—		
Outstanding, December 31, 2018	287	$ 10.92	1.86	$ 5,869
Exercisable at December 31, 2018	287	$ 10.92	1.86	$ 5,869
Vested and expected to vest at December 31, 2018	287	$ 10.92	1.86	$ 5,869

(1) The aggregate intrinsic value was calculated based on the positive difference between the estimated fair value of the Company's common stock on December 31, 2018 of $31.40 and the exercise price of the underlying SARs.

The Company did not grant SARs in 2018, 2017 and 2016.

MSUs

In 2018, 2017 and 2016, the Company granted MSUs to certain executive employees under the Stock Plans. The MSUs are performance-based awards that vest based upon the Company's relative shareholder return. The actual number of MSUs that will be eligible to vest is based on the total shareholder return of the Company relative to the total shareholder return of the Index over the three year Performance Period. The MSUs vested on January 1, 2018 and March 3, 2018, and will vest on March 1, 2019, March 1, 2020, October 9, 2020 and January 10, 2021, respectively. The MSUs maximum number of shares issuable upon vesting is 200% of the MSUs initially granted.

The following table summarizes the Company's MSUs activity for the year ended December 31, 2018 (number of shares and intrinsic value in thousands):

	Number of unvested awards	Weighted average grant date fair value	Weighted average remaining contractual term (year)	Aggregate intrinsic value (1)
Unvested at December 31, 2017	387	$ 23.48		
Granted	117	38.18		
Exercised	(85)	31.83		
Forfeited	—	—		
Expired	—	—		
Unvested at December 31, 2018	419	$ 25.90	1.10	$ 13,162

(1) The aggregate intrinsic value was calculated based on the positive difference between the estimated fair value of the Company's common stock on December 31, 2018 of $31.40 and the grant date fair value of the underlying MSUs.

The Company estimates the fair value of MSUs on the date of grant using a Monte Carlo simulation model. The determination of fair value of the MSUs is affected by the Company's stock price and a number of assumptions including the expected volatilities of the Company's stock and the Index, its risk-free interest rate and expected dividends. The Company's expected volatility at the date of grant was based on the historical volatilities of the Company and the Index over the Performance

Period. The Company did not estimate a forfeiture rate for the MSUs due to the limited size, the vesting period and nature of the grantee population and the lack of history of granting this type of award.

Significant assumptions used in the Monte Carlo simulation model for MSUs granted during the years ended December 31, 2018, 2017 and 2016 are as follows:

	For the Year Ended December 31,		
	2018	2017	2016
Volatility	43.67%	45.38%	44.06%
Risk-free interest rate	2.12%	1.56%	1.04%
Expected option life in years	2.97	3.07	2.93
Dividend yield	—	—	—

The assumptions related to fiscal year 2017 are presented on a weighted average basis for the various awards granted throughout the period.

Employee Stock Purchase Plan

In June 2013, the Board of Directors authorized an Employee Stock Purchase Plan ("ESPP") which provides for eligible employees to purchase shares on an after-tax basis in an amount between 1% and 10% of their annual pay: (i) on June 30 of each year at a 5% discount of the fair market value of the Company's common stock on January 1 or June 30, whichever is lower, and (ii) on December 31 of each year at a 5% discount of the fair market value of the Company's common stock on July 1 or December 31, whichever is lower. An employee may not purchase more than $5,000 in either of the six-month measurement periods described above or more than $10,000 annually. In November 2015, the Board of Directors amended the ESPP plan to increase the discount to 15% of the fair market value of the Company's common stock effective January 1, 2016. The amendment did not change the accounting treatment of the ESPP plan. During the year ended December 31, 2018, the Company issued 75,546 shares under the ESPP. As of December 31, 2018, 215,555 shares remain authorized and available for issuance under the ESPP. As of December 31, 2018, the Company held approximately $0.9 million on behalf of employees for future purchases under the ESPP and this amount was recorded in accrued liabilities in the Company's Consolidated Balance Sheet.

14. Income Taxes

The income tax provision consisted of the following for the years ended December 31, 2018, 2017 and 2016 (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Current:			
Federal	$ (252)	$ —	$ 19
State and Foreign	663	669	402
	411	669	421
Deferred:			
Federal	(211)	(488)	51
State	—	(32)	(2)
Income tax provision	$ 200	$ 149	$ 470

The differences between the effective tax rates reflected in the total provision for income taxes and the U.S. federal statutory rate of 34% for the years ended December 31, 2018, 2017 and 2016, respectively, were as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Provision at the U.S. federal statutory rate	$ (13,464)	$ (26,443)	$ (25,338)
Increase (decrease) resulting from:			
State income taxes, net of federal taxes	46	18	3
Nondeductible expenses	414	373	457
Acquisition-related expense	—	245	(4)
Statutory to GAAP income adjustment	(221)	(77)	(274)
Foreign Tax Expense	—	—	2
Noncash share-based compensation	(394)	(3,405)	604
Other	(153)	—	49
Incremental benefits for tax credits	(1,656)	(1,711)	(1,663)
Change in tax rate/income subject to lower tax rates	(1,824)	2,625	—
Change related to prior tax years	(4,800)	(2,331)	(856)
Change related to US tax reform	1,835	31,359	—
Change in valuation allowance	20,417	(504)	27,490
Income tax provision	$ 200	$ 149	$ 470

The Company’s effective tax rate was 0%, 0% and (1)% for the years ended December 31, 2018, 2017 and 2016, respectively. During the year ended December 31, 2018, the Company's effective tax rate was impacted primarily by changes in valuation allowance, foreign income taxes and other nondeductible expenses.

On December 22, 2017, the Tax Cuts and Jobs Act ("TCJA") was signed into law in the U.S. and included a broad range of tax reform proposals affecting businesses, including corporate tax rates, business deductions, and international tax provisions. The Tax Cuts and Jobs Act reduced the U.S. corporate income tax rate to 21% effective January 1, 2018.

The TCJA imposes a repatriation tax on any accumulated offshore earnings and profit. As of December 31, 2018, the Company has reviewed the offshore earnings and profits and has no additional earnings to repatriate and has provided for no tax. . Based on the current accumulated loss in the foreign jurisdictions, the Company has no global intangible low-taxed income (“GILTI”) to report for December 31, 2018. The Company is under the revenue requirements to be subject to the base erosion and avoidance tax (“BEAT”), however, it has reviewed the transactions with foreign affiliates and does not believe there are payments that qualify under BEAT. The TCJA created the foreign derived intangible income (“FDII”) which allows for a deduction for certain types of foreign income. However, since the Company is in a current net operating loss position, no deduction is allowable for the current year.

In December 2017, the SEC staff issued Staff Accounting Bulletin No. 118, Income Tax Accounting Implications of the Tax Cuts and Jobs Act (SAB 118), which allowed the Company to record provisional amounts during a measurement period not to extend beyond one year of the enactment date. As a result, the Company previously provided a provisional estimate of the effect of the TCJA in the Consolidated Financial Statements. Upon filing of the 2017 income tax returns in the fourth quarter of 2018, the Company completed its analysis to determine the final effect of the TCJA on year end 2017. The Company recorded a final SAB 118 adjustment on the remeasurement of deferred taxes of approximately $1.8 million. This amount was fully offset by a change in valuation allowance.

The tax effects of temporary differences and other tax attributes that give rise to significant portions of the deferred tax assets and liabilities as of December 31, 2018 and 2017 are as follows (in thousands):

	Year Ended December 31,	
	2018	2017
Noncurrent deferred taxes:		
Property and equipment	$ (528)	$ (847)
Noncash share-based compensation	6,922	6,373
Disallowed interest expense	4,574	—
Capitalized software	(1,533)	(1,397)
Amortization	(4,110)	(5,096)
R&E tax credit carryforwards	10,603	9,340
Deferred revenue	2,680	2,996
Federal Net Operating Losses ("NOLs")	58,601	46,907
State NOLs	2,319	1,050
State Credits	2,005	1,613
Foreign NOLs	8,945	9,057
Foreign tax credit carryforward	2,462	2,521
Other	1,291	1,425
Total noncurrent deferred tax assets	94,231	73,942
Less: Valuation allowance	(94,231)	(74,153)
Total noncurrent deferred tax liability	—	(211)
Total net deferred tax liability	$ —	$ (211)

The net deferred tax liability is classified as other liabilities, noncurrent in the accompanying Consolidated Balance Sheets.

The Company has federal and state net operating loss carryforwards related to current and prior year operations and acquisitions. Internal Revenue Code Section 382 ("Section 382") places certain limitations on the annual amount of U.S. net operating loss carryforwards that can be utilized when a change of ownership occurs. The Company believes the past acquisitions were changes in ownership pursuant to Section 382, subjecting federal acquired net operating losses to limitations. According to French tax law the net operating loss carryforwards are not subject to ownership change limitations.

The U.S. federal and foreign net operating loss and R&E tax credit carryforward amount available to be used in future periods, taking into account the Section 382 annual limitation and current year losses, is approximately $310.0 million and $12.6 million, respectively. The Company's net operating losses will begin to expire in 2024, R&E credits will begin to expire in 2031, and foreign tax credits will begin to expire in 2022. The U.S. net operating losses generated in 2018 have no expiration. Also included in net operating losses are $35.8 million of French carryforwards which have no expiration.

As of December 31, 2014, the Company determined it was more likely than not that it would be unable to fully utilize the majority of its U.S. and state deferred tax assets. As a result, the Company had recorded a valuation allowance against those assets to the extent that they cannot be realized through net operating loss carrybacks to prior years. This valuation allowance is evaluated periodically and will be reversed partially or in whole if business results and the economic environment have sufficiently improved to support realization of some or all of the Company's deferred tax assets. In performing the analysis throughout 2018, the Company determined that there was no sufficient positive evidence to outweigh the current and historic negative evidence to determine that it was more likely than not that the deferred assets would not be realized. Therefore, the Company continues to have a valuation allowance against net deferred tax assets as of December 31, 2018 and 2017. During the year ended December 31, 2018, the Company finalized the deferred tax liabilities assumed upon the acquisition of Vayant. An additional release of valuation allowance was recorded in that period.

Undistributed earnings of the Company's foreign subsidiaries are considered permanently reinvested and, accordingly, no provision for U.S. federal or state income taxes or non-U.S. withholding taxes has been provided thereon. The cumulative amount of positive undistributed earnings of the Company's non-U.S. subsidiaries, if any, was minimal for the years ended December 31, 2018 and 2017. The determination of the related deferred tax liability, which requires complex analysis of international tax situations related to repatriation, is not practical at this time. The Company is presently investing in international operations located in Europe, North America, and Australia. The Company is funding the working capital needs of its foreign

operations through its U.S. operations. In the future, the Company plans to utilize its foreign undistributed earnings, as well as continued funding from its U.S. operations, to support its continued foreign investment.

For each of the years ended December 31, 2018, 2017 and 2016, the Company had approximately $0.2 million of net unrecognized tax benefits which, if recognized, would impact the Company's effective tax rate. The Company recorded immaterial amounts for interest and penalties to tax expense as of December 31, 2018, 2017 and 2016, respectively. The Company believes that it is reasonably possible that there will be no change in the unrecognized tax benefits within the next twelve months.

The Company is not subject to or aware of any forth-coming income tax examinations at this time. The Company has received a notice of a transfer pricing review by the Bulgarian tax authorities. At this time, there is no adjustment expected. The Company files tax returns in the U.S. and various foreign jurisdictions. The Company is subject to U.S. federal income tax examination for the calendar tax years 2016, 2015, 2014 and, 2013 and state and foreign income tax examination for various years depending on the statutes of limitation of those jurisdictions.

The following table sets forth the changes to the Company's unrecognized tax benefit for the year ended December 31, 2018, 2017 and 2016 (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Beginning balance	$ 183	$ 192	$ 192
Changes based on tax positions related to prior year	—	—	—
Changes due to settlement	—	(9)	—
Ending balance	$ 183	$ 183	$ 192

The table above has been updated to reflect gross tax liability, exclusive of interest and penalties and other offsetting amounts.

15. Convertible Senior Notes

The Company issued $143.8 million principal amount of convertible senior notes in December 2014 (the "2019 Notes") and $106.3 million principal amount of convertible senior notes in June 2017 (the "2047 Notes" and collectively with the 2019 Notes, the "Notes"). The interest rates for the Notes are fixed at 2.0% per annum. Interest is payable semi-annually in arrears on June 1 and December 1 of each year, commencing on June 1, 2015 for the 2019 Notes, and on December 1, 2017 for the 2047 Notes. The 2019 Notes mature on December 1, 2019, unless redeemed or converted in accordance with their terms prior to such date. The 2047 Notes mature on June 1, 2047, unless repurchased, redeemed or converted in accordance with their terms prior to such date.

Each $1,000 of principal of the 2019 Notes will initially be convertible into 29.5972 shares of the Company's common stock, which is equivalent to an initial conversion price of approximately $33.79 per share. Each $1,000 of principal amount at maturity of the 2047 Notes had an issue price of $880, and will initially be convertible into 20.5624 shares of the Company's common stock, which is equivalent to an initial conversion price of approximately $48.63 per share. The initial conversion price for each of the Notes is subject to adjustment upon the occurrence of certain specified events. An amount equal to the difference between the issue price and the principal amount at maturity will accrete to the 2047 Notes in accordance with the schedule set forth in the 2047 Notes. The issue price plus such accreted amount of the 2047 Notes is referred to herein as the "accreted principal amount." On June 1, 2022, the accreted principal amount will accrete to 100% of the principal amount at maturity.

The Notes are each general unsecured obligations and rank senior in right of payment to all of the Company's indebtedness that is expressly subordinated in right of payment to the Notes, rank equally in right of payment with all of the Company's existing and future liabilities that are not so subordinated, are effectively junior to any of the Company's secured indebtedness to the extent of the value of the assets securing such indebtedness and are structurally subordinated to all indebtedness and other liabilities (including trade payables but excluding intercompany obligations owed to the Company or its subsidiaries).

On or after September 1, 2019 to the close of business on the second scheduled trading day immediately preceding the maturity date, holders may convert all or any portion of their 2019 Notes regardless of the contingent conversion conditions described herein. Upon conversion, the Company will pay or deliver cash, shares of its common stock or a combination of cash and shares of its common stock, at its election, as described in the indenture governing the 2019 Notes.

On or before June 1, 2021, and subject to the satisfaction of certain conditions, the Company is entitled to elect to redeem all or any portion of the 2047 Notes at a redemption price equal to 100% of the accreted principal amount of the 2047 Notes, plus accrued and unpaid interest to, but excluding, the redemption date, if the daily volume weighted average price of the Company's common stock is greater than or equal to 130% of the conversion price for at least 20 trading days during any 30 consecutive trading day period. After June 1, 2021, the Company will be entitled to elect to redeem all or any portion of the 2047 Notes (without regard to the price of the Company's common stock) at a redemption price equal to the then current accreted principal amount of the 2047 Notes, plus accrued and unpaid interest to, but excluding, the redemption date.

Holders may convert their 2019 Notes at their option at any time prior to the close of business on the business day immediately preceding September 1, 2019 only under the following circumstances:

- during any calendar quarter commencing after the calendar quarter ending on March 31, 2015, if the last reported sale price of the common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price on each applicable trading day;
- during the five consecutive business day period immediately following any five consecutive trading day period in which the trading price per $1,000 principal amount of 2019 Notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price of the Company's common stock and the conversion rate on each such trading day; or
- upon the occurrence of specified corporate events.

Holders may convert their 2047 Notes at their option on any day prior to the close of business on the business day immediately preceding March 1, 2047 under the following circumstances:

- during any calendar quarter commencing after the calendar quarter ending September 30, 2017, if the last reported sale price of the Company's common stock for 20 or more trading days (whether or not consecutive) in a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter exceeds 130% of the applicable conversion price in effect on each such trading day;
- during the five consecutive business day period immediately following any five consecutive trading day period (the "Measurement Period") in which the trading price per 2047 Note for each day of that Measurement Period was less than 98% of the product of the last reported sale price of the Company's common stock and the conversion rate on each such day; or
- upon the occurrence of specified corporate events.

The 2047 Notes will also be convertible, regardless of the foregoing circumstances, at any time from, and including, March 1, 2047 until the close of business on the second scheduled trading day immediately preceding the applicable maturity date. Each holder of the 2047 Notes has the right to require the Company to repurchase for cash all or any portion of such holder's 2047 Notes on June 1, 2022 at a price per $1,000 principal amount of the 2047 Notes equal to the accreted principal amount at maturity plus accrued and unpaid interest to, but excluding, the repurchase date.

If a fundamental change (as defined in the relevant indenture governing the applicable series of Notes) occurs prior to the maturity date, holders of each of the 2019 Notes and 2047 Notes may require the Company to repurchase all or a portion of their notes for cash at a repurchase price equal to 100% of the principal amount at maturity of the Notes, plus any accrued and unpaid interest to, but excluding, the repurchase date. If such a fundamental change occurs prior to June 1, 2022, holders of the 2047 Notes may also require the Company to repurchase all or a portion of their notes for cash at a repurchase price equal to the then current accreted principal amount of the Notes, plus any accrued and unpaid interest to, but excluding, the repurchase date. In addition, if specific corporate events occur prior to the applicable maturity date, the Company will be required to increase the conversion rate for holders who elect to convert their notes in certain circumstances. Holders who convert their 2047 Notes in connection with a Make-Whole Fundamental Change (as defined in the indenture governing the 2047 Notes) or in connection with a redemption of such 2047 Notes on or prior to June 1, 2021 will, under certain circumstances, be entitled to a make-whole premium in the form of an increase in the conversion rate determined by reference to a make-whole table set forth in such indenture.

As of December 31, 2018, the 2019 Notes and the 2047 Notes are not yet convertible.

In accordance with accounting guidance on embedded conversion features, the Company valued and bifurcated the conversion options associated with each of the 2019 Notes and 2047 Notes from the respective host debt instrument, which is

referred to as debt discount and recorded the conversion option of each of the Notes in stockholders' equity. The equity component for each Note is not remeasured as long as such Note continues to meet the conditions for equity classification.

In accounting for the transaction costs for each of the Notes issuances, the Company allocated the costs incurred to the liability and equity components in proportion to the allocation of the proceeds from issuance to the liability and equity components. Issuance costs attributable to the liability component, totaling $4.3 million for the 2019 Notes and $2.7 million for the 2047 Notes, are being amortized to expense over the expected life of each Note using the effective interest method. Issuance costs attributable to the equity component related to the conversion option, totaling $1.2 million for the 2019 Notes and $0.3 million for the 2047 Notes, were netted with the equity component in stockholders' equity.

The Notes consist of the following (in thousands):

	December 31, 2018	December 31, 2017
Liability component:		
Principal	$ 250,000	$ 250,000
Less: debt discount, net of amortization	(24,810)	(36,797)
Net carrying amount	$ 225,190	$ 213,203
Equity component [(1)]	$ 37,560	$ 37,560

(1) Recorded within additional paid-in capital in the Consolidated Balance Sheet. As of December 31, 2018, it included $28.7 million and $8.8 million related to the 2019 Notes and the 2047 Notes, respectively, net of $1.2 million and $0.3 million issuance cost in equity, respectively.

The following table sets forth total interest expense recognized related to the Notes (in thousands):

	Year Ended December 31,	
	2018	2017
2.0% coupon	$ 5,000	$ 3,991
Amortization of debt issuance costs	1,419	1,127
Amortization of debt discount	10,567	8,100
Total	$ 16,986	$ 13,218

As of December 31, 2018 and December 31, 2017, the fair value of the principal amount of the Notes was $251.5 million and $246.6 million, respectively. The estimated fair value was determined based on inputs that are observable in the market or that could be derived from, or corroborated with, observable market data, including the Company's stock price and interest rates, which represents level 2 in the fair value hierarchy.

As of December 31, 2018, the remaining life of the 2019 Notes and the 2047 Notes is approximately 11 months and 41 months, respectively.

Note Hedge and Warrant Transactions

Concurrently with the offering of the 2019 Notes, the Company entered into separate convertible note hedge (the "Note Hedge") and warrant (the "Warrant") transactions. Taken together, the purchase of the Note Hedge and the sale of the Warrant are intended to offset any actual dilution from the conversion of the 2019 Notes and to effectively increase the overall conversion price of the 2019 Notes from $33.79 to $45.48 per share. The total cost of the Note Hedge transaction was $29.4 million. The Company received $17.1 million in cash proceeds from the sale of the Warrant.

Pursuant to the Warrants, if the average market value per share of the Company's common stock for the reporting period, as measured under the Warrant, exceeds the strike price of the Warrant, the Warrant will have a dilutive effect on the Company's earnings per share. Holders of the 2019 Notes and Note Hedge will not have any rights with respect to the Warrant, as the Note Hedge is not part of the 2019 Notes or the Warrant. The Warrant is not part of the 2019 Notes or Note Hedge. Both the Note Hedge and Warrant have been accounted for as part of additional paid-in capital.

16. Credit Facility

In January 2017, the Company, through its wholly owned subsidiary PROS, Inc., entered into an amendment to extend its $50 million secured Credit Agreement (the "Revolver") with the lenders party thereto and Wells Fargo Bank, National Association as agent for the lenders party thereto. The Revolver is for a five year term expiring in July 2022, with interest paid at the end of the applicable one month, three month or six month interest period at a rate per annum equal to LIBOR plus an applicable margin of 1.5% to 2.25% or the Federal Funds Rate plus an applicable margin of 1.5% to 2.25%. Borrowings under the Revolver are collateralized by a first priority interest in and lien on all of the Company's material assets.

The Revolver contains affirmative and negative covenants, including covenants which restrict the ability of the Company to, among other things, create liens, incur additional indebtedness and engage in certain other transactions, in each case subject to certain exclusions. In addition, the Revolver contains certain financial covenants which become effective in the event the Company's liquidity falls below $50 million or upon the occurrence of an event of default. As of December 31, 2018, the Company was in compliance with all financial covenants in the Revolver.

As of December 31, 2018 and 2017, $0.1 million and $0.2 million, respectively, of unamortized debt issuance costs related to the Revolver is included in prepaid and other current assets and other assets, noncurrent in the Consolidated Balance Sheets, respectively. For the years ended December 31, 2018 and 2017, the Company recorded an immaterial amount of amortization of debt issuance cost which is included in other income (expense), net in the Consolidated Statements of Comprehensive Income (Loss). As of December 31, 2018, the Company had no outstanding borrowings under the Revolver.

17. Commitments and Contingencies

Litigation

The Company is involved in various legal proceedings, claims and litigation which arise in the ordinary course of the business. The Company makes a provision for a liability relating to legal matters when it is both probable that a liability has been incurred and the amount of the loss can be reasonably estimated. These provisions are reviewed at least quarterly and adjusted to reflect the impacts of negotiations, settlements, rulings, advice of legal counsel and other information and events pertaining to a particular matter. The Company is not currently involved in any outstanding litigation that it believes, individually or in the aggregate, will have a material adverse effect on its business, financial condition, results of operations or cash flows.

Purchase Commitments

In the ordinary course of business, the Company enters into various purchase commitments for goods and services.

In December 2018, the Company entered into a noncancelable agreement with a computing infrastructure vendor that expires in December 2021. The purchase commitment as of December 31, 2018 was $6.4 million for the remaining period under the three-year agreement.

In June 2017, the Company entered into a noncancelable agreement with a computing infrastructure vendor that expires in June 2020. The purchase commitment as of December 31, 2018 was $12.6 million for the remaining period under the three-year agreement.

Contractual Obligations

In September 2018, the Company entered into an agreement of limited partnership related to a venture fund, pursuant to which the Company committed to make a capital contribution of $2.3 million within the next five years.

Indemnification

The Company’s software agreements generally include certain provisions for indemnifying customers against liabilities if the Company’s software solutions infringe a third party’s intellectual property rights. To date, the Company has not incurred any losses as a result of such indemnifications and has not accrued any liabilities related to such obligations in the Company’s Consolidated Financial Statements.

Lease Commitments

The Company leases office space and office equipment under non-cancelable operating leases that expire at various dates. The Company incurred approximately $4.3 million, $3.9 million and $4.1 million of total rent expense for the years ended December 31, 2018, 2017 and 2016, respectively. As of December 31, 2018, the future minimum lease commitments related to lease agreements were as follows:

Year Ending December 31,	Amount
2019	$ 4,164
2020	1,649
2021	5,115
2022	6,181
2023	5,679
2024 and thereafter	57,365
Total minimum lease payments	$ 80,153

The Company's headquarters are located in Houston, Texas, where it currently leases approximately 98,000 square feet of office space until October 31, 2019. In November, 2018, the Company entered into an agreement to lease approximately 118,000 square feet of office space for a new headquarter location which is expected to be occupied in the fourth quarter of 2019. The lease expires in August 2033.

The Company also has smaller regional offices, including in London, England; Toulouse, France; San Francisco, California; and Sofia, Bulgaria. The Company leases approximately 3,000 square feet of office space in London, approximately 14,000 square feet of space in Toulouse, approximately 6,600 of space in San Francisco, and approximately 23,000 square feet of space in Sofia.

The Company had no capital leases at December 31, 2018 and 2017.

18. Segment and Geographic Information

The Company operates as one segment with a single reporting unit. Operating segments are the components of an enterprise where separate financial information is evaluated regularly by the chief operating decision-maker, who is the Company's Chief Executive Officer, in deciding how to allocate resources and assessing financial performance. The Company's chief operating decision maker allocates resources and assesses performance based upon discrete financial information at the consolidated level.

Revenue by Geography

The Company presents financial information on a consolidated basis and does not assess the profitability of its geographic regions. Accordingly the Company does not attempt to comprehensively assign or allocate costs to these regions and does not produce reports for, or measure the performance of, its geographic regions based on any asset-based metrics.

International revenue for the years ended December 31, 2018, 2017 and 2016, amounted to approximately $128.5 million, $105.7 million and $96.5 million, respectively, representing 65%, 63% and 63%, respectively, of annual revenue.

The following geographic information is presented for the years ended December 31, 2018, 2017 and 2016. The Company categorizes geographic revenues based on the location of the customer's headquarters.

	Year Ended December 31,					
	2018		2017		2016	
	Revenue	Percent	Revenue	Percent	Revenue	Percent
The Americas:						
United States of America	$ 68,482	35%	$ 63,097	37%	$ 56,774	37%
Other	18,378	9%	13,645	8%	9,335	6%
Subtotal	86,860	44%	76,742	45%	66,109	43%
Germany	20,171	10%	17,421	10%	10,042	7%
The Rest of Europe	40,776	21%	33,852	20%	34,613	23%
Asia Pacific	32,090	16%	26,528	16%	30,457	20%
The Middle East	15,092	8%	11,437	7%	10,567	7%
Africa	2,035	1%	2,836	2%	1,488	1%
Total revenue	$ 197,024	100%	$ 168,816	100%	$ 153,276	100%

19. Concentrations of Credit Risk

The Company's financial instruments that are exposed to concentrations of credit risk consist primarily of cash and cash equivalents, marketable securities and trade accounts receivable. The Company's deposits exceed federally insured limits. For the year ended December 31, 2018, no customer accounted for 10% or more of trade accounts receivables. For the years ended December 31, 2018, 2017 and 2016, no single customer accounted for 10% or more of revenue.

20. Related-Party Transactions

The Company currently has employment agreements with its executive officers. In the event of termination of employment other than for cause, the employment agreements provide separation benefits, including twelve to eighteen months of salary, as well as the vesting of certain equity awards.

21. Employee Retirement Savings Plan

The Company has a 401(k) savings plan for all eligible employees in the United States. Historically, the Company's matching contribution has been 50% of the first 6% of employee contributions, and the Company may also make discretionary contributions. Matching contributions by the Company in 2018, 2017 and 2016 totaled approximately $2.4 million, $2.0 million and $1.9 million, respectively.

22. Quarterly Results (Unaudited)

The following table presents certain unaudited quarterly financial data for the years ended December 31, 2018 and 2017. This information has been prepared on the same basis as the accompanying Consolidated Financial Statements and all necessary adjustments have been included in the amounts below to state fairly the selected quarterly information when read in conjunction with the accompanying Consolidated Financial Statements and Notes thereto.

	Quarter Ended			
	December 31, 2018	September 30, 2018	June 30, 2018	March 31, 2018
Total revenue	$ 52,613	$ 49,075	$ 47,426	$ 47,910
Gross profit	$ 33,155	$ 29,599	$ 28,702	$ 28,389
Loss from operations	$ (9,609)	$ (11,866)	$ (12,993)	$ (14,747)
Net loss attributable to PROS Holdings, Inc.	$ (12,760)	$ (15,786)	$ (16,844)	$ (18,856)
Net loss attributable to common stockholders per share:				
Basic	$ (0.34)	$ (0.44)	$ (0.52)	$ (0.58)
Diluted	$ (0.34)	$ (0.44)	$ (0.52)	$ (0.58)

	Quarter Ended			
	December 31, 2017	September 30, 2017	June 30, 2017	March 31, 2017
Total revenue	$ 46,344	$ 41,937	$ 40,406	$ 40,129
Gross profit	$ 28,197	$ 24,213	$ 24,320	$ 23,520
Loss from operations	$ (12,815)	$ (17,750)	$ (16,710)	$ (17,668)
Net loss attributable to PROS Holdings, Inc.	$ (16,980)	$ (21,226)	$ (19,513)	$ (20,207)
Net loss attributable to common stockholders per share:				
Basic	$ (0.53)	$ (0.67)	$ (0.62)	$ (0.65)
Diluted	$ (0.53)	$ (0.67)	$ (0.62)	$ (0.65)

Schedule II
Valuation and Qualifying Accounts

	Balance at beginning of period	Additions charged to costs and expenses	Deductions (1)	Other (2)	Balance at end of period
Allowance for doubtful accounts					
2018	$ 760	$ 223	$ —	$ (5)	$ 978
2017	$ 760	$ —	$ —	$ —	$ 760
2016	$ 586	$ 887	$ (713)	$ —	$ 760
Valuation allowance					
2018	$ 74,153	$ 20,417	$ —	$ (339)	$ 94,231
2017	$ 69,049	$ 5,872	$ —	$ (768)	$ 74,153
2016	$ 44,321	$ 26,634	$ —	$ (1,906)	$ 69,049

(1) Deductions column represents the reversal of additions previously charged to costs and expenses and uncollectible accounts written off, net of recoveries.
(2) Other column represents the cumulative translation adjustment impact on the allowance.

Item 16. ***Form 10-K summary***

Registrants may voluntarily include a summary of information required by Form 10-K under this Item 16. The Registrant has elected not to include such summary information.

Signatures

Pursuant to the requirements of Section 13 or 15(d) of the Exchange Act, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on February 15, 2019.

PROS Holdings, Inc.

By: /s/ Andres Reiner

Andres Reiner

President and Chief Executive Officer

KNOW BY THESE PRESENT, that each person whose signature appears below constitutes and appoints each of Andres Reiner and Stefan Schulz, his attorney-in-fact, with the power of substitution, for him in any and all capacities, to sign any amendments to this report on Form 10-K and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of the attorney-in-fact, or his substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirement of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Signatures	Title	Date
/s/ Andres Reiner Andres Reiner	President, Chief Executive Officer, and Director (Principal Executive Officer)	February 15, 2019
/s/ Stefan Schulz Stefan Schulz	Executive Vice President and Chief Financial Officer (Principal Accounting Officer)	February 15, 2019
/s/ William Russell William Russell	Chairman of the Board	February 15, 2019
/s/ Penelope Herscher Penelope Herscher	Director	February 15, 2019
/s/ Greg B. Petersen Greg B. Petersen	Director	February 15, 2019
/s/ Leslie J. Rechan Leslie J. Rechan	Director	February 15, 2019
/s/ Timothy V. Williams Timothy V. Williams	Director	February 15, 2019
/s/ Mariette M. Woestemeyer Mariette M. Woestemeyer	Director	February 15, 2019
/s/ Ronald F. Woestemeyer Ronald Woestemeyer	Director	February 15, 2019

Exhibit Index

Exhibit No.	Description	Provided Herewith	Incorporated by Reference	
			Form	Filing Date
3.1	Amended and Restated Certificate of Incorporation.		S-1/A	6/15/2007
3.2	Amended and Restated Bylaws.		8-K	8/21/2013
4.1	Specimen certificate for shares of common stock.		S-1/A	6/11/2007
4.2	Indenture, dated December 10, 2014, between Registrant and Wilmington Trust, National Association, as trustee.		8-K	12/10/2014
4.3	Global Note, dated December 10, 2014, between Registrant and Wilmington Trust, National Association, as trustee.		8-K	12/10/2014
4.4	Indenture, dated June 21, 2017, between Registrant and Wilmington Trust, National Association, as trustee.		8-K	6/22/2017
10.1+	2007 Equity Incentive Plan.		S-1/A	6/11/2007
10.2+	Form of Stock Appreciation Rights Agreement under the 2007 Equity Incentive Plan.		10-K	2/22/2013
10.3+	Form of Restricted Stock Units Agreement under the 2007 Equity Incentive Plan.		10-K	2/22/2013
10.4+	Form of Market Stock Units Agreement under the 2007 Equity Incentive Plan.		10-Q	5/2/2013
10.5+	Form of Market Stock Units Agreement under the 2007 Equity Incentive Plan.		10-K	2/15/2017
10.6+	2017 Equity Incentive Plan.		10-Q	8/3/2017
10.7+	Form of Notice of Grant of Market Stock Units and Award Agreement under the 2017 Equity Incentive Plan.		10-Q	8/3/2017
10.8+	Form of Notice of Grant of Stock Option and Award Agreement under the 2017 Equity Incentive Plan.		10-Q	8/3/2017
10.9+	Form of Notice of Grant of Performance Restricted Stock Units and Award Agreement under the 2017 Equity Incentive Plan.		10-Q	8/3/2017
10.10+	Form of Notice of Grant of Restricted Stock Units and Award Agreement under the 2017 Equity Incentive Plan.		10-Q	8/3/2017
10.11+	Form of Notice of Grant of Stock Appreciation Rights and Award Agreement under the 2017 Equity Incentive Plan.		10-Q	8/3/2017
10.12+	Form of Non-Plan Market Stock Units Agreement.		S-8	2/24/2014
10.13+	Form of Non-Plan Restricted Stock Units Agreement.		S-8	2/24/2014
10.14+	Form of Non-Plan Restricted Stock Units Agreement (France).		S-8	2/24/2014
10.15+	Form of Non-Plan Restricted Stock Units Agreement (Performance France).		S-8	2/24/2014
10.16+	Form of Performance Restricted Stock Unit Agreement.		8-K	9/12/2016
10.17+	2013 Employee Stock Purchase Plan.		8-K	6/7/2013
10.18+	Stock Purchase and Stockholders Agreement, dated June 8, 1998, by and among Registrant (as successor in interest to PROS Strategic Solutions, Inc.) and certain stockholders.		S-1	4/4/2007
10.18.1+	Amendment to Stock Purchase and Stockholders Agreement, dated March 26, 2007, by and among Registrant and certain stockholders.		S-1	4/4/2007
10.19+	Registration Rights Agreement, dated June 8, 2007, by and among Registrant, Mariette M. Woestemeyer and Ronald F. Woestemeyer.		S-1/A	6/11/2007
10.20	Office Lease, dated January 31, 2001, by and between PROS, Inc. (as successor in interest to PROS Revenue Management L.P.) and Houston Community College System.		S-1	4/7/2007

10.20.1	First Amendment to Office Lease, dated March 31, 2006, by and between PROS, Inc. (as successor in interest to PROS Revenue Management L.P.) and Houston Community College System.	S-1	4/7/2007
10.20.2	Second Amendment to Office Lease, dated March 1, 2007, by and between PROS, Inc. (as successor in interest to PROS Revenue Management L.P.) and Houston Community College System.	10-K	2/22/2013
10.20.3	Third Amendment to Office Lease, dated July 29, 2011, by and between PROS, Inc. (as successor in interest to PROS Revenue Management L.P.) and Houston Community College System.	8-K	8/3/2011
10.20.4	Fourth Amendment to Office Lease, dated June 27, 2012, by and between PROS, Inc. (as successor in interest to PROS Revenue Management L.P.) and Houston Community College System.	10-K	2/22/2013
10.20.5	Fifth Amendment to Office Lease, dated June 9, 2016, by and between PROS, Inc., and Houston Community College System.	8-K	6/14/2016
10.21	Office Lease Agreement, dated November 30, 2018, by and between PROS, Inc., and Thor Kirby 3 Group, LLC.	8-K	12/4/2018
10.22+	Second Amended and Restated Employment Agreement, dated December 3, 2018, by and between PROS, Inc., Registrant, and Andres D. Reiner.	8-K	12/4/2018
10.23+	Offer Letter, dated as of January 15, 2015, by and between PROS, Inc. and Stefan Schulz.	8-K	1/20/2015
10.24+	Amended and Restated Employment Agreement, dated December 3, 2018, by and between PROS, Inc., Registrant, and Stefan B. Schulz.	8-K	12/4/2018
10.25+	Offer Letter by and between PROS, Inc, and Thomas Dziersk, dated as of October 6, 2017.	8-K	10/6/2017
10.26+	Employment Agreement by and between PROS, Inc., Registrant and Thomas Dziersk, dated as of October 9, 2017.	8-K	10/10/2017
10.27+	Form of Indemnity Agreement entered into among Registrant, its affiliates and its directors and officers.	8-K	8/21/2013
10.28+	Form of Indemnification Agreement to be entered into among Registrant, its affiliates and its directors and officers.	10-K	2/15/2017
10.29	Tender Offer Agreement, dated October 24, 2013, by and between Registrant and Cameleon Software.	8-K	10/24/2013
10.30	Agreement and Plan of Merger, dated December 16, 2013, by and among PROS, Inc., Pandora Merger Sub Corporation, SignalDemand, Inc. and Fortis Advisors LLC.	8-K	12/16/2013
10.31	Agreement and Plan of Merger, dated August 3, 2017, by and among Registrant, Wisdom U.S. Merger Sub Corporation, Vayant Travel Technologies, Inc. and NEVEQ Capital Partners, as agent for Target's securityholders thereunder.	8-K	8/3/2017
10.32	Credit Agreement, dated July 2, 2012, by and among PROS, Inc., Wells Fargo Bank, National Association, as administrative agent, and the Lenders party thereto.	8-K	7/9/2012
10.32.1	Third Amendment to Credit Agreement, dated December 3, 2014, by and among PROS, Inc., Wells Fargo Bank, National Association, as administrative agent, and the Lenders party thereto.	8-K	12/5/2014
10.32.2	Seventh Amendment to Credit Agreement, dated January 27, 2017, by and among PROS, Inc., Wells Fargo Bank, National Association, as administrative agent, and the Lenders party thereto.	8-K	2/2/2017
10.32.3	Ninth Amendment to Credit Agreement, dated June 15, 2017, by and between PROS, Inc., Wells Fargo Bank, National Association, as administrative agent, and the Lenders party thereto.	8-K	6/16/2017
10.33	Purchase Agreement, dated December 4, 2014 by and among Registrant, Goldman, Sachs & Co. and Deutsche Bank Securities Inc., as representatives of the several initial purchasers named therein.	8-K	12/10/2014
10.34	Base Bond Hedge Confirmation, dated December 4, 2014 by and between Registrant and Goldman, Sachs & Co.	8-K	12/10/2014
10.35	Base Bond Hedge Confirmation, dated December 4, 2014 by and between Registrant and Deutsche Bank AG, London Branch.	8-K	12/10/2014
10.36	Additional Bond Hedge Confirmation, dated December 5, 2014 by and between Registrant and Goldman, Sachs & Co.	8-K	12/10/2014
10.37	Additional Bond Hedge Confirmation, dated December 5, 2014 by and between Registrant and Deutsche Bank AG, London Branch.	8-K	12/10/2014

10.38	Base Warrant Confirmation, dated December 4, 2014 by and between Registrant and Goldman, Sachs & Co.		8-K	12/10/2014
10.39	Base Warrant Confirmation, dated December 4, 2014 by and between Registrant and Deutsche Bank AG, London Branch.		8-K	12/10/2014
10.40	Additional Warrant Confirmation, dated December 5, 2014 by and between Registrant and Goldman, Sachs & Co.		8-K	12/10/2014
10.41	Additional Warrant Confirmation, dated December 5, 2014 by and between Registrant and Deutsche Bank AG, London Branch.		8-K	12/10/2014
10.42	Form of Private Placement Purchase Agreement, dated June 15, 2017, between Registrant and each purchaser named therein.		8-K	6/21/2017
21.1	List of Subsidiaries.	X		
23.1	Consent of PricewaterhouseCoopers LLP.	X		
24.1*	Power of Attorney.	X		
31.1	Certification of Chief Executive Officer Pursuant to Exchange Act Rule 13a-14(a)/15d-14(a).	X		
31.2	Certification of Chief Financial Officer Pursuant to Exchange Act Rule 13a-14(a)/ 15d-14(a).	X		
32.1**	Certifications of Chief Executive Officer and Chief Financial Officer Pursuant to 18 U.S.C. Section 1350.	X		

Exhibit No.	**Description**
101.INS	XBRL Instance Document.
101.SCH	XBRL Taxonomy Extension Schema Document.
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	XBRL Taxonomy Extension Label Linkbase Document.
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document.

* Reference is made to page F-38 of this Annual Report on Form 10-K.

** This certification shall not be deemed "filed" for purposes of Section 18 of the Securities Act of 1934, or otherwise subject to the liability of that Section, nor shall it be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934.

\+ Indicates a management contract or compensatory plan or arrangement.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington D.C. 20549

FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended December 31, 2018
OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to .

Commission File Number: 001-33554

PROS HOLDINGS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**76-0168604**
(State of Incorporation)	(I.R.S. Employer Identification No.)

3100 Main Street, Suite 900 **Houston TX**	**77002**
(Address of Principal Executive Offices)	(Zip Code)

(713) 335-5151
(Registrant's telephone number, including area code)

____
(Former Name, Former Address and Former Fiscal Year, if changed Since Last Report)

Indicate by check mark whether registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large Accelerated Filer	☐	Accelerated Filer	☒
Non-Accelerated Filer	☐ (do not check if a smaller reporting company)	Smaller Reporting Company	☐
Emerging Growth Company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The number of shares outstanding of the registrant's Common Stock, $0.001 par value, was 37,149,951 as of February 11, 2019.

PROS Holdings, Inc.
Form 10-Q
For the Quarterly Period Ended December 31, 2018

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended ("Exchange Act"). Forward-looking statements relate to future events or our future financial performance. These forward-looking statements regarding future events and our future results are based on current expectations, estimates, forecasts and projections, and the beliefs and assumptions of our management including, without limitation, our expectations regarding the following: our ability to execute on our revenue strategy shift to cloud-first, the license and subscription revenues generated by our software products and services; the impact of our revenue recognition policies; our belief that our current assets, including cash, cash equivalents, short-term investments, and expected cash flows from operating activities, will be sufficient to fund our operations; our belief that we will successfully integrate our acquisitions; our anticipated additions to property, plant and equipment; our belief that our facilities are suitable and adequate to meet our current operating needs; and our belief that we do not have any material exposure to changes in the fair value of our investment portfolio as a result of changes in foreign currency exchange rates or interest rates. Words such as, but not limited to, “we expect,” “anticipate,” “target,” “project,” “believe,” “goals,” “estimate,” “potential,” “predict,” “may,” “might,” “could,” “would,” “intend,” and variations of these types of words and similar expressions are intended to identify these forward-looking statements.

PART I. FINANCIAL INFORMATION

ITEM 1. INTERIM CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

PROS Holdings, Inc.
Condensed Consolidated Balance Sheets
(In thousands, except share and per share amounts)
(Unaudited)

	December 31, 2018	December 31, 2017
Assets:		
Current assets:		
Cash and cash equivalents	$ 295,476	$ 160,505
Trade and other receivables, net of allowance of $978 and $760, respectively	41,822	32,484
Deferred costs	4,089	3,137
Prepaid and other current assets	4,756	5,930
Total current assets	346,143	202,056
Property and equipment, net	14,676	14,007
Long-term deferred costs	13,373	3,194
Intangibles, net	19,354	26,929
Goodwill	38,231	38,458
Other long-term assets	5,190	4,039
Total assets	$ 436,967	$ 288,683
Liabilities and Stockholders' Equity:		
Current liabilities:		
Accounts payable and other liabilities	$ 6,934	$ 2,976
Accrued liabilities	9,506	6,733
Accrued payroll and other employee benefits	22,519	16,712
Deferred revenue	99,262	75,604
Total current liabilities	138,221	102,025
Long-term deferred revenue	17,903	19,591
Convertible debt, net	88,661	213,203
Other long-term liabilities	754	843
Total liabilities	245,539	335,662
Commitments and contingencies (see Note 11)		
Stockholders' equity:		
Preferred stock, $0.001 par value, 5,000,000 shares authorized; none issued	—	—
Common stock, $0.001 par value, 75,000,000 shares authorized; 41,573,491 and 36,356,760 shares issued, respectively; 37,155,906 and 31,939,175 shares outstanding, respectively	42	36
Additional paid-in capital	364,877	207,924
Treasury stock, 4,417,585 common shares, at cost	(13,938)	(13,938)
Accumulated deficit	(292,708)	(238,185)
Accumulated other comprehensive loss	(3,374)	(2,816)
Total stockholders' equity	54,899	(46,979)
Total liabilities and stockholders' equity	$ 300,438	$ 288,683

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

PROS Holdings, Inc.
Condensed Consolidated Statements of Comprehensive Income (Loss)
(In thousands, except per share data)
(Unaudited)

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2018	2017	2018	2017
Revenue:				
Subscription	$ 28,316	$ 19,082	$ 95,192	$ 60,539
Maintenance and support	15,723	17,076	64,760	69,408
Total subscription, maintenance and support	44,039	36,158	159,952	129,947
License	662	1,679	3,516	5,562
Services	7,912	8,507	33,556	33,307
Total revenue	52,613	46,344	197,024	168,816
Cost of revenue:				
Subscription	9,060	8,253	35,368	27,858
Maintenance and support	2,840	2,807	11,602	11,693
Total cost of subscription, maintenance and support	11,900	11,060	46,970	39,551
License	51	72	251	282
Services	7,507	7,015	29,958	28,733
Total cost of revenue	19,458	18,147	77,179	68,566
Gross profit	33,155	28,197	119,845	100,250
Operating expenses:				
Selling and marketing	18,335	17,491	72,006	68,116
General and administrative	10,289	9,822	41,302	40,336
Research and development	14,140	13,592	55,657	56,021
Acquisition-related	—	107	95	720
Loss from operations	(9,609)	(12,815)	(49,215)	(64,943)
Convertible debt interest and amortization	(4,315)	(4,140)	(16,986)	(13,218)
Other income, net	1,188	69	2,155	384
Loss before income tax provision (benefit)	(12,736)	(16,886)	(64,046)	(77,777)
Income tax provision (benefit)	24	94	200	149
Net loss	$ (12,760)	$ (16,980)	$ (64,246)	$ (77,926)
Net loss per share:				
Basic and diluted	$ (0.34)	$ (0.53)	$ (1.86)	$ (2.46)
Weighted average number of shares:				
Basic and diluted	37,154	31,927	34,465	31,627
Other comprehensive income (loss), net of tax:				
Foreign currency translation adjustment	$ (88)	$ 329	$ (558)	$ 2,107
Unrealized gain (loss) on available-for-sale securities	—	6	—	(13)
Other comprehensive income (loss), net of tax	(88)	335	(558)	2,094
Comprehensive loss	$ (12,848)	$ (16,645)	$ (64,804)	$ (75,832)

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

PROS Holdings, Inc.
Condensed Consolidated Statements of Cash Flows
(In thousands)
(Unaudited)

	Twelve Months Ended December 31,	
	2018	2017
Operating activities:		
Net loss	$ (64,246)	$ (77,926)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	13,055	10,531
Amortization of debt discount and issuance costs	12,027	9,264
Share-based compensation	21,453	22,796
Deferred income tax, net	(463)	(520)
Provision for doubtful accounts	212	—
Loss on disposal of assets	37	59
Changes in operating assets and liabilities:		
Accounts and unbilled receivables	(9,550)	2,022
Deferred costs	(4,086)	—
Prepaid expenses and other assets	87	(3,715)
Accounts payable and other liabilities	3,931	700
Accrued liabilities	2,764	(1,055)
Accrued payroll and other employee benefits	5,830	(2,344)
Deferred revenue	24,652	14,875
Net cash provided by (used in) operating activities	5,703	(25,313)
Investing activities:		
Purchases of property and equipment	(1,475)	(1,286)
Acquisition of Vayant, net of cash acquired	—	(34,130)
Capitalized internal-use software development costs	(4,613)	(2,797)
Purchase of intangible assets	(125)	(125)
Proceeds from maturities of short-term investments	—	15,992
Net cash used in investing activities	(6,213)	(22,346)
Financing activities:		
Exercise of stock options	1,142	6,331
Proceeds from employee stock plans	1,720	1,535
Tax withholding related to net share settlement of stock awards	(9,410)	(7,375)
Proceeds from Secondary Offering, net	141,954	—
Payments of notes payable	(54)	(209)
Debt issuance costs related to Revolver	—	(150)
Debt issuance cost related to convertible debt	—	(2,978)
Proceeds from issuance of convertible debt, net	—	93,500
Net cash provided by financing activities	135,352	90,654
Effect of foreign currency rates on cash	174	(529)
Net change in cash and cash equivalents	135,016	42,466
Cash and cash equivalents:		
Beginning of period	160,505	118,039
End of period	$ 295,521	$ 160,505

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

PROS Holdings, Inc.
Notes to Condensed Consolidated Financial Statements
(Unaudited)

1. Organization and Nature of Operations

PROS Holdings, Inc., a Delaware corporation, through its operating subsidiaries (collectively, the "Company" or "PROS"), provides end-to-end Artificial Intelligence ("AI")-powered solutions that enable fast, frictionless and personalized buying experiences for businesses to compete in today's digital economy. PROS solutions provide actionable intelligence that enable dynamic buying experiences for both business-to-business ("B2B") and business-to-consumer ("B2C") companies across industry verticals. The Company's end-to-end solutions drive pricing optimization, sales effectiveness and revenue management by enabling companies to create data-driven, personalized buying experiences. Companies can use PROS solutions to assess the market environment in real time to deliver customized prices and offers. PROS solutions enable buyers to move fluidly across PROS customers' direct sales, online, mobile and partner channels and have personalized experiences however those customers choose to buy. The Company's data science and AI are designed to reduce time and complexity and add actionable intelligence to help PROS customers outperform in their markets. The Company provides standardized configurations of its software based on the industries it serves and offers professional services to configure these solutions to meet the specific needs of each customer.

2. Summary of Significant Accounting Policies

The accompanying unaudited condensed consolidated financial statements reflect the application of significant accounting policies as described below and elsewhere in these notes to the condensed consolidated financial statements.

Basis of presentation

The accompanying unaudited condensed consolidated financial statements of the Company have been prepared in accordance with generally accepted accounting principles in the United States ("GAAP") for interim financial reporting and applicable quarterly reporting regulations of the Securities and Exchange Commission ("SEC"). In management's opinion, the accompanying interim unaudited condensed consolidated financial statements include all adjustments necessary for a fair statement of the financial position of the Company as of December 31, 2018, the results of operations for the twelve months ended months ended December 31, 2018 and 2017, and cash flows for the twelve months ended December 31, 2018 and 2017.

Certain information and disclosures normally included in the notes to the annual financial statements prepared in accordance with GAAP have been omitted from these interim unaudited condensed consolidated financial statements pursuant to the rules and regulations of the SEC. Accordingly, these unaudited condensed consolidated financial statements should be read in conjunction with the consolidated financial statements in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 ("Annual Report") filed with the SEC. The condensed consolidated balance sheet as of December 31, 2017 was derived from the Company's audited consolidated financial statements but does not include all disclosures required under GAAP.

Changes in accounting policies

The Company has consistently applied these accounting policies to all periods presented in these consolidated financial statements, except for the Company's adoption of certain accounting standards described in more detail under "*Recently adopted accounting pronouncements*" in this Note 2 below.

Basis of consolidation

The unaudited condensed consolidated financial statements include the accounts of the Company, its wholly owned subsidiaries and a subsidiary where the Company exercises control. All intercompany transactions and balances have been eliminated in consolidation. The functional currency of PROS France SAS ("PROS France") is the euro. The financial statements of this subsidiary are translated into U.S. dollars using period-end rates of exchange for assets and liabilities, historical rates of exchange for equity, and average rates of exchange for the period for revenue and expenses. Translation gains (losses) are recorded in accumulated other comprehensive loss as a component of stockholders' equity.

Dollar amounts

The dollar amounts presented in the tabular data within these footnote disclosures are stated in thousands of dollars, except per share amounts, or as noted within the context of each footnote disclosure.

Use of estimates

The Company makes estimates and assumptions in the preparation of its unaudited condensed consolidated financial statements, and its estimates and assumptions may affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the unaudited condensed consolidated financial statements, and the reported amounts of revenue and expenses during the reporting periods. Actual results could differ from those estimates. The complexity and judgment required in the Company's estimation process, as well as issues related to the assumptions, risks and uncertainties inherent in the application of the percentage-of-completion method of accounting, affect the amounts of revenue, expenses, unbilled receivables and deferred revenue. Estimates are also used for, but not limited to, receivables, allowance for doubtful accounts, useful lives of assets, depreciation and amortization, income taxes and deferred tax asset valuation, valuation of stock options, other current liabilities and accrued liabilities. Numerous internal and external factors can affect estimates. The critical accounting policies related to estimates and judgments are discussed in the Annual Report under management's discussion and analysis of financial condition and results of operations and are also discussed under Item 2 *"Management's discussion and analysis of financial condition and results of operations*".

Revenue recognition

The Company derives its revenues primarily from subscription services, professional services, perpetual licensing of its software products and associated software maintenance and support services.

The Company determines revenue recognition through the following steps:

- Identification of the contract, or contracts, with a customer;
- Identification of the performance obligations in the customer contract(s);
- Determination of the transaction price;
- Allocation of the transaction price to each performance obligation in the customer contract(s); and
- Recognition of revenue when, or as, the Company satisfies a performance obligation.

Subscription services revenue

Subscription services revenue primarily consists of fees that give customers access to one or more of the Company's cloud applications with routine customer support. Subscription services revenue is generally recognized ratably over the contractual term of the arrangement beginning on the date that the Company's service is made available to the customer. The Company's subscription contracts do not provide customers with the right to take possession of the software supporting the applications and, as a result, are accounted for as service contracts. The Company's subscription contracts are generally two to five years in length, billed annually in advance, and are non-cancelable.

Maintenance and support revenue

Maintenance and support revenue includes post-implementation customer support and the right to unspecified software updates and enhancements. The Company recognizes revenue from maintenance arrangements ratably over the period in which the services are provided. The Company's maintenance and support contracts are generally one to three years in length, billed annually in advance, and non-cancelable.

License revenue

Licenses for on-premise software provide the customer with a right to use the software as it exists when made available to the customer. License revenue from distinct on-premises licenses is recognized at the point in time when the software is made available to the customer. For customer contracts that contain license and professional services that are not considered distinct, the license and professional services are determined to be a single performance obligation and recognized over time based upon the Company's efforts to satisfy the performance obligation.

Professional services revenue

Professional services revenue primarily consists of fees for deployment and configuration services, as well as training. Professional services revenues are generally recognized as the services are rendered for time and material contracts, or on a

proportional performance basis for fixed price contracts. The majority of the Company's professional services contracts are on a time and materials basis. Training revenues are recognized as the services are rendered.

Significant judgments are required in determining whether professional services that are contained in customer subscription services contracts are considered distinct, including whether the professional services are capable of being distinct and whether they are separately identifiable in the customer contract. Professional services that are deemed to be distinct are accounted for as a separate performance obligation and revenue is recognized as the services are performed. If determined that the professional services are not considered distinct, the professional services and the subscription services are determined to be a single performance obligation and revenue is recognized over the contractual term of the subscription beginning on the date that subscription services are made available to the customer.

Customer Contracts with Multiple Performance Obligations

A portion of the Company's customer contracts contain multiple performance obligations. Significant judgment is required in determining whether multiple performance obligations contained in customer contracts are capable of being distinct and whether they are separately identifiable in customer contracts. If the obligations are determined to be distinct, each separate performance obligation is recognized when, or as, the Company satisfies the performance obligation. If the obligations are not determined to be distinct, they are recognized as a single combined performance obligation. The transaction price is allocated to each performance obligation on a relative standalone selling price basis.

Business combinations

The Company records tangible and intangible assets acquired and liabilities assumed in business combinations under the acquisition method of accounting. Amounts paid for each acquisition are allocated to the assets acquired and liabilities assumed based on their fair values at the date of acquisition. Significant management judgments and assumptions are required in determining the fair value of acquired assets and liabilities, particularly acquired intangible assets. The valuation of purchased intangible assets is based upon estimates of the future performance and cash flows from the acquired business. Each asset is measured at fair value from the perspective of a market participant.

The Company uses its best estimates and assumptions to accurately assign fair value to the tangible and intangible assets acquired and liabilities assumed at the acquisition date. The Company's estimates are inherently uncertain and subject to refinement. During the measurement period, which may be up to one year from the acquisition date, the Company may record adjustments to the fair value of these tangible and intangible assets acquired and liabilities assumed, with the corresponding offset to goodwill. Uncertain tax positions and tax-related valuation allowances are initially established in connection with a business combination as of the acquisition date. During the measurement period, the Company reevaluates these estimates and assumptions quarterly and records any adjustments to the Company's preliminary estimates to goodwill. Any subsequent adjustments are recorded to the Company's condensed consolidated statements of operations upon the earlier of the conclusion of the measurement period and final determination of the fair value of assets acquired or liabilities assumed.

Internal-use software

Costs incurred to develop internal-use software during the development stage are capitalized, stated at cost, and amortized using the straight-line method over the estimated useful lives of the assets. Development stage costs generally include salaries and personnel costs and third-party contractor expenses associated with internal-use software configuration, coding, installation and testing. For the three months ended December 31, 2018 and 2017, the Company capitalized $1.2 million and $0.7 million, respectively, of internal-use software development costs related to cloud-based offerings, and for the twelve months ended December 31, 2018 and 2017, the Company capitalized $4.7 million and $3.0 million, respectively, of internal-use software development costs related to cloud-based offerings. Capitalized internal-use software development costs related to cloud-based offerings are amortized using the straight-line method over the useful life of the asset. For the twelve months ended months ended December 31, 2018, the Company amortized $0.3 million and $1.1 million, respectively, of capitalized internal-use software development costs, and for the twelve months ended months ended December 31, 2017, the Company amortized an immaterial amount of capitalized internal-use software development costs. Capitalized software for internal use is included in property and equipment, net in the unaudited condensed consolidated balance sheets. Amortization of capitalized internal-use software development costs, once it commences, is included in cost of subscription and cost of services revenues in the accompanying unaudited condensed consolidated statements of comprehensive income (loss).

Impairment of long-lived assets

Long-lived assets are reviewed for impairment whenever an event or change in circumstances indicates that the carrying amount of an asset or group of assets may not be recoverable. The impairment review includes comparison of future cash flows expected to be generated by the asset or group of assets with the associated assets' carrying value. If the carrying value of the asset or group of assets exceeds its expected future cash flows (undiscounted and without interest charges), an impairment loss is recognized to the extent that the carrying amount of the asset exceeds its fair value. The Company recorded no impairment charges during the twelve months ended months ended December 31, 2018 and 2017.

Noncash share-based compensation

The Company measures all share-based payments to its employees based on the grant date fair value of the awards and recognizes expenses in the Company's unaudited consolidated statement of comprehensive income (loss) on a straight-line basis over the periods during which the recipient is required to perform services (generally over the vesting period of the awards). To date, the Company has granted stock options, Restricted Stock Units ("RSUs"), stock settled Stock Appreciation Rights ("SARs") and Market Stock Units ("MSUs"). RSUs include (i) time-based awards and (ii) market-based awards in which the number of shares that vest are based upon attainment of target average per share closing price over a requisite trading period. MSUs are performance-based awards in which the number of shares that vest are based upon the Company's relative stockholder return.

The following table presents the number of shares or units outstanding for each award type as of December 31, 2018 and December 31, 2017, respectively, (in thousands):

Award type	December 31, 2018	December 31, 2017
Stock options	—	—
Restricted stock units (time-based)	1,988	1,969
Restricted stock units (market-based)	215	215
Stock appreciation rights	287	287
Market stock units	419	419

Stock options, time-based RSUs and SARs vest ratably between one and four years. Market-based RSUs vest if the average trailing closing price of the Company's common stock meets certain minimum performance hurdles for at least 105 calendar days prior to September 9, 2020, with 25% vesting at $27, an additional 25% vesting at $33, and the remaining 50% vesting at $41. The actual number of MSUs that will be eligible to vest is based on the total stockholder return of the Company relative to the total stockholder return of the Russell 2000 Index ("Index") over their respective performance periods, as defined by each award's plan documents. The Company did not grant any stock options or SARs during the twelve months ended months ended December 31, 2018 or 2017.

The fair value of the time-based RSUs is based on the closing price of the Company's stock on the date of grant.

The Company estimates the fair value and the derived service period of the market-based RSUs on the date of grant using a 'Monte Carlo' simulation model. The model requires the use of a number of assumptions including the expected volatility of the Company's stock, its risk-free interest rate and expected dividends. The Company's expected volatility at the date of grant was based on the historical volatility of the Company over the performance period.

The fair value of the market-based RSUs is expensed over the derived service period for each separate vesting tranche. The derived service period for the vesting tranches of the market-based RSUs ranges between 1.01 and 1.98 years.

The Company estimates the fair value of MSUs on the date of grant using a 'Monte Carlo' simulation model. The determination of fair value of the MSUs is affected by the Company's stock price and a number of assumptions including the expected volatilities of the Company's stock and the Index, its risk-free interest rate and expected dividends. The Company's expected volatility at the date of grant was based on the historical volatilities of the Company and the Index over the performance period.

The weighted average assumptions used to value the MSUs granted during the twelve months ended months ended December 31, 2018 were as follows:

	December 31, 2018
Volatility	43.67%
Risk-free interest rate	2.12%
Expected option life in years	2.97
Dividend yield	—

Earnings per share

The Company computes basic earnings (loss) per share by dividing net income (loss) attributable to common stockholders by the weighted average number of common shares outstanding. Diluted earnings (loss) per share is computed by dividing net income (loss) attributable to common stockholders by the weighted average number of common shares and dilutive potential common shares then outstanding. Diluted earnings per share reflect the assumed conversion of all dilutive securities, using the treasury stock method. Dilutive potential common shares consist of shares issuable upon the exercise of stock options, shares of unvested restricted stock units, and settlement of stock appreciation rights. When the Company incurs a net loss, the effect of the Company's outstanding stock options, stock appreciation rights and restricted stock units are not included in the calculation of diluted earnings (loss) per share as the effect would be anti-dilutive. Accordingly, basic and diluted net loss per share are identical.

Cost method investment

Investments in equity securities of privately held companies without readily determinable fair value, where the Company does not exercise significant influence over the investee, are recorded using the cost method of accounting, carrying the investment at historical cost. If there are no identified events or changes in circumstances that might have an adverse effect on the cost method investments, the Company does not estimate the investments' fair value. For all investments, if a decline in the fair value of an investment below the carrying value is determined to be other-than-temporary, such investment is written down to its estimated fair value with a charge to current earnings.

At both December 31, 2018 and December 31, 2017, the Company held $2.0 million of equity securities in a privately held company. This investment is accounted for under the cost method and the Company measures it at fair value on a nonrecurring basis when it is deemed to be other-than-temporarily impaired. The Company estimates fair value of its cost method investment considering available information such as pricing in recent rounds of financing, current cash positions, earnings and cash flow forecasts, recent operational performance and any other readily available market data, which represents level 3 in the fair value hierarchy as defined by Accounting Standard Codification ("ASC") 820, "*Fair Value Measurement and Disclosure*" ("ASC 820"). As of December 31, 2018, the Company determined there were no other-than-temporary impairments on its cost method investment.

Fair value measurement

The Company's financial assets that are included in cash and cash equivalents and that are measured at fair value on a recurring basis consisted of $268.6 million and $131.4 million at December 31, 2018 and December 31, 2017, respectively, and were invested in treasury money market funds. The fair value of the treasury money market funds is determined based on quoted market prices, which represents level 1 in the fair value hierarchy as defined by ASC 820.

Trade and other receivables

Trade and other receivables are primarily comprised of trade receivables, net of allowance for doubtful accounts, contract assets and unbilled receivables. The Company records trade accounts receivable for its unconditional rights to consideration arising from the Company's performance under contracts with customers. The Company's standard billing terms are that payment is due upon receipt of invoice, payable generally within thirty to sixty days. The carrying value of such receivables, net of the allowance for doubtful accounts, represents their estimated net realizable value. The Company estimates its allowance for doubtful accounts for specific trade receivable balances based on historical collection trends, the age of outstanding trade receivables, existing economic conditions, and any financial security associated with the receivables.

Contract assets represent conditional rights to consideration that have been recognized as revenue in advance of billing the customer. Unbilled receivables represent unconditional rights to consideration arising from contingent revenue, that have been recognized as revenue in advance of billing the customer.

Deferred costs

Sales commissions earned by the Company's sales representatives are considered incremental and recoverable costs of obtaining a customer contract. Sales commissions are deferred and amortized on a straight-line basis over the period of benefit which the Company has determined to be five to eight years. The Company determined the period of benefit by taking into consideration its customer contracts, expected renewals as the Company currently does not pay an incremental sales commission, the Company's technology and other factors. The Company also defers amounts earned by employees other than sales representatives who earn incentive payments under compensation plans that are also tied to the value of customer contracts acquired. Deferred costs were $17.5 million and $6.3 million as of December 31, 2018 and December 31, 2017, respectively. Amortization expense for the deferred costs was $0.8 million for both the three months ended December 31, 2018 and 2017, and $3.0 million and $2.5 million for the twelve months ended December 31, 2018 and 2017, respectively.

Deferred implementation costs

The Company capitalizes certain contract fulfillment costs, including personnel and other costs (such as hosting, employee salaries, benefits and payroll taxes), that are associated with arrangements where professional services are not distinct from other undelivered obligations in its customer contracts. The Company analyzes implementation costs and capitalizes those costs that are directly related to customer contracts, that are expected to be recoverable, and that enhance the resources which will be used to satisfy the undelivered performance obligations in those contracts. Deferred implementation costs are amortized ratably over the remaining contract term once the revenue recognition criteria for the respective performance obligation has been met and revenue recognition commences. Deferred implementation costs were $3.9 million and $2.2 million as of December 31, 2018 and December 31, 2017, respectively. Amortization expense for the deferred implementation costs was $0.3 million for both the three months ended December 31, 2018 and 2017, and $0.6 million and $0.3 million for the twelve months ended December 31, 2018 and 2017, respectively. Deferred implementation costs are included in prepaid and other current assets and other long-term assets in the condensed consolidated balance sheets. Amortization of deferred implementation costs is included in cost of subscription and cost of services revenues in the accompanying unaudited condensed consolidated statements of comprehensive income (loss).

Deferred revenue

Deferred revenue primarily consists of customer invoicing in advance of revenues being recognized. The Company generally invoices its customers annually in advance for subscription services and maintenance and support services. Deferred revenue that is anticipated to be recognized during the next twelve-month period is recorded as current deferred revenue and the remaining portion is recorded as long-term.

Credit facility

As of December 31, 2018, the Company had no outstanding borrowings under its $50.0 million secured Credit Agreement ("Revolver") with the lenders party thereto and Wells Fargo Bank, National Association as agent for the lenders party thereto. The Company included $0.1 million of unamortized debt issuance costs related to the Revolver in prepaid and other current assets and other long-term assets in the condensed consolidated balance sheets. For the twelve months ended months ended December 31, 2018 and 2017, the Company recorded an immaterial amount of amortization of debt issuance cost which is included in other income (expense), net in the unaudited condensed consolidated statements of comprehensive income (loss).

Income taxes

The Company recorded an income tax provision of $0.0 million and a tax benefit of $0.1 million for the three months ended December 31, 2018 and 2017, respectively, and a tax provision of $0.2 million and $0.1 million for the twelve months ended December 31, 2018 and 2017, respectively, primarily related to foreign income taxes and withholding taxes offset by additional release of the valuation allowance. The effective tax rate for the three months ended December 31, 2018 and 2017 was 0% and (1)%, respectively, and for the nine months ended December 31, 2018 and 2017 was 0%. The income tax rates vary from the federal and state statutory rates primarily due to the valuation allowances on the Company's deferred tax assets and foreign and state taxes not based on income. During the nine months ended December 31, 2018, the Company finalized the deferred tax liabilities assumed upon the acquisition of PROS Travel Commerce, Inc. (formerly Vayant Travel Technologies, Inc.) ("Vayant") resulting in an additional release of valuation allowance recorded in the period.

The Company estimates its annual effective tax rate at the end of each quarterly period. Jurisdictions with a projected loss for the year where no tax benefit can be recognized due to the valuation allowances on the Company's deferred tax assets are

excluded from the estimated annual effective tax rate. The impact of such an exclusion could result in a higher or lower effective tax rate during a particular quarter depending on the mix and timing of actual earnings versus annual projections.

Recently adopted accounting pronouncements

Topic 606

In May 2014, the FASB issued Accounting Standards Update ("ASU") No. 2014-09, "*Revenue from Contracts with Customers (Topic 606)*" ("Topic 606"). Topic 606 replaces the prior revenue recognition requirements in ASC 605, *"Revenue Recognition"* ("Topic 605" or "Prior Guidance") with a comprehensive revenue measurement and recognition standard, and expanded disclosure requirements. The new standard also provides guidance on the recognition of costs related to obtaining customer contracts. Topic 606 took effect in the first quarter of 2018, including interim periods within that reporting period. The Company adopted Topic 606 and applied Topic 606 to those contracts which were not complete as of January 1, 2018 using the modified retrospective method by recognizing the cumulative effect of initially applying the new standard as an adjustment to the opening balance of accumulated deficit, while prior period amounts are not adjusted and continue to be reported in accordance with the Company's historic accounting under the Prior Guidance.

The most significant impact of Topic 606 relates to the Company's accounting for arrangements that include term-based software licenses bundled with maintenance and support, the deferral of incremental costs of obtaining a contract with a customer, including the period of amortization of such costs, and additional disclosures. Under the Prior Guidance, revenue attributable to term-based software licenses was recognized ratably over the term of the arrangement when vendor-specific objective evidence ("VSOE") did not exist for the undelivered maintenance and support element because it was not sold separately. Topic 606 does not require VSOE for undelivered elements to separate revenue for the delivered software licenses. Accordingly, under the new standard, the Company is required to recognize as revenue a portion of the arrangement fee upon delivery of the software license. The adjustment to the opening balance sheet of the accumulated deficit for all revenue related items was a decrease of approximately $2.7 million.

Topic 606 also requires the Company to capitalize and amortize the costs to obtain a contract over the expected period of customer benefit. The Company previously capitalized and amortized only direct and incremental commission costs over the term of the related contract. The expected period of customer benefit determined under Topic 606 is longer than the typical two to five year term of the Company's contracts as required under the Prior Guidance. As a result of applying Topic 606, the Company recorded a decrease to the opening balance sheet of the accumulated deficit for costs to obtain a contract of approximately $7.0 million.

Topic 230

In August 2016, the FASB issued ASU 2016-15, "*Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments*" which is intended to reduce the diversity in practice on classification of certain transactions in the statement of cash flows. The Company adopted this standard on January 1, 2018 and the adoption had no impact on its condensed consolidated financial statements and related disclosures.

In November 2016, the FASB issued ASU 2016-18, "*Statement of Cash Flows (Topic 230): Restricted Cash (a consensus of the FASB Emerging Issues Task Force*" which is intended to define the presentation and related disclosures of restricted cash balances. The Company adopted this standard on January 1, 2018 and the adoption had no impact on its condensed consolidated financial statements and related disclosures.

Recently issued accounting pronouncements not yet adopted

In February 2016, the FASB issued ASU 2016-02, "*Leases (Topic 842)*" ("Topic 842") which requires the lessee to recognize most leases on the balance sheet thereby resulting in the recognition of lease assets and liabilities for those leases currently classified as operating leases. Lessor accounting remains largely unchanged from current guidance, however, Topic 842 provides improvements that are intended to align lessor accounting with the lessee model and with updated revenue recognition guidance. This standard is effective for interim and annual reporting periods beginning after December 15, 2018. The Company is currently assessing the impact of Topic 842 on its condensed consolidated financial statements.

In January 2017, the FASB issued ASU 2017-04, "*Intangibles - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment*" ("Topic 350"), which eliminates step two from the goodwill impairment test. Under the amendments in this standard, an entity should recognize an impairment charge for the amount by which the carrying amount of a reporting unit exceeds its fair value; however, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit.

The standard is effective for interim and annual reporting periods beginning after December 15, 2019; earlier adoption is permitted for goodwill impairment tests performed after January 1, 2017. The Company is currently assessing the impact of Topic 350 on its condensed consolidated financial statements.

With the exception of the new standards discussed above, there have been no other recent accounting pronouncements or changes in accounting pronouncements during the twelve months ended December 31, 2018, as compared to the recent accounting pronouncements described in the Company's Annual Report, that are of significance or potential significance to the Company.

3. Deferred Revenue and Performance Obligations

Deferred Revenue

For the three months ended December 31, 2018 and 2017, the Company recognized approximately $32.4 million and $27.9 million, respectively, and for the twelve months ended December 31, 2018 and 2017, the Company recognized approximately $74.6 million and $65.6 million, respectively, in each case of revenue that was included in the deferred revenue balances at the beginning of the respective periods and primarily related to subscription services, maintenance and services.

Performance Obligations

As of December 31, 2018, the Company expects to recognize approximately $336.5 million of revenue from remaining performance obligations. The Company expects to recognize revenue on approximately $162.2 million of these performance obligations over the next 12 months, with the balance recognized thereafter.

4. Disaggregation of Revenue

Revenue by Geography

The geographic information in the table below is presented for the twelve months ended months ended December 31, 2018 and 2017. The Company categorizes geographic revenues based on the location of the customer's headquarters. Because the Company's contracts are predominately denominated in U.S. dollars, it has limited exposure to foreign currency exchange risk as discussed under "*Foreign Currency Exchange Risk*" of Part I, Item 3 below.

	Three Months Ended December 31,				Twelve Months Ended December 31,			
	2018		2017		2018		2017	
	Revenue	Percent	Revenue	Percent	Revenue	Percent	Revenue	Revenue
United States of America	$ 34,554	34%	$ 32,068	45%	$ 68,482	35%	$ 63,097	37%
Europe	10,685	11%	11,370	16%	40,776	21%	33,852	20%
The rest of the world	36,278	35%	27,422	39%	67,595	34%	54,446	32%
Total revenue	$ 81,517	100%	$ 70,860	100%	$ 176,853	100%	$ 151,395	100%

5. Impact on Financial Statements of Changes in Accounting Policies

The Company applied Topic 606 using the modified retrospective method by recognizing the cumulative effect of initially applying Topic 606 as an adjustment to the opening balance sheet at January 1, 2018. Therefore, the comparative information has not been adjusted and continues to be reported under Topic 605. The differences between balances under Topic 606 and Topic 605 are detailed below:

	December 31, 2018		
(in thousands)	As Reported	Adjustments	Balances Under Topic 605
Balance Sheets			
Trade and other receivables, net of allowance	$ 41,822	$ (232)	$ 41,590
Deferred costs, current	4,089	(30)	4,059
Long-term deferred costs	13,373	(8,278)	5,095
Deferred revenue, current	99,262	2,120	101,382
Long-term deferred revenue	17,903	1,088	18,991
Accumulated deficit	$ (292,708)	$ (11,748)	$ (304,456)

	Three Months Ended December 31, 2018		
(in thousands, except per share amounts)	As Reported	Adjustments	Balances Under Topic 605
Income Statements			
Total revenue	$ 52,613	$ (500)	$ 52,113
Total cost of revenue	19,458	216	19,674
Selling and marketing	18,335	379	18,714
General and administrative	10,289	(80)	10,209
Research and development	14,140	(59)	14,081
Net loss	(12,760)	(956)	(13,716)
Basic and diluted loss per share	$ (0.34)	$ (0.13)	$ (0.47)

	Twelve Months Ended December 31, 2018		
(in thousands, except per share amounts)	As Reported	Adjustments	Balances Under Topic 605
Income Statements			
Total revenue	$ 197,024	$ (684)	$ 196,340
Total cost of revenue	77,179	328	77,507
Selling and marketing	72,006	1,028	73,034
General and administrative	41,302	(239)	41,063
Research and development	55,657	(176)	55,481
Net loss	(64,246)	(1,625)	(65,871)
Basic and diluted loss per share	$ (1.86)	$ 0.28	$ (1.58)

6. Business Combination

On August 3, 2017, the Company acquired Vayant, a privately held company based in Sofia, Bulgaria, for total cash consideration, net of cash acquired, of approximately $34.1 million. Vayant is a cloud software company that provides advanced shopping, merchandising and inspirational travel solutions.

For the twelve months ended months ended December 31, 2018, the Company has included $2.3 million and $7.0 million, respectively, of revenue and $1.6 million and $3.8 million, respectively, of net loss related to Vayant in its consolidated income statement. During the twelve months ended months ended December 31, 2018, the Company incurred acquisition-related costs of zero and $0.1 million, respectively consisting primarily of integration costs and retention of key employees. During the twelve months ended months ended December 31, 2017, the Company incurred acquisition-related costs of $0.7 million primarily related to advisory and legal fees, accounting and professional fees, and retention of key employees.

All of the assets acquired and the liabilities assumed in the transaction have been recognized at their acquisition date fair values at August 3, 2017.

The final allocation of the total purchase price for Vayant is as follows (in thousands):

Cash	$	1,822
Other current assets		1,235
Noncurrent assets		86
Intangibles		18,600
Goodwill		17,052
Accounts payable and accrued liabilities		(1,668)
Deferred revenue		(600)
Deferred tax liability		(526)
Noncurrent liabilities		(49)
Net assets acquired	$	35,952

The following are the identifiable intangible assets acquired (in thousands) with respect to the Vayant acquisition, and their respective useful lives:

		Amount	Useful Life (years)
Developed technology	$	11,600	7
Customer relationships		7,000	5
Total	$	18,600	

In performing the purchase price allocation, the Company considered, among other factors, its anticipated future use of the acquired assets, historical financial performance, and estimated cash flows from Vayant's products and services. The allocation resulted in acquired intangible assets of $18.6 million. The acquired intangible assets consisted of developed technology and customer relationships and were valued using the income approach in which the after-tax cash flows are discounted to present value. The cash flows are based on estimates used to price the transaction, and the discount rates applied were benchmarked with reference to the implied rate of return from the transaction model as well as the weighted average cost of capital. Additionally, the Company assumed certain liabilities in the acquisition, including deferred revenue with a fair value of $0.6 million as determined using a cost-plus profit approach.

The Company made a preliminary determination that $0.5 million of net deferred tax liabilities were assumed on the acquisition date. During the nine months ended December 31, 2018, the Company made a final determination upon filing of the pre-acquisition period tax return that $0.8 million of net deferred tax liabilities were assumed on the acquisition date. The measurement period adjustment of $0.3 million to the deferred tax liabilities recorded during the nine months ended December 31, 2018 resulted in an increase to the goodwill and a benefit to the income tax provision.

The excess of the purchase price over the estimated amounts of net assets as of the effective date of the acquisition was allocated to goodwill. The factors contributing to the recognition of the amount of goodwill were based on several strategic and synergistic benefits that were expected to be realized from the Vayant acquisition. These benefits include the expectation that the combined company's complementary products will strengthen the Company's modern commerce solutions for the travel industry. The Company believes the combined company will benefit from a broader global presence and, with the Company's direct sales force and larger channel coverage, significant cross-selling opportunities. None of the goodwill is expected to be currently deductible for tax purposes. In accordance with applicable accounting standards, goodwill will not be amortized but instead will be tested for impairment at least annually, or more frequently if certain indicators are present. In the event that the management of the combined company determines that the value of goodwill has become impaired, the combined company will incur an accounting charge for the amount of the impairment during the fiscal quarter in which the determination is made.

Pro Forma Financial Information

The unaudited financial information in the table below summarizes the combined results of operations of the Company and Vayant, on a pro forma basis, for the twelve months ended months ended September 30, 2017 as though the Company had acquired Vayant on January 1, 2016. The pro forma information for all periods presented also includes the effect of business combination accounting resulting from the acquisition, including amortization charges from acquired intangible assets.

	Three Months Ended December 31,	Twelve Months Ended December 31,
(in thousands, except earnings per share)	2017	2017
Total revenue	$ 47,145	$ 160,696
Net loss	(18,904)	(81,652)
Earnings per share - basic and diluted	$ (0.59)	$ (2.69)

7. Earnings per Share

The following table sets forth the computation of basic and diluted earnings per share for the twelve months ended months ended December 31, 2018 and 2017:

	Three Months Ended December 31,		Twelve Months Ended December 31,	
(in thousands, except per share data)	2018	2017	2018	2017
Numerator:				
Net loss	$ (12,760)	$ (16,980)	$ (64,246)	$ (77,926)
Denominator:				
Weighted average shares (basic)	37,154	31,927	34,465	31,627
Dilutive effect of potential common shares	—	—	—	—
Weighted average shares (diluted)	37,154	31,927	34,465	31,627
Basic loss per share	$ (0.34)	$ (0.53)	$ (1.86)	$ (2.46)
Diluted loss per share	$ (0.34)	$ (0.53)	$ (1.86)	$ (2.46)

Dilutive potential common shares consist of shares issuable upon the exercise of stock options, settlement of SARs, and the vesting of RSUs and MSUs. Potential common shares determined to be antidilutive and excluded from diluted weighted average shares outstanding were approximately 2.2 million and 2.0 million for the three months ended December 31, 2018 and 2017, respectively, and 2.1 million and 2.0 million for the twelve months ended December 31, 2018 and 2017, respectively.

Since the Company has the intention and ability to settle the principal amount of its Notes (as defined in Note 9 below) in cash, the treasury stock method is expected to be used for calculating any potential dilutive effect of the conversion spread on diluted net income per share, if applicable. The conversion spread will have a dilutive impact on diluted net income per share of common stock when the average market price of common stock for a given period exceeds the conversion price of $33.79 and $48.63 per share, for the 2019 Notes (as defined in Note 9 below) and 2047 Notes (as defined in Note 9 below), respectively.

8. Noncash Share-based Compensation

During the three months ended December 31, 2018, the Company granted 18,904 RSUs with a weighted average grant-date fair value of $39.41 per share. The Company granted no MSUs, options or SARs during this period.

During the twelve months ended December 31, 2018, the Company granted 803,896 RSUs with a weighted average grant-date fair value of $27.47 per share. The Company also granted 116,899 MSUs with a weighted average grant-date fair value of $38.18 to certain executive employees during the twelve months ended December 31, 2018. These MSUs vest on January 10, 2021 and the actual number of MSUs that will be eligible to vest is based on the total stockholder return of the Company relative to the total stockholder return of the Index over the performance period, as defined by each award's plan documents or individual award agreements. The Company did not grant any stock options or SARs during the twelve months ended December 31, 2018.

Share-based compensation expense is allocated to expense categories on the unaudited condensed consolidated statements of comprehensive income (loss). The following table summarizes share-based compensation expense included in the Company's

unaudited condensed consolidated statements of comprehensive income (loss) for the twelve months ended months ended December 31, 2018 and 2017:

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2018	2017	2018	2017
Share-based compensation:				
Cost of revenue	$ 445	$ 479	$ 1,721	$ 1,971
Operating expenses:				
Selling and marketing	779	909	4,396	4,348
General and administrative	2,635	2,864	10,717	11,163
Research and development	1,098	1,319	4,619	5,314
Total included in operating expenses	4,512	5,092	19,732	20,825
Total share-based compensation expense	$ 4,957	$ 5,571	$ 21,453	$ 22,796

The Company's 2017 Equity Incentive Plan ("2017 Stock Plan") was approved by stockholders in May 2017 and reserved an aggregate amount of 2,500,000 shares for issuance. As of December 31, 2018, 1,347,240 shares remain available for issuance under the 2017 Stock Plan.

At December 31, 2018, the Company had an estimated $33.3 million of total unrecognized compensation costs related to share-based compensation arrangements. These costs will be recognized over a weighted average period of 2.4 years.

The Company's Employee Stock Purchase Plan ("ESPP") provides for eligible employees to purchase shares on an after-tax basis in an amount between 1% and 10% of their annual pay: (i) on June 30 of each year at a 15% discount of the fair market value of the Company's common stock on January 1 or June 30, whichever is lower, and (ii) on December 31 of each year at a 15% discount of the fair market value of the Company's common stock on July 1 or December 31, whichever is lower. An employee may not purchase more than $5,000 in either of the six-month measurement periods described above or more than $10,000 annually. During the twelve months ended months ended December 31, 2018, the Company issued 38,431 and 75,546 shares, respectively, under the ESPP. As of December 31, 2018, 215,555 shares remain authorized and available for issuance under the ESPP. As of December 31, 2018, the Company held approximately $0.9 million on behalf of employees for future purchases under the ESPP, and this amount was recorded in accrued payroll and other employee benefits in the Company's unaudited condensed consolidated balance sheet.

9. Convertible Senior Notes

The Company issued $143.8 million principal amount of convertible senior notes in December 2014 (the "2019 Notes") and $106.3 million principal amount of convertible senior notes in June 2017 (the "2047 Notes" and collectively with the 2019 Notes, the "Notes"). The interest rates for the Notes are fixed at 2.0% per annum. Interest is payable semi-annually in arrears on June 1 and December 1 of each year, commencing on June 1, 2015 for the 2019 Notes, and on December 1, 2017 for the 2047 Notes. The 2019 Notes mature on December 1, 2019, unless redeemed or converted in accordance with their terms prior to such date. The 2047 Notes mature on June 1, 2047, unless repurchased, redeemed or converted in accordance with their terms prior to such date.

Each $1,000 of principal of the 2019 Notes will initially be convertible into 29.5972 shares of the Company’s common stock, which is equivalent to an initial conversion price of approximately $33.79 per share. Each $1,000 of principal amount at maturity of the 2047 Notes had an issue price of $880, and will initially be convertible into 20.5624 shares of the Company’s common stock, which is equivalent to an initial conversion price of approximately $48.63 per share. The initial conversion price for each of the Notes is subject to adjustment upon the occurrence of certain specified events. An amount equal to the difference between the issue price and the principal amount at maturity will accrete to the 2047 Notes in accordance with the schedule set forth in the 2047 Notes. The issue price plus such accreted amount of the 2047 Notes is referred to herein as the “accreted principal amount.” On June 1, 2022, the accreted principal amount will accrete to 100% of the principal amount at maturity.

The Notes are each general unsecured obligations and rank senior in right of payment to all of the Company's indebtedness that is expressly subordinated in right of payment to the Notes, rank equally in right of payment with all of the Company's existing and future liabilities that are not so subordinated, are effectively junior to any of the Company's secured indebtedness to the extent of the value of the assets securing such indebtedness and are structurally subordinated to all indebtedness and other liabilities (including trade payables but excluding intercompany obligations owed to the Company or its subsidiaries).

From September 1, 2019 through the end of the second scheduled trading day immediately prior to maturity, holders may convert all or any portion of their 2019 Notes regardless of the contingent conversion conditions described herein. Upon conversion, the Company will pay or deliver cash, shares of its common stock or a combination of cash and shares of its common stock, at its election, as described in the indenture governing the 2019 Notes.

On or before June 1, 2021, and subject to the satisfaction of certain conditions, the Company is entitled to elect to redeem all or any portion of the 2047 Notes at a redemption price equal to 100% of the accreted principal amount of the 2047 Notes, plus accrued and unpaid interest to, but excluding, the redemption date, if the daily volume weighted average price of the Company’s common stock is greater than or equal to 130% of the conversion price for at least 20 trading days during any 30 consecutive trading day period. After June 1, 2021, the Company will be entitled to elect to redeem all or any portion of the 2047 Notes (without regard to the price of the Company’s common stock) at a redemption price equal to the then current accreted principal amount of the 2047 Notes, plus accrued and unpaid interest to, but excluding, the redemption date.

Holders may convert their 2019 Notes at their option at any time prior to the close of business on the business day immediately preceding September 1, 2019 only under the following circumstances:

- during any calendar quarter commencing after the calendar quarter ending on March 31, 2015, if the last reported sale price of the common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price on each applicable trading day;

- during the five consecutive business day period immediately following any five consecutive trading day period in which the trading price per $1,000 principal amount of 2019 Notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price of the Company's common stock and the conversion rate on each such trading day; or

- upon the occurrence of specified corporate events.

Holders may convert their 2047 Notes at their option on any day prior to the close of business on the business day immediately preceding March 1, 2047 under the following circumstances:

- during any calendar quarter commencing after the calendar quarter ending September 30, 2017, if the last reported sale price of the Company's common stock for 20 or more trading days (whether or not consecutive) in a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter exceeds 130% of the applicable conversion price in effect on each such trading day;

- during the five consecutive business day period immediately following any five consecutive trading day period (the "Measurement Period") in which the trading price per 2047 Note for each day of that Measurement Period was less than 98% of the product of the last reported sale price of the Company's common stock and the conversion rate on each such day; or

- upon the occurrence of specified corporate events.

The 2047 Notes will also be convertible, regardless of the foregoing circumstances, at any time from, and including, March 1, 2047 until the close of business on the second scheduled trading day immediately preceding the applicable maturity date. Each holder of the 2047 Notes has the right to require the Company to repurchase for cash all or any portion of such holder's 2047 Notes on June 1, 2022 at a price per $1,000 principal amount of the 2047 Notes equal to the accreted principal amount at maturity plus accrued and unpaid interest to, but excluding, the repurchase date.

If a fundamental change (as defined in the relevant indenture governing the applicable series of Notes) occurs prior to the maturity date, holders of each of the 2019 Notes and 2047 Notes may require the Company to repurchase all or a portion of their notes for cash at a repurchase price equal to 100% of the principal amount at maturity of the Notes, plus any accrued and unpaid interest to, but excluding, the repurchase date. If such a fundamental change occurs prior to June 1, 2022, holders of the 2047 Notes may also require the Company to repurchase all or a portion of their notes for cash at a repurchase price equal to the then current accreted principal amount of the Notes, plus any accrued and unpaid interest to, but excluding, the repurchase date. In addition, if specific corporate events occur prior to the applicable maturity date, the Company will be required to increase the conversion rate for holders who elect to convert their notes in certain circumstances. Holders who convert their 2047 Notes in connection with a Make-Whole Fundamental Change (as defined in the indenture governing the 2047 Notes) or in connection

with a redemption of such 2047 Notes on or prior to June 1, 2021 will, under certain circumstances, be entitled to a make-whole premium in the form of an increase in the conversion rate determined by reference to a make-whole table set forth in such indenture.

As of December 31, 2018, the 2019 Notes and the 2047 Notes are not yet convertible.

In accordance with accounting guidance on embedded conversion features, the Company valued and bifurcated the conversion options associated with each of the 2019 Notes and 2047 Notes from the respective host debt instrument, which is referred to as debt discount and recorded the conversion option of each of the Notes in stockholders' equity. The equity component for each Note is not remeasured as long as such Note continues to meet the conditions for equity classification.

In accounting for the transaction costs for each of the notes issuance, the Company allocated the costs incurred to the liability and equity components in proportion to the allocation of the proceeds from issuance to the liability and equity components. Issuance costs attributable to the liability component, totaling $4.3 million for the 2019 Notes and $2.7 million for the 2047 Notes, are being amortized to expense over the expected life of each notes using the effective interest method. Issuance costs attributable to the equity component related to the conversion option, totaling $1.2 million for the 2019 Notes and $0.3 million for the 2047 Notes, were netted with the equity component in stockholders' equity.

The Notes consist of the following (in thousands):

	December 31, 2018	December 31, 2017
Liability component:		
Principal	$ 250,000	$ 250,000
Less: debt discount and issuance cost, net of amortization	(24,810)	(36,797)
Net carrying amount	$ 225,190	$ 213,203
Equity component[(1)]	$ 37,560	$ 37,560

(1) Recorded within additional paid-in capital in the consolidated balance sheet. As of December 31, 2018, it included $28.7 million and $8.8 million related to the 2019 Notes and the 2047 Notes, respectively, net of $1.2 million and $0.3 million issuance cost in equity, respectively.

The following table sets forth total interest expense recognized related to the Notes (in thousands):

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2018	2017	2018	2017
2.0% coupon	$ 1,250	$ 1,250	$ 5,000	$ 3,991
Amortization of debt issuance costs	357	340	1,419	1,127
Amortization of debt discount	2,659	2,504	10,567	8,100
Total	$ 4,266	$ 4,094	$ 16,986	$ 13,218

As of December 31, 2018 and December 31, 2017, the fair value of the principal amount of the Notes was and $246.6 million, respectively. The estimated fair value was determined based on inputs that are observable in the market or that could be derived from, or corroborated with, observable market data, including the Company's stock price and interest rates, which represents level 2 in the fair value hierarchy.

As of December 31, 2018, the remaining life of the 2019 Notes and the 2047 Notes is approximately 11 months and 41 months, respectively.

Note Hedge and Warrant Transactions

Concurrently with the offering of the 2019 Notes, the Company entered into separate convertible note hedge (the "Note Hedge") and warrant (the "Warrant") transactions. Taken together, the purchase of the Note Hedge and the sale of the Warrant are intended to offset any actual dilution from the conversion of the 2019 Notes and to effectively increase the overall conversion price of the 2019 Notes from $33.79 to $45.48 per share. The total cost of the Note Hedge transaction was $29.4 million. The Company received $17.1 million in cash proceeds from the sale of the Warrant.

Pursuant to the Warrant, if the average market value per share of the Company's common stock for the reporting period, as measured under the Warrant, exceeds the strike price of the Warrant, the Warrant will have a dilutive effect on the Company's

earnings per share. Holders of the 2019 Notes and Note Hedge will not have any rights with respect to the Warrant, as the Note Hedge is not part of the 2019 Notes or the Warrant. The Warrant is not part of the 2019 Notes or Note Hedge. Both the Note Hedge and Warrant have been accounted for as part of additional paid-in capital.

10. Equity Offering

In August 2018, the Company completed a follow-on public offering of 3,800,000 shares of the Company's common stock at an offering price of $34 per share (the "Secondary Offering"). Additionally, as part of the Secondary Offering the underwriters exercised, in full, their over-allotment option to purchase an additional 570,000 shares of the Company's common stock at the offering price of $34 per share. The aggregate gross proceeds from the Secondary Offering, including the exercise of the over-allotment, were $148.6 million, and net proceeds received after underwriting fees and offering expenses were approximately $142.0 million.

11. Commitments and Contingencies

Litigation

In the ordinary course of business, the Company regularly becomes involved in contract and other negotiations and, in more limited circumstances, becomes involved in legal proceedings, claims and litigation. The outcomes of these matters are inherently unpredictable. The Company is not currently involved in any outstanding litigation that it believes, individually or in the aggregate, will have a material adverse effect on its business, financial condition, results of operations or cash flows.

Purchase commitments

In the ordinary course of business, the Company enters in various purchase commitments for goods and services.

In June 2017, the Company entered in a noncancelable agreement with a computing infrastructure vendor that expires on June 30, 2020. The purchase commitment as of December 31, 2018 was $12.6 million for the remaining period under the three-year agreement.

Contractual obligations

In September 2018, the Company entered into an agreement of limited partnership related to a venture fund, pursuant to which the Company committed to make a capital contribution of $2.3 million within the next five years.

Lease commitments

The Company leases office space and office equipment under noncancelable operating leases that expire at various dates.

As of December 31, 2018, the future minimum lease commitments related to lease agreements were as follows:

Year Ending December 31,	Amount
Remaining 2018	$ 4,164
2019	1,649
2020	5,115
2021	6,181
2022	5,679
2023 and thereafter	57,365
Total minimum lease payments	$ 80,153

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The terms "we," "us," "PROS" and "our" refer to PROS Holdings, Inc. and all of its subsidiaries that are consolidated in conformity with generally accepted accounting principles in the United States.

This management's discussion and analysis of financial condition and results of operations should be read along with the unaudited condensed consolidated financial statements and unaudited notes to condensed consolidated financial statements included in Part I, Item 1 ("*Interim Condensed Consolidated Financial Statements (Unaudited)*"), as well as the audited consolidated financial statements and notes to consolidated financial statements and management's discussion and analysis of financial condition and results of operations set forth in our Annual Report.

Overview

PROS provides end-to-end Artificial Intelligence ("AI")-powered solutions that enable fast, frictionless and personalized buying experiences for businesses to compete in today's digital economy. Our solutions provide actionable intelligence that enable dynamic buying experiences for both B2B and B2C companies across industry verticals. Our end-to-end solutions drive pricing optimization, sales effectiveness and revenue management by enabling companies to create data-driven, personalized buying experiences. Companies can use PROS solutions to assess the market environment in real time to deliver customized prices and offers. Our solutions enable buyers to move fluidly across our customers' direct sales, online, mobile and partner channels and have personalized experiences however those customers choose to buy. Our data science and AI are designed to reduce time and complexity and add actionable intelligence to help our customers outperform in their markets. We provide standardized configurations of our software based on the industries we serve and offer professional services to configure these solutions to meet the specific needs of each customer.

Q3 2018 Financial Overview

In the third quarter of 2018, we continued to make substantial progress in the execution of our cloud-first strategy, leading to an increase in our subscription revenue of 48% and 57% for the twelve months ended months ended December 31, 2018, respectively, as compared to the same periods in 2017. Our continuing shift to a subscription-based revenue model also led to a growth of recurring revenue (which consists of subscription revenue and maintenance and support revenue) of 22% and 23%, respectively, as compared to the twelve months ended months of 2017, and accounted for 84% and 81%, respectively, of total revenue for the twelve months ended months ended December 31, 2018.

Cash used in operating activities was $5.7 million for the twelve months ended December 31, 2018, as compared to $25.3 million for the twelve months ended December 31, 2017. The improvement in net cash used in operating activities was primarily due to the net impact of working capital changes and an improvement in our operating results. The change in the working capital was mainly attributable to higher recurring deferred revenue driven by our subscription-based sales.

Free cash flow is a key metric to assess the strength of our business. Free cash flow is a non-GAAP financial measure defined as net cash provided or used by operating activities, less additions to property, plant and equipment, purchases of other (non-acquisition-related) intangible assets and capitalized internal-use software development costs. We believe free cash flow may be useful to investors and others in evaluating the amount of cash generated (used) by our business operations. Free cash flow used during the three months ended December 31, 2018 improved to $14.1 million, compared to $3.6 million for the three months ended December 31, 2017. The improvement was primarily attributable to a $10.7 million decrease in our operating cash outflow due to our business performance following our shift to a subscription-based revenue model. Free cash flow used during the twelve months ended December 31, 2018 improved to $0.5 million, compared to $29.5 million for the twelve months ended December 31, 2017. The improvement was primarily attributable to a $31.0 million decrease in operating cash outflow. The following is a reconciliation of free cash flow to the most comparable GAAP measure, net cash used in operating activities:

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2018	2017	2018	2017
Net cash used in operating activities	$ 15,188	$ 4,535	$ 5,703	$ (25,313)
Purchase of property and equipment	(69)	(51)	(1,475)	(1,286)
Purchase of intangible assets	(125)	(50)	(125)	(125)
Capitalized internal-use software development costs	(927)	(801)	(4,613)	(2,797)
Free Cash Flow	$ 14,067	$ 3,633	$ (510)	$ (29,521)

Total deferred revenue was $117.2 million as of December 31, 2018, as compared to $95.2 million as of December 31, 2017, an increase of $22.0 million, or 23%, primarily due to an increase in subscription deferred revenue.

Secondary Offering

In August 2018, we completed a follow-on public Secondary Offering of 3,800,000 shares of our common stock at an offering price of $34 per share. Additionally, as part of the Secondary Offering the underwriters exercised, in full, their over-allotment option to purchase an additional 570,000 shares of our common stock at the offering price of $34 per share. The aggregate gross proceeds from the Secondary Offering, including the exercise of the over-allotment, were $148.6 million, and net proceeds received after underwriting fees and offering expenses were approximately $142.0 million.

Factors Affecting Our Performance

Key factors and trends that have affected and we believe will continue to affect our operating results include:

- *Buying Preferences Driving Technology Adoption*. Buyers are increasingly demanding the same type of digital buying experience that they enjoy as consumers. For example, buyers increasingly prefer to buy online when they have already decided what to buy, and often prefer not to interact with a sales representative as their primary source of research. In response, we believe that businesses are increasingly looking to modernize their sales process to compete in digital commerce by adopting technologies which provide fast, frictionless, and personalized buying experiences across sales channels. We believe we are uniquely positioned to help power these buying experiences with our AI-powered solutions that enable buyers to move fluidly across our customers' direct sales, online, mobile and partner channels and have personalized experiences however they choose to buy.

- *Continued Investments*. We are focused on creating awareness for our solutions, expanding our customer base and growing our recurring revenues. While we incurred losses in 2018, we believe our market is large and underpenetrated and therefore we intend to continue investing to grow our recurring revenue and support our long-term initiatives. We plan to continue to invest in product development to enhance our existing technologies and develop new applications and technologies. In addition, we plan to continue to expand our ability to sell our subscription offerings globally through investments in sales, marketing, cloud support, security, data privacy compliance and infrastructure.

- *Cloud Migrations*. [In 2015, we began our transition to a cloud business to help accelerate adoption of our solutions and drive recurring revenue. Our cloud strategy has resulted in more sales of subscription-based solutions and very few on-premise licenses since that time, and we expect this trend to continue. This increase in the sales of subscription-based solutions has resulted in an increase in our subscription revenue, and deferred more of our revenue recognition to later periods than we experienced prior to 2015. We also expect that over time, additional sales of our cloud-based solutions will result in a decrease in our maintenance and support revenue, particularly as existing customers migrate from our licensed solutions to our cloud solutions.]

- *Sales Mix Impacts Subscription Revenue Recognition Timing*. The mix of subscription services and professional services can create revenue variability in given periods based on the nature and scope of services sold together. Professional services that are deemed to be distinct from the subscription services are accounted for as a separate performance obligation and revenue is recognized as the services are performed. If determined that the professional services are not considered distinct, the professional services and the subscription services are determined to be a single performance obligation and all revenue is recognized over the contractual term of the subscription beginning on the date that subscription services are made available to the customer, resulting in a deferral of revenue and revenue recognized over a shorter period of time, which would have a negative near-term financial impact.

Results of Operations

The following table sets forth certain items in our Condensed Consolidated Statements of Comprehensive Income (Loss) as a percentage of total revenues for the twelve months ended months ended December 31, 2018 and 2017:

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2018	2017	2018	2017
Revenue:				
Subscription	54 %	41 %	48 %	36 %
Maintenance and support	30	37	33	41
Total subscription, maintenance and support	84	78	81	77
License	1	4	2	3
Services	15	18	17	20
Total revenue	100	100	100	100
Cost of revenue:				
Subscription	17	18	18	17
Maintenance and support	5	6	6	7
Total cost of subscription, maintenance and support	23	24	24	23
License	—	—	—	—
Services	14	15	15	17
Total cost of revenue	37	39	39	41
Gross profit	63	61	61	59
Operating Expenses:				
Selling and marketing	35	38	37	40
General and administrative	20	21	21	24
Research and development	27	29	28	33
Acquisition-related	—	—	—	—
Total operating expenses	81	88	86	98
Convertible debt interest and amortization	(8)	(9)	(9)	(8)
Other income (expense), net	2	—	1	—
Loss before income tax provision	(24)	(36)	(33)	(46)
Income tax provision	—	—	—	—
Net loss	(24)%	(37)%	(33)%	(46)%

***Revenue**:*

	Three Months Ended December 31,		Variance		Twelve Months Ended December 31,		Variance	
(Dollars in thousands)	2018	2017	$	%	2018	2017	$	%
Subscription	$ 28,316	$ 19,082	$ 9,234	48 %	$ 95,192	$ 60,539	$ 34,653	57 %
Maintenance and support	15,723	17,076	(1,353)	(8)%	64,760	69,408	(4,648)	(7)%
Total subscription, maintenance and support	44,039	36,158	7,881	22 %	159,952	129,947	30,005	23 %
License	662	1,679	(1,017)	(61)%	3,516	5,562	(2,046)	(37)%
Services	7,912	8,507	(595)	(7)%	33,556	33,307	249	1 %
Total revenue	$ 52,613	$ 46,344	$ 6,269	14 %	$ 197,024	$168,816	$ 28,208	17 %

Subscription revenue. Subscription revenue increased primarily due to an increase in the number of subscriptions purchased by new and existing customers, with the total number of customers generating subscription revenue increasing by 14% and 17%, respectively, for the twelve months ended months ended December 31, 2018. The increase in subscription revenue also included an increase of $1.1 million and $5.6 million, respectively, from our acquisition of Vayant for the twelve months ended months ended December 31, 2018 as compared to the same periods in 2017 . We expect our subscription revenue will continue to increase

as we focus on subscription-based sales. We continued to invest in customer programs and initiatives which helped keep our attrition rate fairly consistent as compared to the prior year. Our ability to maintain consistent customer subscription renewal rates will play a role in our ability to continue to grow our subscription revenue.

Maintenance and support revenue. The decrease in maintenance and support revenue was principally a result of customer maintenance churn and converting existing maintenance contracts to the cloud during the twelve months ended months ended December 31, 2018. The decrease for the nine months ended December 31, 2018 was also impacted by the timing of certain cash collections during the same period in 2017. As a result of our cloud strategy, we expect maintenance revenue to continue to decline over time as we sell fewer licenses and related maintenance and support, sell more subscription services and convert existing maintenance contracts to the cloud.

License revenue. License revenue increased during the three months ended December 31, 2018 primarily due to an increase in license revenue recognized upon software delivery.

License revenue decreased during the nine months ended December 31, 2018 primarily due to a smaller number of customers licensing our software as a result of our strategy to sell fewer licenses and more subscription services.

Services revenue. For the three months ended December 31, 2018, services revenue decreased primarily as a result of the timing of services recognition on certain customer contracts recognized as the performance obligation was satisfied over time, partially offset by higher sales of professional services related to our subscription sales.

For the nine months ended December 31, 2018, services revenue increased primarily as a result of higher sales of professional services related to our subscription sales and add-on professional services revenue from existing customers. Services revenue varies from period to period depending on different factors, including the level of professional services required to implement our solutions, the timing of services revenue recognition on certain subscription contracts and any additional professional services requested by our customers during a particular period.

Cost of revenue and gross profit:

	Three Months Ended December 31,		Variance		Twelve Months Ended December 31,		Variance	
(Dollars in thousands)	**2018**	**2017**	**$**	**%**	**2018**	**2017**	**$**	**%**
Cost of subscription	$ 9,060	$ 8,253	$ 807	10 %	$ 35,368	$ 27,858	$ 7,510	27 %
Cost of maintenance and support	2,840	2,807	33	1 %	11,602	11,693	(91)	(1)%
Total cost of subscription, maintenance and support	11,900	11,060	840	8 %	46,970	39,551	7,419	19 %
Cost of license	51	72	(21)	(29)%	251	282	(31)	(11)%
Cost of services	7,507	7,015	492	7 %	29,958	28,733	1,225	4 %
Total cost of revenue	19,458	18,147	1,311	7 %	77,179	68,566	8,613	13 %
Gross profit	$ 33,155	$ 28,197	$ 4,958	18 %	$ 119,845	$ 100,250	$ 19,595	20 %

Cost of subscription. The three and nine-month increase in cost of subscription was primarily attributable to an increase of $1.1 million and $4.7 million, respectively, associated with the acquisition of Vayant and an increase in infrastructure, IT-related and other costs of $0.1 million and $2.0 million, respectively, to support our current and anticipated subscription customer base. The subscription gross profit percentage for the three months ended December 31, 2018 and 2017, was 68% and 57%, respectively. The subscription gross profit percentage for the twelve months ended December 31, 2018 and 2017, was 63% and 54%, respectively. The three and nine-month increase in gross profit percentage was primarily attributable to a 48% and 57% increase in subscription revenue, respectively, combined with a smaller increase in cost of subscription driven by efficiencies we are achieving in our cloud infrastructure.

Cost of maintenance and support. The cost of maintenance and support remained relatively unchanged for the twelve months ended months ended December 31, 2018. The maintenance and support gross profit percentage was 82% and 84% for the three months ended December 31, 2018 and 2017, respectively. The maintenance and support gross profit percentage was 82% and 83% for the twelve months ended December 31, 2018 and 2017, respectively, due to the decline in maintenance revenue.

Cost of license. Cost of license consists of third-party fees for licensed software and remained consistent for the twelve months ended months ended December 31, 2018 and 2017. License gross profit percentage for the three months ended December 31,

2018 and 2017 was 92% and 96%, respectively. License gross profit percentage for the twelve months ended December 31, 2018 and 2017, was 93% and 95%, respectively.

Cost of services. The three and nine-month increase in cost of services was primarily attributable to an increase in personnel cost for our customer implementations. Services gross profit percentage for the three months ended December 31, 2018 and 2017, was 5% and 18%, respectively. Services gross profit percentage for the twelve months ended December 31, 2018 and 2017, was 11%. Services gross profit percentages vary from period to period depending on different factors, including the level of professional services required to implement our solutions, our effective man-day rates and the utilization of our professional services personnel.

Gross profit. The increase in overall gross profit for the twelve months ended months ended December 31, 2018 was primarily attributable to an increase in total revenue of 14% and 17%, respectively, as compared to the same periods in 2017 mainly due to increase in our subscription revenue.

Operating expenses:

	Three Months Ended December 31,		Variance		Twelve Months Ended December 31,		Variance	
(Dollars in thousands)	**2018**	**2017**	**$**	**%**	**2018**	**2017**	**$**	**%**
Selling and marketing	$ 18,335	$ 17,491	$ 844	5%	$ 72,006	$ 68,116	$ 3,890	6 %
General and administrative	10,289	9,822	467	5%	41,302	40,336	966	2 %
Research and development	14,140	13,592	548	4%	55,657	56,021	(364)	(1)%
Acquisition-related	—	107	(107)	nm	95	720	(625)	(87)%
Total operating expenses	$ 42,764	$ 41,012	$ 1,752	4%	$ 169,060	$ 165,193	$ 3,867	2 %

Selling and marketing expenses. For the twelve months ended months ended December 31, 2018, selling and marketing expenses increased primarily as a result of a $0.7 million and $2.1 million, respectively, increase in personnel cost as we continue our focus on adding new customers and increasing penetration within our existing customer base. In addition, for the three months, there was a decrease in non-personnel cost primarily driven by a decrease of $0.3 million in travel expense and a decrease of $0.2 million in recruiting expense, partially offset by an increase of $0.3 million in sales and marketing initiatives. For the nine months, there was an increase of $0.9 million in non-personnel cost, which was mainly driven by an increase of $1.1 million of the intangible amortization related to our acquisition of Vayant and a $0.5 million increase in sales and marketing initiatives, partially offset by a $0.7 million decrease in travel expenses.

General and administrative expenses. The three-month decrease in general and administrative expenses was mainly attributable to a slight decrease in personnel cost in the period, mainly related to a decrease of share-based compensation cost. For the twelve months ended December 31, 2018, the increase in general and administrative expenses was primarily due to a $0.4 million increase associated with the acquisition of Vayant and an increase in bad debt expense as compared to the same period in 2017.

Research and development expenses. The three-month decrease in research and development expenses was mainly attributable to an increase in capitalized internal-use software cost of $0.5 million and a decrease of share-based compensation cost of $0.2 million, partially offset by a $0.4 million increase primarily due to higher headcount associated with the Vayant acquisition.

The nine-month decrease in research and development expenses was mainly attributable to an increase in capitalized internal-use software cost of $1.5 million, a decrease of share-based compensation cost of $0.8 million, and a $0.2 million decrease in IT-related and other expenses. The decrease was partially offset by an increase of $1.6 million in personnel cost primarily due to higher headcount associated with the Vayant acquisition.

Acquisition-related expenses. Acquisition-related expenses were zero and $0.1 million for the three months ended December 31, 2018 and 2017, respectively, and $0.1 million and $0.7 million for the nine months ended December 31, 2018 and 2017, respectively. Acquisition-related expenses consisted primarily of integration costs, retention bonuses, advisory, legal, accounting and professional fees related to our acquisition of Vayant.

***Other income, net*:**

	Three Months Ended December 31,		Variance		Twelve Months Ended December 31,		Variance	
(Dollars in thousands)	**2018**	**2017**	**$**	**%**	**2018**	**2017**	**$**	**%**
Convertible debt interest and amortization	$ (4,315)	$ (4,140)	$ (175)	4%	$ (16,986)	$ (13,218)	$ (3,768)	29%
Other income, net	$ 1,188	$ 69	$ 1,119	1,622%	$ 2,155	$ 384	$ 1,771	461%

Convertible debt interest and amortization. The convertible debt expense for the twelve months ended months ended December 31, 2018 and 2017 related to coupon interest and amortization of debt discount and issuance costs attributable to our Notes. The increase in convertible debt interest is directly related to the 2047 Notes issued in June 2017.

Other income, net. Other income, net increased by $1.1 million and $1.8 million, respectively, for the twelve months ended months ended December 31, 2018, primarily due to an increase in interest income partially offset by foreign currency exchange rate fluctuations during the periods.

***Income tax provision (benefit)*:**

	Three Months Ended December 31,		Variance		Twelve Months Ended December 31,		Variance	
(Dollars in thousands)	**2018**	**2017**	**$**	**%**	**2018**	**2017**	**$**	**%**
Effective tax rate	— %	(1)%	n/a	n/a	— %	— %	n/a	n/a
Income tax provision (benefit)	$ 24	$ 94	$ (70)	(74)%	$ 200	$ 149	$ 51	34%

Income tax provision (benefit). The tax provision for the twelve months ended months ended December 31, 2018 included both foreign income and withholding taxes offset by additional release of the valuation allowance related to the Vayant acquisition. No tax benefit was recognized on jurisdictions with a projected loss for the year due to the valuation allowances on our deferred tax assets.

On December 22, 2017, the U.S. enacted the Tax Cuts and Jobs Act (the "TCJA"). The TCJA significantly changes U.S. corporate income tax laws by, among other things, reducing the U.S. corporate income tax rate to 21% effective January 1, 2018. We continue to monitor tax reform and have reflected the impact of tax reform in our results for the twelve months ended months ended December 31, 2018.

Our effective tax rate was 0% and 0% for the twelve months ended months ended December 31, 2018, respectively, and (1)% and 0% for the twelve months ended months ended December 31, 2017, respectively. The income tax rate varies from the 21% federal statutory rate primarily due to the valuation allowances on our deferred tax assets and foreign and state taxes not based on income. While our expected tax rate would be 0% due to the full valuation on the deferred tax assets, the 0% and (1)% tax rate for the three months ended December 31, 2018 and 2017, respectively, is due to foreign and state taxes not based on pre-tax income. During the nine months ended December 31, 2018, we finalized the deferred tax liabilities assumed upon the acquisition of Vayant. An additional release of valuation allowance was recorded in that period.

Jurisdictions with a projected loss for the year where no tax benefit can be recognized due to the valuation allowances on our deferred tax assets are excluded from the estimated annual federal effective tax rate. The impact of such an exclusion could result in a higher or lower effective tax rate during a particular quarter depending on the mix and timing of actual earnings versus annual projections.

Liquidity and Capital Resources

At December 31, 2018, we had $295.5 million of cash and cash equivalents and $71.4 million of working capital as compared to $160.5 million of cash and cash equivalents and $100.0 million of working capital at December 31, 2017.

Our principal sources of liquidity are our cash and cash equivalents, cash flows generated from operations and potential borrowings under our Revolver. We issued the 2019 Notes in December 2014, the 2047 Notes in June 2017 and the Secondary Offering in August 2018 to supplement our overall liquidity position. Our material drivers or variants of operating cash flow are net income (loss), noncash expenses (principally share-based compensation, intangible amortization and amortization of debt discount and issuance costs) and the timing of periodic invoicing and cash collections related to licenses, subscriptions and support

for our software and related services. Our operating cash flows are also impacted by the timing of payments to our vendors and the payments of our other liabilities. We generally pay our vendors in accordance with the invoice terms and conditions.

We believe our existing cash, cash equivalents, including funds provided by the issuance of our Notes and our Secondary Offering, funds available under our Revolver and our current estimates of future operating cash flows, will provide adequate liquidity and capital resources to meet our operational requirements, anticipated capital expenditures and coupon payments for our Notes for the next twelve months. Our future working capital requirements will depend on many factors, including the operations of our existing business, potential growth of our subscription services, future acquisitions we might undertake, and expansion into complementary businesses. If such need arises, we may raise additional funds through equity or debt financings.

The following table presents key components of our unaudited condensed consolidated statements of cash flows for the twelve months ended December 31, 2018 and 2017:

	Twelve Months Ended December 31,	
(Dollars in thousands)	**2018**	**2017**
Net cash provided by (used in) operating activities	$ 5,703	$ (25,313)
Net cash used in investing activities	(6,258)	(22,346)
Net cash provided by financing activities	135,352	90,654
Cash and cash equivalents (beginning of period)	160,505	118,039
Cash and cash equivalents (end of period)	$ 295,476	$ 160,505

Net cash provided by (used in) operating activities. The $31.0 million decrease in net cash used in operating activities was primarily due to the net impact of working capital changes and a $13.7 million improvement in our operating results. The change in the working capital was mainly attributable to higher recurring deferred revenue driven by our subscription-based sales.

Net cash used in investing activities. The $16.1 million decrease in net cash used in investing activities was primarily due to the $34.1 million consideration paid for the acquisition of Vayant in 2017 partially offset by $16.0 million related to maturities of short-term investments in 2017. In addition, capitalized internal-use software and capital expenditures increased by $1.8 million and $0.2 million, respectively, in the twelve months ended December 31, 2018 as compared to the same period in 2017 as we continue to invest in our solutions to grow our recurring revenue.

Net cash provided by financing activities. The increase of $44.7 million in net cash provided by financing activities primarily consisted of an increase in net proceeds from our Secondary Offering of $142.0 million in August 2018, higher proceeds from employee stock plan of $0.2 million, 2017 payments for debt issuance costs of $3.0 million and $0.2 million, respectively, for the 2047 Notes and the Revolver renewal in 2017, and a decrease of $0.2 million in note payable payments. The increase was partially offset by a decrease of proceeds from the issuance of our 2047 Notes of $93.5 million in 2017, a decrease in proceeds from the exercise of stock options of $5.2 million and an increase of $2.0 million in tax withholdings on vesting of employee share-based awards.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements that have or are reasonably likely to have a current or future effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that are material. We do not have any relationships with unconsolidated entities or financial partnerships, such as variable interest entities, that would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Contractual Obligations and Commitments

Other than changes described in Note 11 above, there have been no material changes to our contractual obligations and commitments disclosed in our Annual Report.

Credit facility

In July 2012, we entered into the Revolver. In January 2017, we extended the maturity date of the Revolver through July 2022. There were no outstanding borrowings under the Revolver as of December 31, 2018. As of December 31, 2018, we had $0.1

million of unamortized debt issuance costs related to the Revolver included in prepaids and other current assets and other long-term assets in the unaudited condensed consolidated balance sheets. For the twelve months ended months ended December 31, 2018 and 2017, we recorded an immaterial amount of amortization of debt issuance cost which is included in other expense, net in the unaudited condensed consolidated statements of comprehensive income (loss).

Recent Accounting Pronouncements

See "*Recently adopted accounting pronouncements*" in Note 2 above for discussion of recent accounting pronouncements including the respective expected dates of adoption.

Critical accounting policies and estimates

Our consolidated financial statements are prepared in accordance with GAAP. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, costs and expenses, and related disclosures. Actual results could differ from those estimates. The complexity and judgment of our estimation process and issues related to the assumptions, risks and uncertainties inherent in the application of the percentage-of-completion method of accounting could affect the amounts of revenue, expenses, unbilled receivables and deferred revenue. Estimates are also used for, but not limited to, receivables, allowance for doubtful accounts, useful lives of assets, depreciation, income taxes and deferred tax asset valuation, valuation of stock options, other current liabilities and accrued liabilities. Numerous internal and external factors can affect estimates. Our critical accounting policies related to the estimates and judgments are discussed in our Annual Report under management's discussion and analysis of financial condition and results of operations, except for the revenue recognition policy which has been updated in result of the adoption of the new revenue standard under Topic 606 and is included herein.

We believe the critical accounting policy listed below affects significant judgment and estimates used in the preparation of our accompanying interim unaudited condensed consolidated financial statements.

Revenue recognition

We derive our revenues primarily from subscription services, professional services, the perpetual licensing of our software products and associated software maintenance and support services.

We determine revenue recognition through the following steps:

- Identification of the contract, or contracts, with a customer
- Identification of the performance obligations in the customer contract(s)
- Determination of the transaction price
- Allocation of the transaction price to each performance obligation in the customer contract(s)
- Recognition of revenue when, or as, we satisfy a performance obligation

Subscription services revenue

Subscription services revenue primarily consists of fees that give customers access to one or more of our cloud applications with routine customer support. Subscription services revenue is generally recognized ratably over the contractual term of the arrangement beginning on the date that our service is made available to the customer. Our subscription contracts do not provide customers with the right to take possession of the software supporting the applications and, as a result, are accounted for as service contracts. Our subscription contracts are generally two to five years in length, billed annually in advance, and are non-cancelable.

Maintenance and support revenue

Maintenance and support revenue includes post-implementation customer support and the right to unspecified software updates and enhancements. We recognize revenue from maintenance arrangements ratably over the period in which the services are provided. Our maintenance and support contracts are generally one to three years in length, billed annually in advance, and non-cancelable.

License revenue

Licenses for on-premise software provide the customer with a right to use the software as it exists when made available to the customer. License revenue from distinct on-premises licenses is recognized at the point in time when the software is made available to the customer. For customer contracts that contain license and professional services that are not considered distinct, the license and professional services are determined to be a single performance obligation and recognized over time based upon our efforts to satisfy the performance obligation.

Professional services revenue

Professional services revenue primarily consists of fees for deployment and configuration services, as well as training. Professional services revenues are generally recognized as the services are rendered for time and material contracts, or on a proportional performance basis for fixed price contracts. The majority of our professional services contracts are on a time and materials basis. Training revenues are recognized as the services are rendered.

Significant judgments are required in determining whether professional services that are contained in customer subscription services contracts are considered distinct, including whether the professional services are capable of being distinct and whether they are separately identifiable in the customer contract. Professional services that are deemed to be distinct are accounted for as a separate performance obligation and revenue is recognized as the services are performed. If determined that the professional services are not considered distinct, the professional services and the subscription services are determined to be a single performance obligation and revenue is recognized over the contractual term of the subscription beginning on the date that subscription services are made available to the customer.

Customer Contracts with Multiple Performance Obligations

A portion of our customer contracts contain multiple performance obligations. Significant judgment is required in determining whether multiple performance obligations contained in customer contracts are capable of being distinct and whether they are separately identifiable in the customer contract. If the obligations are determined to be distinct, each separate performance obligation is recognized when, or as, we satisfy the performance obligation. If the obligations are not determined to be distinct, they are recognized as a single combined performance obligation. The transaction price is allocated to each performance obligation on a relative standalone selling price basis.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Foreign Currency Exchange Risk

Although our contracts are predominately denominated in U.S. dollars, we are exposed to foreign currency exchange risk because we also have some contracts denominated in foreign currencies. The effect of a hypothetical 10% adverse change in exchange rates on our foreign denominated receivables as of December 31, 2018 would result in a loss of approximately $0.5 million. We are also exposed to foreign currency risk due to our operating subsidiaries in France, United Kingdom, Canada, Germany, Ireland, Australia, Bulgaria and United Arab Emirates. A hypothetical 10% adverse change in the value of the U.S. dollar in relation to the euro, which is our single most significant foreign currency exposure, would have decreased revenue for the twelve months ended months ended December 31, 2018 by approximately $0.2 million and $0.7 million, respectively. However, due to the relatively low volume of payments made and received through our foreign subsidiaries, we do not believe that we have significant exposure to foreign currency exchange risks. Fluctuations in foreign currency exchange rates could harm our financial results in the future.

We currently do not use derivative financial instruments to mitigate foreign currency exchange risks. We continue to review this matter and may consider hedging certain foreign exchange risks through the use of currency futures or options in future years.

Interest Rate Risk

We are exposed to market risk for changes in interest rates related to the variable interest rate on borrowings under the Revolver. As of December 31, 2018, we had no borrowings under the Revolver.

As of December 31, 2018, we had outstanding principal amounts of $143.8 million and $106.3 million, respectively, of 2019 Notes and 2047 Notes, which are fixed rate instruments. Therefore, our results of operations are not subject to fluctuations in interest rates. The fair value of the Notes may change when the market price of our stock fluctuates.

We believe that we do not have any material exposure to changes in the fair value as a result of changes in interest rates due to the short term nature of our cash equivalents.

ITEM 4. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

Our management, with the participation of our chief executive officer and chief financial officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) or 15d-15(e) under the Exchange Act) as of December 31, 2018. Based on our evaluation of our disclosure controls and procedures as of December 31, 2018, our chief executive officer and chief financial officer concluded that our disclosure controls and procedures were effective to ensure that information we are required to disclose in reports that we file or submit under the Exchange Act (i) is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, and (ii) is accumulated and communicated to our management, including our chief executive officer and chief financial officer, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting during the three months ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. We implemented internal controls to ensure we adequately evaluated our revenue contracts and properly assessed the impact of our adoption of Topic 606 on January 1, 2018. There were no significant changes to our internal control over financial reporting due to the adoption of Topic 606.

PART II. OTHER INFORMATION
ITEM 1. LEGAL PROCEEDINGS

From time to time, we are a party to legal proceedings and claims arising in the ordinary course of business. We are not currently aware of any such proceedings or claims that we believe will have, individually or in the aggregate, a material adverse effect on our business, financial condition, results of operations or cash flows.

ITEM 1A. RISK FACTORS

There have been no material changes to the risk factors as presented in our Annual Report.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

We have an ongoing authorization from our board of directors to repurchase up to $15.0 million in shares of our common stock in the open market or through privately negotiated transactions. As of December 31, 2018, $10.0 million remained available for repurchase under the existing repurchase authorization. We did not make any purchases of our common stock under this program for the three months ended December 31, 2018.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURE

None.

ITEM 5. OTHER INFORMATION

None.

ITEM 6. EXHIBITS

Index to Exhibits

Exhibit No.	Description	Provided Herewith	Incorporated by Reference		
			Form	SEC File No.	Filing Date
31.1	Certification of Chief Executive Officer Pursuant to Exchange Act Rule 13a-14(a)/15d-14(a).	X			
31.2	Certification of Chief Financial Officer Pursuant to Exchange Act Rule 13a-14(a)/ 15d-14(a).	X			
32.1*	Certifications of Chief Executive Officer and Chief Financial Officer Pursuant to 18 U.S.C. Section 1350.	X			

Exhibit No.	Description
101.INS	XBRL Instance Document.
101.SCH	XBRL Taxonomy Extension Schema Document.
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	XBRL Taxonomy Extension Label Linkbase Document.
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document.

* This certification shall not be deemed “filed” for purposes of Section 18 of the Securities Act of 1934, or otherwise subject to the liability of that Section, nor shall it be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

PROS HOLDINGS, INC.

February 15, 2019	By:	/s/ Andres Reiner
		Andres Reiner
		President and Chief Executive Officer (Principal Executive Officer)
February 15, 2019	By:	/s/ Stefan Schulz
		Stefan Schulz
		Executive Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)

EXHIBIT 21.1

PROS Holdings, Inc.
List of Subsidiaries as of December 31, 2018

Name of Entity	State/Country of Incorporation/Organization
PROS Bulgaria EOOD	Bulgaria
PROS Canada Operations, Ltd.	Canada
PROS CPQ, Inc.	Illinois
PROS Europe Limited	England and Wales
PROS France SAS	France
PROS Germany GmbH	Germany
PROS, Inc.	Delaware
PROS International Technology Limited	Ireland
PROS Middle East Technology Systems L.L.C.	United Arab Emirates
PROS Technology Australia Pty. Ltd.	Australia
PROS Travel Commerce, Inc.	Delaware

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statement on Form S-3 (No. 333-226812) and Form S-8 (Nos. 333-219192, 333-215623, 333-209067, 333-201412, 333-194105, 333-193867, 333-186857, 333-179721, 333-172516, 333-165362, 333-157555, 333-149359 and 333-145237) of PROS Holdings, Inc. of our report dated February 15, 2019 relating to the consolidated financial statements, financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

San Jose, California

February 15, 2019

EXHIBIT 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Andres Reiner, certify that:

1. I have reviewed this annual report on Form 10-K of PROS Holdings, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

February 15, 2019

/s/ Andres Reiner

Andres Reiner
President and Chief Executive Officer

EXHIBIT 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Stefan Schulz, certify that:

1. I have reviewed this annual report on Form 10-K of PROS Holdings, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant’s other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
    c. Evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    d. Disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and
5. The registrant’s other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of the registrant’s board of directors (or persons performing the equivalent functions):
    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and
    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting.

February 15, 2019

/s/ Stefan Schulz
Stefan Schulz
Executive Vice President and Chief Financial Officer

EXHIBIT 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Andres Reiner, certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the annual report of PROS Holdings, Inc., on Form 10-K for the period ended December 31, 2018 fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and the information contained in such Form 10-K fairly presents, in all material respects, the financial condition and results of operations of PROS Holdings, Inc.

February 15, 2019

/s/ Andres Reiner
Andres Reiner
President and Chief Executive Officer

I, Stefan Schulz, certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the annual report of PROS Holdings, Inc., on Form 10-K for the period ended December 31, 2018 fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and the information contained in such Form 10-K fairly presents, in all material respects, the financial condition and results of operations of PROS Holdings, Inc.

February 15, 2019

/s/ Stefan Schulz
Stefan Schulz
Executive Vice President and Chief Financial Officer

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to PROS Holdings, Inc. and will be retained by PROS Holdings, Inc. and furnished to the Securities and Exchange Commission or its staff upon request. This certification "accompanies" the Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.

Corporate Information

EXECUTIVE OFFICERS

Andres D. Reiner
President, Chief Executive Officer and Director

Stefan B. Schulz
Executive Vice President and Chief Financial Officer

Tom Dziersk
Executive Vice President Worldwide Sales

For additional listing of PROS senior management, visit:

https://pros.com/about-pros/leadership-team/

BOARD OF DIRECTORS

William Russell (2) (3)
Non-Executive Chairman

Penelope Herscher (2) (3)
Director

Timothy V. Williams (1) (3)
Director

Andres D. Reiner
President, Chief Executive Officer and Director

Greg B. Petersen (1) (2)
Director

Leslie Rechan (1) (3)
Director

Mariette M. Woestemeyer
Director

Ronald F. Woestemeyer
Director

(1) *Audit Committee*
(2) *Compensation and Leadership Development Committee*
(3) *Nominating and Corporate Governance Committee*

Stockholder Information

CORPORATE OFFICES

PROS Holdings, Inc.
3100 Main Street, Suite 900
Houston, TX 77002
713.335.5151
www.PROS.com

ANNUAL MEETING

Our 2019 annual stockholders meeting will be held at 8:00 a.m. Central Daylight Time on Tuesday, May 7, 2019 at our corporate offices in Houston, Texas. Only stockholders of record at the close of business on March 15, 2019 will be entitled to vote at the annual meeting.

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Pricewaterhouse Coopers, LLP
488 Almaden Boulevard, Suite 1800
San Jose, CA 95110
408.817.3700
www.pwc.com

TRANSFER AGENT AND REGISTRAR

Shareholders with inquiries regarding address corrections, lost certificates or changes in registered ownership should contact our stock transfer agent:

Computershare
P.O. Box 30170
College Station, TX 77842-3170
www.computershare.com/investor

COMMON STOCK LISTING

Our Common Stock is traded on the New York Stock Exchange under the symbol “**PRO**”.

CONTACTS

Investor Relations
713.335.5151
IR@PROS.com

Corporate Communications
713.335.5151
CorpComm@PROS.com

About PROS

PROS Holdings, Inc. (NYSE: PRO) provides AI-powered solutions that optimize selling in the digital economy. PROS solutions make it possible for companies to price, configure and sell their products and services in an omnichannel environment with speed, precision and consistency. Our customers, who are leaders in their markets, benefit from decades of data science expertise infused into our industry solutions.

To learn more, visit pros.com.

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