
# ANNUAL REPORT

# A LETTER FROM PRESIDENT AND CEO ANDRES REINER

## Dear Shareholders, Customers, Partners, and Employees:

2019 was a strong year for PROS. Thanks to the tremendous effort of our amazing team, we grew our total revenue by 27% year-over-year, our highest growth rate yet as a cloud company. Our AI solutions are resonating in the market, which has driven us to achieve a 48% compounded annual growth rate in our subscription revenue over the last four years.

At the core of us delivering this strong and sustained growth are our people and the incredible culture that we've created together. Our people are owners, innovators and care tremendously about our customers, their communities and each other. Every day I'm humbled to work with such a passionate, dedicated and talented team.

Innovation remains at the heart of our strategy, and we enhanced our AI solutions and platform to handle even more scale with great speed and precision. Last year, we processed about 1.7 trillion transactions in our cloud, delivered over 11 billion real-time price calculations to power eCommerce, and enabled our customers to create over a million quotes in our Smart CPQ solution. We also released our next generation Smart CPQ and Revenue Management solutions in the market, which are helping our customers across industries power their digital selling transformations.

With the current global public health crisis, we are focused on ensuring the safety and health of our people and communities and supporting our customers and partners. We are executing upon our business continuity plans and capabilities to support our global workforce and customers through virtualization, processes and technology to continue to drive business and deliver our solutions. We are also planning for the possibility that remote participation may also be made available for the Annual Meeting. If we take this step, we will announce the decision to do so in advance and provide further details on how to participate. We have faced difficult situations in our history before – 9/11, SARS, Hurricane Harvey - and each time, we have emerged stronger because of our caring team and our desire to help our customers and fellow employees. I'm confident we will rise to this challenge and continue to deliver on our mission of helping people and companies outperform.

Despite the current public health crisis, as we enter this decade, we are excited about our team, market opportunity, and innovative solutions. Now more than ever, digital selling and AI are critical for companies to gain a competitive advantage in their go-to-market strategy, and we're well positioned to lead companies in these areas.

Thank you for your support of PROS.

**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 2020 Annual Meeting of Stockholders

Date: Wednesday, April 29, 2020
Time: 8:00 a.m., Central Daylight Time
Place: 3100 Main Street, 9th Floor, Houston, Texas 77002, +1 (713) 335-5151

## Agenda

| | |
|---|---|
| 1 | Elect three Class I directors and one Class III director named in the Proxy Statement to the board of directors of PROS Holdings, Inc. (Board of Directors or Board) each Class I director to serve a three-year term until our annual meeting of our stockholders to be held in the year 2023 (2023 Annual Meeting) and the Class III director to serve a two-year term until our annual meeting of stockholders to be held in 2022 (2022 Annual Meeting); |
| 2 | Advisory vote on named executive officer compensation; |
| 3 | Ratification of appointment of PricewaterhouseCoopers LLP as our independent registered public accounting firm for 2020; and |
| 4 | 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 5, 2020 (Record Date) will be entitled to receive notice of, and to vote at, the 2020 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, 2019 (2019 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 2019 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 17, 2020

# Table of Contents

# 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 three Class I directors and one Class III director** | **FOR** each director nominee | 21 |
| **Advisory vote on executive compensation** | **FOR** | 44 |
| **Ratification of appointment of PricewaterhouseCoopers LLP for fiscal year 2020** | **FOR** | 49 |

## Business Highlights

In 2019, PROS again reached new milestones in our cloud transformation, while also enabling our customers to leverage our AI-powered solutions to power commerce in today's digital economy. The following highlights some of our accomplishments in 2019:

- Continued substantial growth:
  - Subscription revenue increased 48% year-over-year;
  - Recurring Revenue (Subscription + Maintenance Revenue) grew 25% year-over-year; and
  - Total revenue grew 27% year-over-year.

- Continued to deliver our solutions faster and more efficiently, building towards our long-term growth objectives:
  - Non-GAAP Recurring Revenue Gross Margin(1) increased by 2% to 76% year-over-year; and
  - Non-GAAP Subscription Gross Margin(2) improved by 6% to 73% year-over-year.

- Delivered strong total shareholder return:
  - Grew 91% during 2019; and
  - Delivered 41% compound annual growth rate (CAGR) from 2017 through 2019.

- Improved financial position by reducing outstanding debt to $143.75 million and lowering cash borrowing costs by 50%.

- Further strengthened our executive team to help us continue scaling our business.

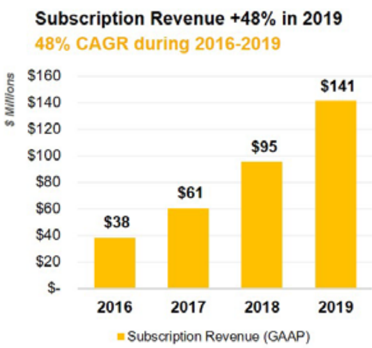
- Published our inaugural Corporate Social Responsibility Report, available at ir.pros.com

(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 and other items approved by the Company's Audit Committee for inclusion in the Company's external non-GAAP financial reporting (non-GAAP Recurring Cost of Revenue), divided by (b) total recurring revenue, expressed as a percentage.

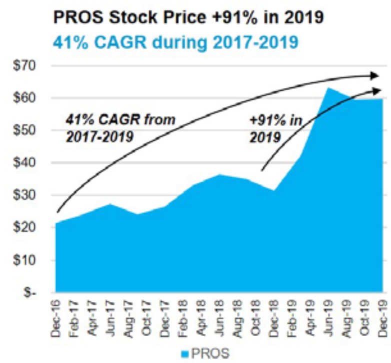
(2) Non-GAAP Subscription Gross Margin is used to measure the efficiency of our business, and is defined as (a) total subscription revenue, less subscription cost excluding share-based compensation, amortization of acquisition-related intangibles, acquisition-related expenses and non-cash rent expense on the preoccupied new PROS headquarters and other items approved by the Company's Audit Committee for inclusion in the Company's external non-GAAP financial reporting, divided by (b) total subscription revenue, expressed as a percentage.

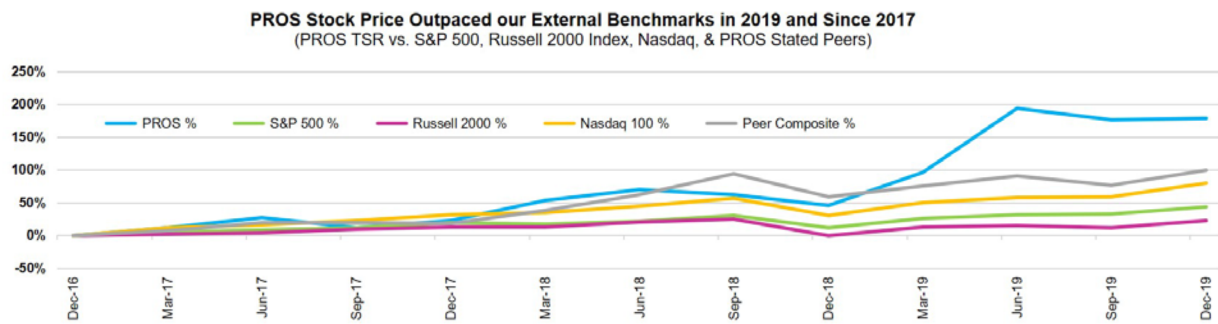
## CEO Pay and Company Performance

In 2019, we continued to deliver on our mission of helping people and companies outperform as we power sales in the digital era. We continue to execute our multi-year cloud transition, with total revenue growth rate accelerating to 27% while improving our non-GAAP recurring revenue gross margin to 76%. This strong performance helped drive 91% total shareholder return in 2019.



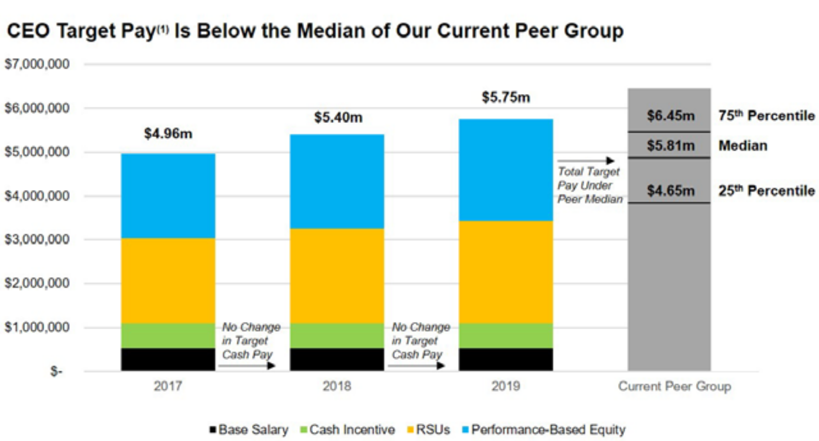


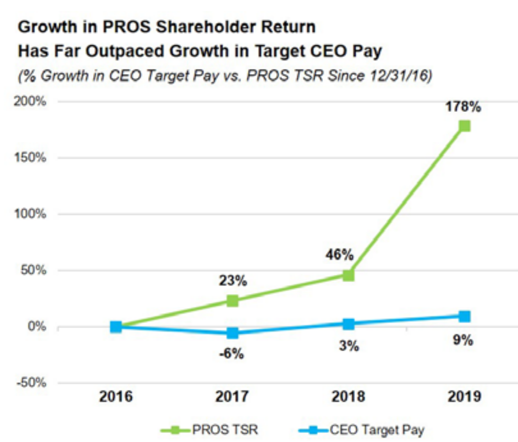



**CEO target pay was set conservatively again in 2019, near peer CEO median target compensation levels, despite the Company's strong financial performance and total shareholder return in 2018.**

- *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 far outpaced growth in our CEO's target pay.* Our CEO's 2019 base salary and target cash incentive remained unchanged from 2018 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 2019, which proved true when reviewing updated peer CEO compensation levels later in 2019.




(1) Target equity compensation (a) for restricted stock units (RSUs) and market stock units (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 New York Stock Exchange (NYSE) on the grant date, and for 2017 and 2018 MSUs differ from the accounting grant date fair value included in teh "Grants of Plan-Based Awards" table; and (b) for performance-based RSUs (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 top line growth required to achieve target payout when compared to the median of our peers' trailing 12-month top line growth.

## CEO 2019 Target Compensation

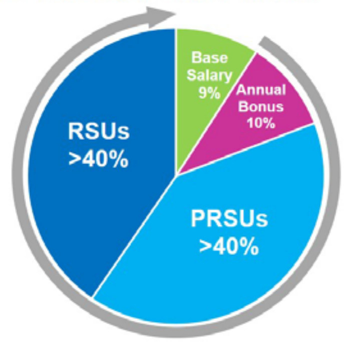
For 2019, our CLD Committee decided to leave Mr. Reiner's base salary and cash incentive target unchanged from 2018, the fourth year in a row without an increase in target cash compensation. Consistent with the market practice of our peer group compensation, the CLD Committee decided to increase Mr. 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 6% in 2019 - far less than our total shareholder return of 91% in 2019 - and ended up falling below the median of our peer group.

### 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<br>• 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<br>• Attainment is formulaic:<br>  • Total Revenue<br>  • Replaced Free Cash Flow with Recurring Revenue Gross Margin % in 2019 |
| 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<br>• 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<br>• 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 1/15/2022) |

2019 Total Target Compensation Mix (1)




**>90% At-Risk**
**>50% Performance-Based**

(1) Target equity compensation for RSUs and PRSUs represents 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.

## Governance Highlights

### Board Practices

- ✓ All non-employee directors independent
- ✓ Independent non-executive chairman
- ✓ Independent Audit, Compensation and Leadership Development, and Nominating and Corporate Governance Committees of the Board (Committees)
- ✓ Regular executive sessions of non-employee and independent directors. Our non-executive chairman of the Board presides at executive sessions.
- ✓ Annual Board and Committee evaluations
- ✓ Regularly attend continuing education related to board governance best practices
- ✓ 25% women
- ✓ 50% under age 60
- ✓ Risk oversight by full Board and Committees

### Shareholder Matters

- ✓ Active shareholder outreach program
- ✓ 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.
- ✓ Annual "Say-on-Pay" advisory vote

### Other Best Practices

- ✓ Anti-hedging, anti-short and anti-pledging policies
- ✓ Stock ownership guidelines for named executive officers (NEOs)
- ✓ "Clawback" policy to recover, under applicable law, incentive bonuses awarded to any NEO as a result of that NEO's fraud or intentional misconduct
- ✓ 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 | AC | CC | NC | Other Current Public Company Boards |
|---|---|---|---|---|---|---|---|---|
| Greg B. Petersen | 57 | 2007 | I | Yes | M | C | | Mohawk Group Holdings, Inc.; Plus Therapeutics, Inc. |
| Timothy V. Williams | 71 | 2007 | I | Yes | C | | M | ChannelAdvisor Corporation |
| Mariette M. Woestemeyer | 68 | 1985 | I | Yes | | | | - |
| Carlos Dominguez | 61 | - | III | Yes | | | | The Hartford Financial Services Group, Inc. |

## Continuing Directors

| Name | Age | Director Since | Class | Independent | AC | CC | NC | Other Current Public Company Boards |
|---|---|---|---|---|---|---|---|---|
| Penelope Herscher | 59 | 2018 | II | Yes | | M | M | Faurecia SA; Lumentum Holdings, Inc.; Verint Systems, Inc. |
| Leslie Rechan | 58 | 2015 | II | Yes | M | | M | MicroStrategy Incorporated |
| Andres Reiner | 49 | 2010 | III | No | | | | Paylocity Holding Corporation |
| William Russell | 68 | 2008 | II | Yes | | M | C | Accesso Technology Group PLC |

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

PROS

# PROXY STATEMENT

## 2020 ANNUAL MEETING OF STOCKHOLDERS

## April 29, 2020

### General

The enclosed proxy is solicited for use at the Annual Meeting to be held April 29, 2020 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 2020 Annual Meeting of Stockholders.

The purposes of the Annual Meeting are:

| | |
|---|---|
| 1 | To elect three Class I directors to the Board of Directors, each to serve for a three-year term until the 2023 Annual Meeting, and one Class III director to serve for a two-year term until the 2022 Annual Meeting; |
| 2 | To conduct an advisory vote on executive compensation; |
| 3 | To ratify the appointment of PricewaterhouseCoopers LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020; and |
| 4 | To transact such other business as may properly come before the Annual Meeting or any adjournment thereof. |

### 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, 43,280,194 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 Wednesday, April 29, 2020, at 3100 Main Street, 9the 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.

At PROS, the safety of our shareholders, employees, customers and communities is our top priority. As part of our precautions regarding the coronavirus, or COVID-19, we are planning for the possibility that remote participation may be made available for the Annual Meeting. If we take this step, we will announce the decision to do so in advance, and provide details on how to participate in a press release posted under the "*Investor Relations*" section of our website at ir.pros.com, and filed with the Securities and Exchange Commission (SEC) as proxy material.

### Vote Required

Our amended and restated bylaws, as contained in the Current Report on Form 8-KI filed with the SEC on August 21, 2013 (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.

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. We will not count abstentions as either for or against a director, so abstentions have no effect on the election of a director.

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 advisory vote on executive compensation and the ratification of the selection of our independent auditors. 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.

## 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 April 28, 2020.
- *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 April 28, 2020.
- *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.
- *Telephone*. Using the telephone voting method described above, in which case only your latest telephone proxy submitted prior to the Annual Meeting will be counted.
- *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.
- *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.

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 2019 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 17, 2020 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 reduce 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 oversees our CEO and other senior management to assure that the long-term interests of stockholders 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.

In 2019, our Board met six times and acted via unanimous written consent three times, the Audit Committee met nine times and acted via unanimous written consent two times, the CLD Committee met five times and acted via unanimous written consent one time, and the Nominating and Corporate Governance Committee met three times. Each current director who served as a director in 2019 attended at least 75% of the meetings of our Board and the Committees on which he or she served during 2019. The Board encourages all directors to attend annual meetings of the stockholders. All incumbent directors attended the 2019 meeting of the stockholders.

## Board Committees

The Board has standing Audit, 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, as amended (Exchange Act), and an outside director, as defined pursuant to Section 162(m) of the Internal Revenue Code (Code).

*Audit Committee.* The Audit Committee assists 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;
- engaging 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 assists 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, 2019: Messrs. Dominguez, Petersen, Rechan, Russell, Williams, and Woestemeyer and Mses. Herscher and Woestemeyer. Our Audit, CLD and NGC Committees are comprised entirely of independent directors. In connection with his nomination to stand for election as a director, the Board determined that Mr. Dominguez has no relationships with us that would interfere with the exercise of independent judgment in carrying out his responsibilities as a director, and as such is "independent" under NYSE listing standards and federal securities laws.

## 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 NCG Committee assist the Board in discharging its oversight duties. The Audit Committee considers risks related to the subject matters enumerated in its charter, including risks relating to internal controls, disclosure, and financial reporting. The CLD Committee reviews risks related to the subject matters enumerated in its charter, including risks associated with our compensation programs. Similarly, the NCG Committee considers risks related to the subject matters for which it is responsible as identified in its charter, including risks associated with corporate governance. 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 50 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 increases our NEOs’ and directors' alignment with stockholder interests. These guidelines require our Chief Executive Officer to hold shares of our stock worth at least six times his annual salary, other NEOs to hold shares of our stock worth at least two times their annual salary, and each non-employee director to hold shares of our stock worth at least five times the director's annual retainer. New directors are expected to achieve their ownership threshold within six years after joining our Board. New NEOs are expected to achieve their ownership threshold within five years from the date of hire or promotion. As of December 31, 2019, 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 Insider Trading Policy, which applies to all employees, including officers, and non-employee directors, specifically prohibits short sales of our securities, transactions in puts, calls or other derivative securities involving our stock, hedging or monetization transactions (including but not limited to zero-cost collars, prepaid variable forwards, and equity swaps), and holding our securities in a margin account or pledging our securities as collateral for a loan. 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 the “*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, Texas 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 (immediately prior to the Annual Meeting), positions, term of office, current membership, and other relevant information for each of our directors and director nominees:

| Name | Age | Position(s) with the Company | Director Since | Current Term Expires | Current Class of Director | Audit | Compensation and Leadership Development | Nominating and Corporate Governance |
|---|---|---|---|---|---|---|---|---|
| Penelope Herscher | 59 | Director | 2018 | 2021 | II | | Member | Member |
| Greg B. Petersen | 57 | Director (Nominee) | 2007 | 2020 | I | Member | Chair | |
| Leslie Rechan | 58 | Director | 2015 | 2021 | II | Member | | Member |
| Andres D. Reiner | 49 | President, CEO and Director | 2010 | 2022 | III | | | |
| William Russell | 68 | Non-Executive Chairman | 2008 | 2021 | II | | Member | Chair |
| Timothy V. Williams | 71 | Director (Nominee) | 2007 | 2020 | I | Chair | | Member |
| Mariette M. Woestemeyer | 68 | Director (Nominee) | 1985 | 2020 | I | | | |
| Ronald F. Woestemeyer | 74 | Director(1) | 1985 | 2022 | III | | | |
| Carlos Dominguez | 61 | Nominee | - | | | | | |
| Number of meetings in 2019 | | | | | | 9 | 5 | 3 |

(1) Mr. Ronald F. Woestemeyer, a Class III director, has informed the Board of his intention to resign from the Board effective as of the Annual Meeting.

## 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 the following public companies: Faurecia SA (EPA: EO), Verint Systems, Inc. (NASD: VRNT), and Lumentum Holdings, Inc. (NASD: LITE). She also serves on the board of directors for privately held Delphix Corporation.

Ms. Herscher previously served on the board of directors of Rambus, Inc. (NASD: RMBS) (2006 to 2018). Ms. Herscher served as CEO for FirstRain, a privately held company in the unstructured data analytics space, from 2004 to 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. He currently serves on the board of directors of the following public companies: Mohawk Group Holdings, Inc. (NASD: MWK) and Plus Therapeutics, Inc. (NASD: PSTV).

Mr. Petersen previously served on the board of directors of Diligent Corporation (2013 to 2016) and Piksel, Inc. (2012 to 2017). 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. Mr. Rechan serves on the board of directors of MicroStrategy Incorporated (NASD: MSTR).

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 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 20 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 22 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 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. He also serves on the board of directors of PointclickCare Corp., a privately held company.

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. She has served as a director of the Company since 1985.

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 a director since the Company's founding. 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. He has served as a director of the Company since 1985. Mr. Woestemeyer has notified the Board that he will be retiring from the Board as of the Annual Meeting.

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.

Carlos Dominguez

Mr. Dominguez has been nominated by the Board to stand for election at the Annual Meeting as a Class III director to serve a two-year term until the 2022 Meeting.

Mr. Dominguez has served as the president of Sprinklr, Inc., a privately held SaaS company, since 2015. He serves on the board of directors of The Hartford Financial Services Group, Inc. (NYSE: HIG) and serves on the Compensation & Management Development, Nominating & Corporate Governance committees of the Hartford's board. He also served on the board of directors of Medidata Solutions, Inc. (NASD: MDSO) from 2009 until its acquisition by Dassault Systemes in 2019. From 1992 to 2015, Mr. Dominguez held a variety of roles at Cisco Systems, Inc., including SVP, Worldwide Service Provider Operations (2004 to 2008) and SVP, Office of the Chairman and CEO (2008 to 2015).

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

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 (Nominee) | Leslie Rechan | Andres D. Reiner | William Russell | Timothy V. Williams (Nominee) | Mariette M. Woestemeyer (Nominee) | Ronald F. Woestemeyer | Carlos Dominguez (Nominee) |
|---|---|---|---|---|---|---|---|---|---|
| Accounting | | x | | | | x | x | | |
| Business Operations | x | x | x | x | x | x | x | x | x |
| Finance | | x | x | x | | x | x | | |
| International | x | | x | x | x | | x | x | x |
| Leadership | x | x | x | x | x | x | x | x | x |
| M&A | x | x | x | x | x | x | | | x |
| Public Company/Governance | x | x | x | x | x | x | | | x |
| Risk Management | x | x | x | | | x | | | x |
| Sales & Marketing | x | | x | x | x | | | x | x |
| Software Industry | x | x | x | x | x | x | x | x | x |
| Travel Industry | | x | x | x | | | x | x | |
| Cloud Software | x | 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. 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 CLD Committee periodically reviews non-employee director compensation taking into account various factors, including director responsibilities, peer group data and market practices. In the fall of 2018, F.W. Cook provided an independent analysis, including peer group data, which was taken into consideration by the CLD Committee. For 2019, the CLD Committee 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 2019, each non-employee member of our Board received 6,640 RSUs, 75% of which vested in full on January 15, 2020, and the remainder vest in full on the date of the Annual Meeting. Each non-employee member of our Board received an annual cash retainer of $35,000 in 2019. The non-executive chairman of our Board received a supplemental retainer of $60,000 in 2019. 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 | CLD Committee | NCG 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.

## 2019 Director Compensation Table

The following table sets forth the compensation paid to our non-employee directors for service on our Board during 2019. Compensation for Andres D. Reiner our President and Chief Executive Officer is set forth in the "*Summary Compensation*" table on page 39 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 ($) |
|---|---|---|---|
| Penelope Herscher | $ 57,500 | $ 219,452 | $ 276,952 |
| Greg B. Petersen | $ 70,000 | $ 219,452 | $ 289,452 |
| Leslie Rechan | $ 57,500 | $ 219,452 | $ 276,952 |
| William Russell | $ 120,000 | $ 219,452 | $ 339,452 |
| Timothy V. Williams | $ 72,500 | $ 219,452 | $ 291,952 |
| Mariette M. Woestemeyer | $ 35,000 | $ 219,452 | $ 254,452 |
| Ronald F. Woestemeyer | $ 35,000 | $ 219,452 | $ 254,452 |

(1) Represents the aggregate grant date fair value of equity awards granted in 2019 calculated in accordance with GAAP. For additional information about valuation assumptions for equity awards, refer to Note 14 of our financial statements in our Annual Report on Form 10-K for the year ended December 31, 2019. The January 15, 2019 grant of RSUs awarded to all non-employee directors had two vesting dates: 75% vested in full on January 15, 2020, and the remainder vests in full on the date of the Annual Meeting and had a grant date fair value of $219.452.

The following table presents the aggregate number of outstanding RSUs held by our non-employee directors as of December 31, 2019:

| Name | Restricted Stock Units (#) (1) |
|---|---|
| Penelope Herscher | 6,640 |
| Greg B. Petersen | 6,640 |
| Leslie Rechan | 6,640 |
| William Russell | 6,640 |
| Timothy V. Williams | 6,640 |
| Mariette M. Woestemeyer | 6,640 |
| Ronald F. Woestemeyer | 6,640 |

(1) Represents RSUs granted on January 15, 2019, 75% of which vested in full on January 15, 2020 and the remainder vest in full on the date of the Annual Meeting, under the 2019 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 three Class I director nominees to the Board for a three-year term and one Class III director nominee to the Board for a two-year term.

### Voting Recommendation:

The Board recommends voting "FOR" the election of each of the three Class I and one Class III director nominees.

Four (4) directors are to be elected at the Annual Meeting. Our Board, upon the recommendation of the NCG Committee, has nominated Greg B. Petersen, Timothy V. Williams, and Mariette M. Woestemeyer as Class I directors, each to hold office until the 2023 Annual Meeting and until their successor has been duly elected and qualified or until the earlier of their death, resignation or removal. The Board, upon the recommendation of the NCG Committee

The Board is also composed of 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, and two Class III directors, whose terms expire upon the election and qualification of directors at the 2022 Annual Meeting. Mr. Ronald F. Woestemeyer, a Class III director, has informed the Board of his intention to resign from the Board effective as of the Annual Meeting. The Board has nominated Mr. Carlos Dominguez to serve as a Class III director. If elected, Mr. Dominguez will serve a two-year term until the 2022 Annual Meeting.

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 above.

### Vote Required

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.

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.

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 I AND ONE CLASS III DIRECTOR NOMINEES.**

# EXECUTIVE OFFICERS

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

| Name | Age | Position |
|---|---|---|
| ***Named Executive Officers*:** | | |
| Andres D. Reiner | 49 | Chief Executive Officer, President and Director |
| Stefan B. Schulz | 53 | Executive Vice President and Chief Financial Officer |
| John C. P. Allessio | 56 | Executive Vice President and Chief Customer Officer |
| Thomas F. Dziersk | 57 | Executive Vice President, Worldwide Sales |
| Roberto Reiner | 58 | Executive Vice President and Chief Technology Officer |
| ***Other Significant Employees*:** | | |
| Nikki Brewer | 39 | Chief People Officer |
| Scott Cook | 52 | Chief Accounting Officer |
| Celia Fleischaker | 50 | Chief Marketing Officer |
| Damian Olthoff | 45 | General Counsel and Secretary |
| Benson Yuen | 59 | President, Travel |
| Craig Zawada | 49 | Chief Innovation Officer |

Andres D. Reiner

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

Mr. A. Reiner joined the Company in 1999. He has served as President and Chief Executive Officer since November 2010. From 1999 to 2010, Mr. A. Reiner 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. A. 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. A. Reiner held technical and management positions in technology companies including Platinum Technology, ADAC Healthcare Information Systems, and Kinesix.

Mr. A. 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 the Company and assumed his current position in March 2015. Prior to joining the Company, 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 in our transition to a cloud business.

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

John C.P. Allessio

Mr. Allessio serves as our Executive Vice President and Chief Customer Officer.

Mr. Allessio joined the Company in October 2019 as Chief Customer Officer and was appointed Executive Vice President in November 2019. Prior to joining the Company, Mr. Allessio served as Senior Vice President and General Manager, Global Services, at Red Hat, Inc. from 2014 to 2019. From 1987 to 2014, Mr. Allessio held a number of positions with IBM, including as Vice President, Global Client Success and Engagements - Industry Cloud Solutions.

Mr. Allessio holds a B.S. in Computer Science from Wayne State University and a M.B.A. from the University of Michigan.

Thomas F. Dziersk

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

Mr. Dziersk joined the Company and assumed his current position in October 2017. Prior to joining the Company, 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.

Roberto Reiner

Mr. R. Reiner serves as our Executive Vice President and Chief Technology Officer.

Mr. R. Reiner joined the Company as Chief Technology Officer in 2016. He was appointed Executive Vice President in November 2019. Prior to joining the Company, Mr. R. Reiner co-founded and served as Chief Technology Officer for ITinvolve from 2011 to 2015. During his extensive software career, Mr. R. Reiner also has served in various technology leadership roles at leading software companies, Attachmate and BMC Software.

Mr. R. Reiner holds a B.S. in Computer Science from the University of Houston.

# COMPENSATION DISCUSSION AND ANALYSIS

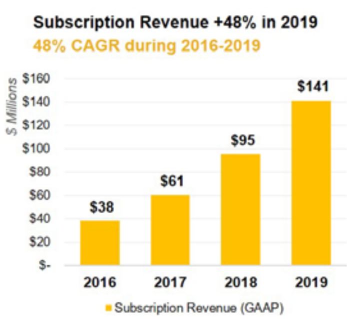
In this section, we describe the executive compensation program for our NEOs. We also explain how our CLD Committee determined the pay of our NEOs and its rationale for specific decisions in 2019. Our NEOs for 2019 were:

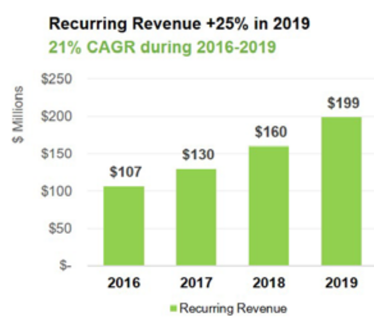
| | |
|---|---|
| Andres D. Reiner | Chief Executive Officer, President and Director |
| Stefan B. Schulz | Executive Vice President and Chief Financial Officer |
| John C. P. Allessio | Executive Vice President and Chief Customer Officer |
| Thomas F. Dziersk | Executive Vice President, Worldwide Sales |
| Roberto Reiner | Executive Vice President and Chief Technology Officer |

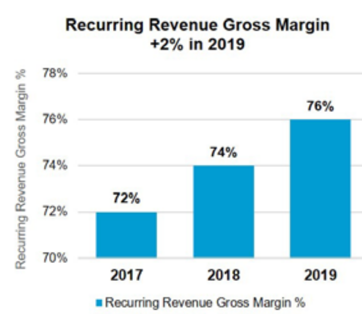
## 2019 Business Highlights

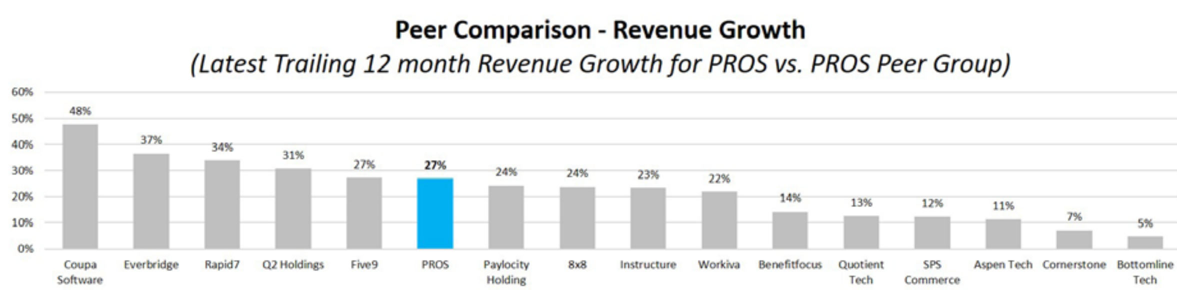
PROS AI solutions power companies to compete and win in today's digital economy, driving tangible results for customers across numerous industries. With an over $30 billion total addressable market (TAM), the Company's strategy is focused on market penetration and delivering value to shareholders through strong top line growth of a sustainable cloud business. In 2019 we executed successfully against this strategy, growing subscription revenue 48% and total revenue 27%, and driving 91% total shareholder return for the year.

- *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 48% in subscription revenue, and 25% in Recurring Revenue, while also improving Recurring Revenue Gross Margin by 2% to 76%. Our total revenue growth in 2019 was well above median for our peer group.

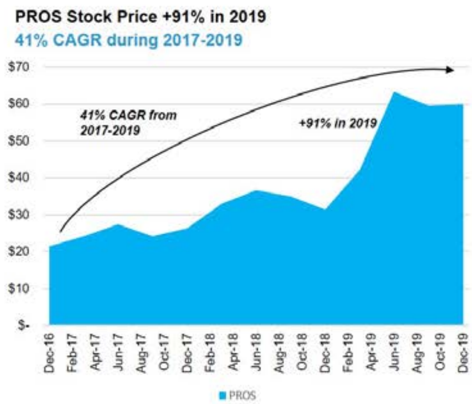


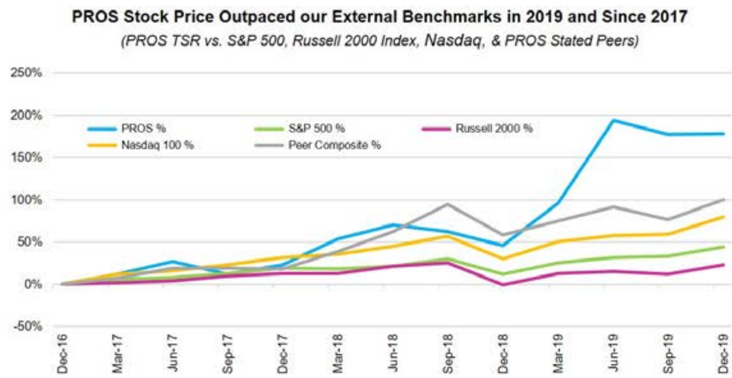



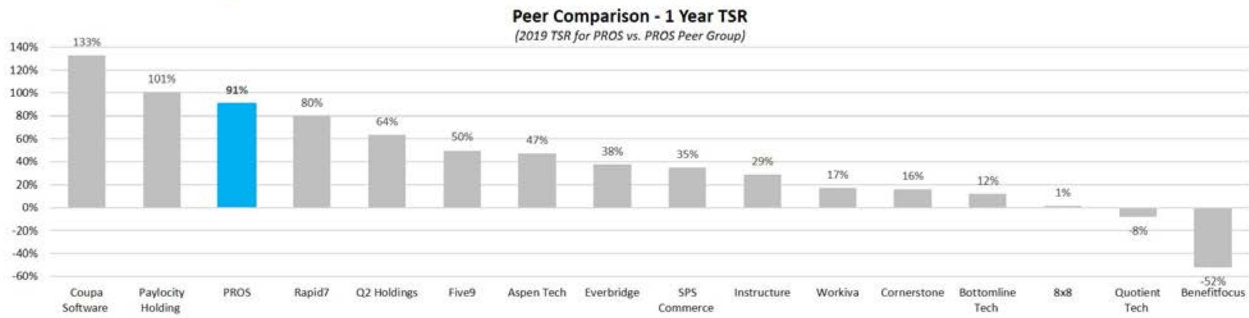




- *In connection with our accelerated cloud transformation and strong business performance our stock price outperformed external benchmarks in 2019.* Shareholders benefited from a 91% increase in our share price in 2019 and a 41% CAGR in our share price during 2017-2019. This performance has far outpaced our external benchmarks, including the S&P 500, Nasdaq, the Russell 2000 index, and our PROS stated peers used for executive compensation benchmarking.




## Say-on-Pay Vote.

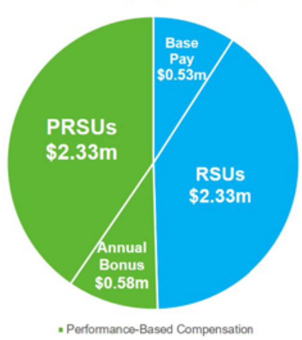
Each year, our CLD Committee takes into account the result of the "say-on-pay" vote cast by our stockholders. At our 2019 Annual Meeting of Stockholders, our stockholders had the opportunity to provide an advisory vote on the compensation paid to our NEOs, or a "say-on-pay" vote. More than 64% of the total votes cast were voted in favor of our "say-on-pay" proposal in 2019, following more than 87% support in the 2018 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, including executive compensation. We actively engaged with the stockholders that represent a significant majority of our shares outstanding in both 2018, before 2019 executive compensation decisions, and again in 2019, after the May 2019 stockholder vote and before 2020 executive compensation decisions. In 2019, this included the Company's management team and the CLD Committee Chairman reaching out to stockholders that represent 78% of our shares outstanding and having 23 active discussions with 70% of our shares outstanding. As a result of this ongoing outreach, the CLD Committee further reevaluated our executive compensation program and made several changes to our pay program for 2019. The following table summarizes our stockholders' feedback and the CLD Committee's resulting decisions:

| What We Heard | What We Did |
|---|---|
| ✓ A focus on CEO pay level. | ✓ **Reviewed and updated our peer group** prior to January 2019 executive compensation decisions to ensure an accurate size-appropriate comparison of peer executive compensation practices and pay levels.<br>✓ Eliminated one outlier from 2019 for our 2020 peer group that may appear aspirational.<br>✓ Set CEO 2019 target compensation near the expected median of our updated peer group. CEO 2019 *actual* total compensation as reported in the Summary Compensation table is 6% lower than in 2018, despite a higher bonus payout for 2019 than for 2018 due to our accelerated outperformance in 2019.<br>✓ Continued to **set majority of pay based on performance** through our bonus plan and equity grants tied to our operational performance.<br>✓ Continued to **set aggressive goals** for cash incentive attainment at the beginning of each year tied to our strategic plan. For example, in 2019, our primary growth-oriented performance metric was Total Revenue, and this goal required 19% annual growth to earn a target award vs. the median annual 18% top line growth forecasts of our peers for their fiscal 2019. |
| ✓ Strong support for linking performance-based equity to internal operating measures. | ✓ **Revised the structure of our performance-based equity grants** from TSR performance relative to the Russell 2000 Index for 2018 awards **to performance against preset internal operating measures** that reflect the success of our cloud transition and align with shareholder interests for 2019 awards. |
| ✓ Desire for our performance-based goals to be tied to a successful cloud transition and business performance. | ✓ **Eliminated Free Cash Flow** from the success measures associated with annual bonus attainment. In 2019, this was replaced with Recurring Revenue Gross Margin to ensure focus on the primary measure of health and sustainability of our cloud business.<br>✓ **Eliminated ARR, leaving total revenue** as the primary success measure of top line growth associated with bonus attainment. In 2019 and again in 2020, bonus attainment will in part be based on aggressive annual Total Revenue growth targets.<br>✓ **Changed our performance-based equity compensation** to incentivize growth in Total Recurring Revenue, our primary measure of growth for our cloud business. |

- *Continued emphasis on pay-for-performance.* In 2019, our CLD Committee again sought to motivate our NEOs through predominantly "performance-based" cash and equity awards. The majority of our CEO's 2019 target total compensation was directly performance-based, including annual cash incentives tied to pre-established performance targets and PRSU equity awards where attainment varies based on performance against certain long-term Company performance goals. PRSU attainment is formulaic and measured over multiple years against unchanged goals. Including RSU equity awards, which increase or decrease in value based on share price movement, >90% of our CEO's 2019 total target compensation is considered at risk.

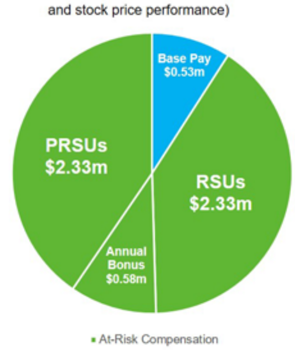
**>50% of 2019 CEO Target Pay Was Performance-Based**

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



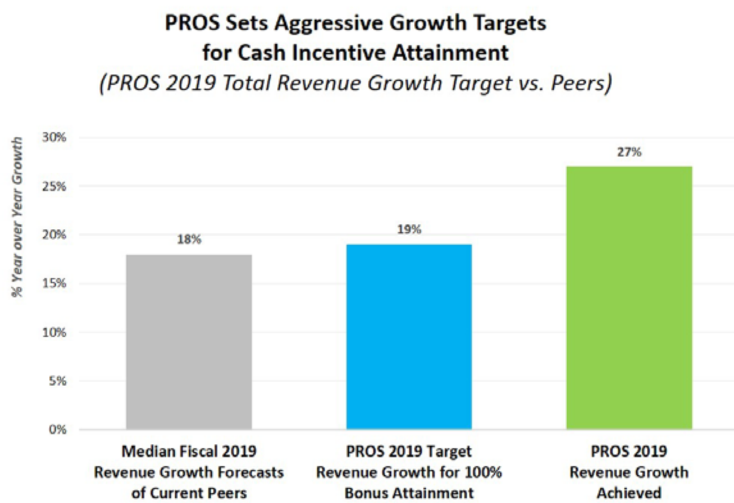

**>90% of 2019 CEO Target Pay Was At-Risk**

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



Target equity compensation for RSUs and PRSUs 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 the accounting grant date fair value included in the "*Grants of Plan-Based Awards*" table.

- *Set aggressive, performance-based and formulaic goals based on predefined targets with no discretion.* Performance goals that determine annual cash incentive attainment were set aggressively in 2019, with above median performance expectations compared to our peer group. Our growth-oriented performance measure was Total Revenue. The minimum threshold for any incentive payment required 14% Total Revenue growth over 2018, and the target level award required 19% Total Revenue growth over 2018. This was higher than the annual 18% median revenue growth forecasts disclosed by our peers at the beginning of their fiscal 2019.




## Key Pay Practices

- ✓ Emphasize pay-for-performance where compensation is contingent upon the performance of our business, our stock price and individual performance
- ✓ Utilize performance-based pay through equity and cash incentive awards that require achievement of pre-established goals with no discretion
- ✓ Maintain “double trigger” change in control agreements
- ✓ Maintain a clawback policy
- ✓ CLD Committee oversees risks associated with compensation policies and practices
- ✓ CLD Committee retains an independent compensation consultant
- ✓ 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

- ✗ No hedging or pledging of Company stock, including short sales
- ✗ No excessive perquisites
- ✗ No pensions
- ✗ No discount from fair market value in setting exercise price of stock options and stock appreciation rights
- ✗ No repricing underwater stock options or stock appreciation rights without stockholder approval
- ✗ No equity vesting within less than one year after grant, except for up to 5% of the authorized shares

## Our Compensation Philosophy

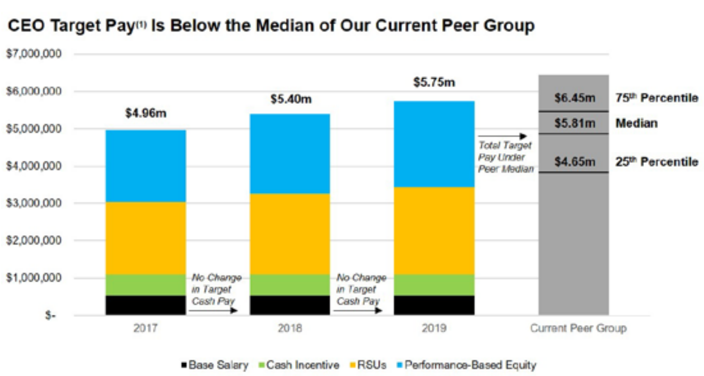
Our executive compensation program is designed to provide competitive pay enabling the Company to attract and retain high-caliber talent, to link executive pay to the Company’s performance, and to align the interests of our executives with those of our shareholders.

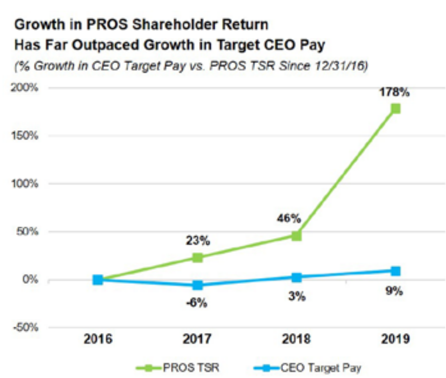
| Objective | Rationale |
|---|---|
| Competitive pay | Enable the Company to attract and retain high-caliber talent by setting compensation competitive with that being offered to individuals holding comparable positions at other public companies with which we compete for business and talent. The Company 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

In order to promote retention and properly incentivize our NEOs, the CLD Committee focused on an executive compensation program that was both market competitive and aligned with market best practices:

- *CEO target pay was set conservatively, increasing just 6% for 2019, near peer median pay levels despite the Company's strong financial performance and total shareholder return in 2018.* Despite the Company's continued success in growing its cloud-based recurring revenue business and 91% shareholder return in 2019, our CEO's base salary and target cash incentive remained unchanged in 2019 from 2018. His target equity compensation[1] increased to $4.65 million in 2019 from $4.3 million in 2018 to reflect this performance. 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 2019 peer group, and this expected median was later confirmed to be an accurate forecast.




(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.

## 2019 NEO Compensation Decision

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 prior year performance, the compensation practices from our updated peer group, each leader's compensation relative to our updated peer group, and feedback from stockholder engagement throughout each prior year. As the Company continues to grow aggressively, and the peers we use to compare executive compensation continue to grow, the CLD Committee is focused on ensuring we keep compensation market relevant for our strong performing executive team.

### Andres Reiner, President and Chief Executive Officer

Mr. A. Reiner joined the Company in 1999 and has served as our President and Chief Executive Officer since 2010. Mr. A. Reiner again successfully steered the Company through an accelerated transition to the cloud in 2019.

Despite the Company's strong financial performance and stockholder return in 2018, CEO target pay was set conservatively for 2019, increasing just 6% and sitting near peer median pay levels. Base salary and target annual cash incentive were unchanged from 2018, the fourth year in a row with no target cash compensation change, and long-term equity compensation increased 8% in line with market compensation practice of our peer group and to recognize the Company's strong performance.

### 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 increased Mr. Schulz's base salary and target annual cash incentive by 3%, and his target long-term equity by 11% from 2018 in recognition of his impact on the Company's successful operational and financial progress on our cloud transition, and the resulting growth in stockholder return in 2019.

### John C.P. Allessio, Executive Vice President and Chief Customer Officer

Mr. Allessio joined the Company in October 2019 as Chief Customer Officer, and the Board appointed him as an Executive Vice President in November 2019. Mr. Allessio is responsible for the Company's Professional Services and Customer Success operations. Based on external market data and Mr. Allessio's prior experience, the CLD committee reviewed and approved his base salary of $320,000, a target bonus of 65%, and initial RSU equity award of $2.0 million vesting over 4 years.

### 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.

In 2019, the CLD Committee increased Mr. Dziersk's base salary and target annual cash incentive by 2% and maintained his target long-term equity compensation in recognition of strong top line and overall Company performance.

### Roberto Reiner, Executive Vice President and Chief Technology Officer

Mr. R. Reiner joined the Company in January 2016 as Chief Technology Officer, and the Board appointed him as an Executive Vice President in November 2019. Mr. R. Reiner is responsible for the Company's technology operations, including Product Management, Product Development, Science & Research, Cloud Operations and Technical Support. There was no change in compensation levels at the time of his appointment as an Executive Vice President. Prior to his appointment as an Executive Vice President, Mr. R. Reiner's cash compensation was regularly benchmarked against external market data and reviewed by the CLD Committee, and his equity awards were granted by the CLD Committee. Upon his appointment as an Executive Vice President, no changes were made to his then current compensation, and his compensation and amended and restated employment agreement were approved by the CLD Committee.

## 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 2019, the median annual total compensation of all employees of the Company and its subsidiaries other than our CEO, was $88,685. Our CEO's total annual compensation for 2019 for purposes of the Pay Ratio Disclosure was $6.33 million. The ratio of the total annual compensation of our CEO to the median of all other employees was 71:1. 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 2019 total cash compensation for all individuals, excluding our CEO, who were employed by us during the 2019 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 2019. We used the relevant exchange rate on December 31, 2019. After identifying the median employee criteria, we calculated annual total compensation for such employee and compared it to the CEO's total compensation as set forth in the 2019 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 2019, and for the NEOs in particular, are recommendations from the Committee's independent compensation advisor, 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 it 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 2019, Mr. A. 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 but does not participate in discussions regarding his own pay. In addition, the CLD Committee has delegated to the Chief Executive Officer the authority to make share-based awards to employees who are not NEOs 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 2019 due to the breadth and depth of FW Cook's experience with executive compensation matters and their particular expertise in the software industry. During 2019, 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 2019 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, starting in 2017 and continuing through 2019, the Committee specifically began to focus on reconsidering peers with a founder CEO because they tend not to be paid in a manner that reflects the external pay market. As a result of this annual review, the Committee made the following changes to the peer group for purposes of informing executive compensation decisions:

| 2019 Peer Group (Count = 18) | 2020 Peer Group (Count = 17) |
|---|---|
| 8x8 | 8x8 |
| Aspen Tech | Aspen Tech |
| Benefitfocus | Benefitfocus |
| Bottomline Tech | Bottomline Tech |
| Cornerstone | Cornerstone |
| Coupa Software | Coupa Software |
| Ellie Mae | Ellie Mae |
| | Everbridge |
| Five9 | Five9 |
| | Instructure |
| Monotype Imaging | Monotype Imaging |
| Paylocity | Paylocity |
| **Q2 Holdings** | Q2 Holdings |
| Quotient Tech | Quotient Tech |
| | Rapid7 |
| SPS Commerce | SPS Commerce |
| Workiva | Workiva |
| **Included for 2019, Removed for 2020:** | |
| Callidus Software (acquired) | |
| Imperva (acquired) | |
| Model N (market cap below target range) | |
| RingCentral (revenue multiple above target range) | |

With these changes, the CLD Committee examined the compensation practices of these companies, which we believe most closely approximate the size, revenue (within 2.5 multiple of PROS revenue), scope and complexity of our business. The 2019 peer group was set in late 2018 and referenced for setting target compensation levels for NEOs for 2019 and for the hiring of Mr. Allessio, our Executive Vice President and Chief Customer Officer. The 2020 peer group was established in late 2019 and referenced for setting target compensation levels for NEOs for 2020. We believe that all companies in the 2020 peer group are in a comparable and appropriate size range and their inclusion is consistent with widely accepted peer group development best practices. The 2020 peer group has 2019 revenues ranging from 0.8x to 2.4x of our total revenue, and market capitalizations at the time the peer group was constructed ranging from 0.3x to 3.2x of our market capitalization. At the time the peer group was developed (August 2019), our total revenue was slightly below the peer median but is balanced by our market capitalization, which was slightly above the peer median.

FW Cook prepared a compensation analysis using data gathered from publicly available information for this peer group. 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 2019.* Based on the criteria above, the CLD Committee approved no increase for Mr. A. Reiner, increases of 3% to Mr. Schulz, 2% to Mr. Dziersk, and 4% to Mr. R. Reiner, and an on hire salary decision placing Mr. Allessio within the competitive range for his role relative to our peer group.

### *Cash Incentives*

For 2019, we utilized a cash incentive plan for our NEOs under which cash incentive payments could be made after the end of the year based on our performance against our corporate objectives for the year. This program is 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 are interpolated. 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 2019.* Our CLD Committee approved our 2019 Named Executive Officers Incentive Plan (2019 NEO Plan) for each of our NEOs in January 2019, and many of the changes reflected in the 2019 NEO Plan were in response to feedback received after the 2018 "say-on-pay" vote. The 2019 NEO Plan eliminated the Annual Recurring Revenue and Free Cash Flow elements from the 2018 Names Executive Officer Plan, and added Recurring Revenue Gross Margin as a new metric for 2019. We believe Total Revenue is an increasingly valuable indication of growth for the Company, and that Recurring Revenue Gross Margin is the best indicator to measure the health and sustainability of our cloud business. The 2019 NEO Plan also eliminated the quarterly component and utilizes only annual performance periods for all measures in order to eliminate stockholder confusion on how our quarterly goals are defined. The weighting of the 2019 NEO Plan components is set forth in the following table:

| Component | Weighting |
|---|---|
| Total Revenue | 60% |
| Recurring Revenue Gross Margin | 40% |

Payouts under the 2019 NEO Plan were based on Company performance compared to aggressive goals set for each component's target. The CLD Committee reviewed the target setting practices of our peers before approving the Company's goals at the beginning of the year. Our primary growth-oriented performance metric is Total Revenue, and the Total Revenue performance goal required 19% growth at target for 2019, which is more aggressive than the 18% median top line trailing 12-month growth of our peer companies. The CLD Committee authorized payments for attainment under the 2019 NEO Plan to be made in February 2020 after audited results were determined for 2019. The minimum threshold, target, and maximum goals for each component are set forth in the following table:

| Component | Goals ($M) Threshold | Target | Maximum | Performance Achieved |
|---|---|---|---|---|
| Total Revenue | 225.0 | 234.4 | 240.2 | 250.3 |
| Recurring Revenue Gross Margin | 70.0% | 72.0% | 74.0% | 76% |

For 2019, the CLD Committee decided upon the target total cash compensation (base salary plus target cash incentives) for Messrs. A. Reiner, Schulz, Allessio, Dziersk, and R. Reiner 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.

The CLD Committee set the 2019 incentive pay as a percentage of the annual base salary of each of Messrs. A. Reiner, Schulz, Allessio, Dziersk and R. Reiner based on achievement of the goals for each component above. 2019 incentive pay as a percentage remained unchanged from 2018 for Messrs. A. Reiner, Schulz, and Dziersk. These 2019 incentive pay targets are set forth in the following table:

| Named Executive Officer | Threshold | Target | Maximum |
|---|---|---|---|
| Andres D. Reiner | 55% | 110% | 220% |
| Stefan B. Schulz | 40% | 80% | 160% |
| John C. P. Allessio [(1) (2)] | 32.5% | 65% | 122% |
| Thomas F. Dziersk | 50% | 100% | 200% |
| Roberto Reiner[(1)] | 35% | 70% | 132% |

(1) Messrs. Allessio and R. Reiner became executive officers near the end of 2019. The incentive plan they participated in for 2019 was weighted 15% for individual performance as recommended by the CEO and approved by the CLD Committee, and 85% for the Company achievement against Total Revenue & Recurring Revenue Gross Margin targets. For the purposes of "Target Maximum" a maximum payout for the individual performance of 120% was assumed.

(2) Mr. Allessio's actual payout for 2019 was prorated based upon his start date of 10/22/2019.

The actual payout for 2019 performance as a percentage of the base salary of each NEO reflects actual performance against the performance schedule 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 | 220% | 200% |
| Stefan B. Schulz | 160% | 200% |
| John C. P. Allessio | 112% | 188% |
| Thomas F. Dziersk | 200% | 200% |
| Roberto Reiner | 132% | 188% |

NEO bonuses for Messrs. A. Reiner, Schulz, and Dziersk in 2019 included no adjustment outside of the formulaic outcome driven by performance versus the goals that were set at the start of the year. As noted above, bonuses for 2019 for Messrs. Allessio and R. Reiner included an individual discretionary component (15% of their 2019 bonus target) recommended by the CEO and approved by the CLD Committee. Mr. Allessio's individual component was paid out at 100%, and Mr. R. Reiner's individual component was paid out at 120% based on 2019 individual performance. We believe that the 2019 goals were aggressive based on performance benchmarking of the growth rates compared to our 2019 peer group and this is supported by the strong stock price performance that accompanied the maximum payout, which contributed to our 91% stock price increase in 2019.

### *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 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 performance-based equity and RSUs to Mr. Reiner, and 60% RSUs and 40% performance-based equity for Messrs. Schulz and Dziersk to align with our peer group compensation practices. See 2019 award detail included in the "*Grants of Plan-Based Awards*" table.

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 in 2018 to PRSUs in 2019, which are tied to achievement of long-term 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 CLD Committee over a two-year performance period beginning January 2019.

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 PRSU and RSU grants made in January 2019 to Messrs. Reiner, Schulz and Dziersk.

PRSUs are subject to both a performance condition and a time-based vesting condition. The number of PRSUs which may be earned is based on achievement by the Company against total recurring revenue goals. These goals are long-term in nature, set based on targets that factor in at least two years of financial performance where each year drives cumulative impact to achievement of the goal. If we achieve the target performance level, the percentage at which the 2019 PRSUs convert into earned RSUs will be 100%. If we fail to achieve the performance level at target, the percentage at which the 2019 PRSUs convert into earned RSUs 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 2020 PRSUs convert to earned RSUs will be increased from 100%, through linear interpolation, with a maximum percentage of 200% for performance above maximum performance levels. Once earned based on achievement against the performance targets, the earned RSUs are further subject to one additional year of time-based vesting for a total of three years from the initial grant date.

Stock price PRSUs are performance vested restricted stock units which vest upon achievement of certain performance metrics, which were granted on a one-time basis 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, an additional 25% vesting at $33, and the remaining 50% vested at $41. The Stock Price PRSUs were partially earned in 2017 and 2018 based on achieving the first two of three stock price growth goals, with the remaining Stock Price PRSUs earned in 2019 upon achieving the final stock price growth goal. The following table shows the number of Stock Price PRSUs earned during 2017 through 2019:

| | Stock Price PRSUs per Price Hurdle | | |
|---|---|---|---|
| | Earned in 2017 | Earned in 2018 | Earned in 2019 |
| Andres D. Reiner | 50,000 | 50,000 | 100,000 |
| Stefan B. Schulz | 15,000 | 15,000 | 30,000 |
| John C. P. Allessio | — | — | — |
| Thomas F. Dziersk | — | — | — |
| Roberto Reiner | 12,500 | 12,500 | 25,000 |

### *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*". 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. A. Reiner, our Chief Executive Officer and President, 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. A. Reiner is subject to periodic review by our CLD Committee. In the event Mr. A. 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. A. 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. A. 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. A. 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. A. 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 Equity Incentive Plan (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, 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.

*John C. P. Allessio, Thomas F. Dziersk and Roberto Reiner.* In November 2019, we entered into an employment agreement with Mr. Allessio, our Executive Vice President and Chief Customer Officer. In October 2017, we entered into an employment agreement with Mr. Dziersk, our Executive Vice President, Worldwide Sales. In November 2019, we entered into an amended and restated employment agreement with Mr. R. Reiner, our Executive Vice President and Chief Technology Officer. These three agreements utilize a similar form of employment agreement. Each 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 the officer is subject to periodic review by our CLD Committee. In the event the officer's employment with us is terminated by the officer for good reason, by us without cause, or we decide not to renew their agreement, the officer 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 his health benefits. Alternatively, if the officer'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 his 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. Each of these officers 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) the unauthorized use or disclosure of the confidential information or trade secrets of the Company by the officer which causes a material harm to the Company, (b) the officer’s 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) any intentional wrongdoing by the officer, whether by omission or commission, which adversely affects the business or affairs of the Company; (d) continued failure to perform assigned duties or comply with any Company policy after notice and a cure period; (e) any material breach by the officer of his employment agreement or any other agreement between the officer and the Company after notice and a cure period; and (f) any failure to cooperate in good faith with the Company in any governmental investigation or formal proceeding.

Each of our NEOs can resign for “good reason” and be entitled to certain severance payments as detailed above in the table titled “Potential Payments Upon Termination of Employment or Change of Control.” “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 the Company, other than, in the case of the employment agreements with Messrs. Allessio, Dziersk and R. Reiner, where they are asked to assume substantially similar duties and responsibilities in a larger entity after any change of control; (ii) a material reduction in their base salaries other than reductions which are part of a general reduction affecting all employees; (iii) the relocation of their principal place of service to their employer to more than 25 miles from their present location; (iv) any failure by the Company to continue to provide them with the opportunity to participate, on terms no less favorable than those in effect for the benefit of any employee holding a comparable position with the Company, in any material benefit or compensation plans and programs, which results in a material detriment to them; (v) any material breach by the Company of any provision of their employment agreement; or (vi) any failure by any successor corporation to assume the Company's 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 increases 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, 2019, 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. Additionally, the 2017 Plan provides for recovery of certain equity awards and profits from securities sales in similar circumstances.

## 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. 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

# EXECUTIVE COMPENSATION

## 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, our Chief Customer Officer, our Executive Vice President, Worldwide Sales, and our Chief Technology Officer during 2019, 2018 and 2017:

| Name and Principal Position | Year | Salary | | Bonus | | Stock Awards (1) | | Non-Equity Incentive Plan Compensation | All Other Compensation | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Andres D. Reiner | 2019 | $ 525,000 | | $ — | | $ 4,650,003 | (2) | $ 1,155,000 | $ 8,567 | $ 6,338,570 |
| *President and Chief* | 2018 | $ 525,000 | | $ — | | $ 5,408,210 | (3) | $ 799,838 | $ 1,785 | $ 6,734,832 |
| *Executive Officer* | 2017 | $ 525,000 | | $ — | | $ 4,032,840 | (4) | $ 419,843 | $ 18,584 | $ 4,996,267 |
| Stefan B. Schulz | 2019 | $ 392,000 | | $ — | | $ 2,000,021 | (5) | $ 627,200 | $ 8,548 | $ 3,027,769 |
| *Executive Vice President* | 2018 | $ 380,000 | | $ — | | $ 2,186,406 | (6) | $ 421,040 | $ 5,660 | $ 2,993,106 |
| *and Chief Financial Officer* | 2017 | $ 365,000 | | $ — | | $ 1,528,423 | (7) | $ 212,284 | $ 20,981 | $ 2,126,688 |
| John C. P. Allessio | 2019 | $ 66,667 | (8) | $ — | | $ 1,999,979 | (9) | $ 74,851 | $ 1,333 | $ 2,142,830 |
| *Executive Vice President* | | | | | | | | | | |
| *and Chief Customer Officer* | | | | | | | | | | |
| Thomas F. Dziersk | 2019 | $ 383,000 | | $ — | | $ 1,600,017 | (10) | $ 766,000 | $ 6,479 | $ 2,755,496 |
| *Executive Vice President,* | 2018 | $ 375,000 | | $ — | | $ 485,863 | (11) | $ 519,375 | $ — | $ 1,380,238 |
| *Worldwide Sales* | 2017 | $ 85,336 | (12) | $ 100,000 | (13) | $ 2,697,901 | (14) | $ 76,377 | $ 5,418 | $ 2,965,032 |
| Roberto Reiner | 2019 | $ 338,000 | | $ — | | $ 1,800,002 | (15) | $ 444,808 | $ 8,400 | $ 2,591,210 |
| *Executive Vice President* | | | | | | | | | | |
| *and Chief Technology Officer* | | | | | | | | | | |

(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 14 of our financial statements in our Form 10-K for the year ended December 31, 2019.

(2) Represents 70,348 RSUs and 70,348 PRSUs awarded to Mr. A. Reiner on January 15, 2019. The 2019 RSUs vest annually in one fourth installments on January 15th of each year and have a grant date fair value of $33.05 per unit. The 2019 PRSUs will vest on January 15, 2022, and have a grant date fair value of $33.05 per unit. For additional information on the 2019 RSUs and 2019 PRSUs, see "2019 Grants of Plan-Based Awards" below.

(3) Represents 82,948 RSUs awarded to Mr. A. 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 per unit. The 2018 MSUs will vest on January 10, 2021, and have a grant date fair value of $38.18 per unit.

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

(5) Represents 36,309 RSUs and 24,206 PRSUs awarded to Mr. Schulz on January 15, 2019. The 2019 RSUs vest annually in one fourth installments on January 15th of each year and have a grant date fair value of $33.05 per unit. The 2019 PRSUs will vest on January 15, 2022, and have a grant date fair value of $33.05 per unit. For additional information on the 2019 RSUs and 2019 PRSUs, see "2019 Grants of Plan-Based Awards" below.

(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 per unit. The 2018 MSUs will vest on January 10, 2021, and have a grant date fair value of $38.18 per unit.

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

(8) Mr. Allessio commenced his employment with us in October 2019.

(9) Represents 38,632 RSUs awarded to Mr. Allessio on November 6, 2019. The 2019 RSUs vest annually in one fourth installments on November 6th of each year and have a grant date fair value of $51.77 per unit. For additional information on the 2019 RSUs, see "2019 Grants of Plan-Based Awards" below.

(10) Represents 29,047 RSUs and 19,365 PRSUs awarded to Mr. Dziersk on January 15, 2019. The 2019 RSUs vest annually in one fourth installments on January 15th of each year and have a grant date fair value of $33.05 per unit. The 2019 PRSUs will vest on January 15, 2022, and have a grant date fair value of $33.05 per unit. For additional information on the 2019 RSUs and 2019 PRSUs, see "2019 Grants of Plan-Based Awards" below.

(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 per unit. The 2018 MSUs will vest on January 10, 2021, and have a grant date fair value of $38.18 per unit.

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

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

(14) 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 PRSUs per unit. The 2017 MSUs will vest on October 9, 2020, and have a grant date fair value of $31.29 per unit.

(15) Represents 54,463 RSUs awarded to Mr. R. Reiner on January 15, 2019. The 2019 RSUs vest annually in one fourth installments on January 15th of each year and have a grant date fair value of $33.05 per unit. For additional information on the 2019 RSUs, see "2019 Grants of Plan-Based Awards" below.

## Grants of Plan-Based Awards

The following table shows all plan-based awards granted to our NEOs during 2019, 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 Units (#) | FMV on Grant Date ($/Sh) | Grant Date Fair value of Options and Awards ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Threshold ($) | Target ($) | Maximum ($) | Target (#) | Maximum (#) | | | |
| Andres D. Reiner | RSU | 1/15/2019 | | | | | | 70,348 | $ 33.05 | $ 2,325,001 |
| | PSU(1) | 1/15/2019 | | | | 70,348 | 140,696 | | $ 33.05 | $ 2,325,001 |
| | Cash incentive | | $ 288,750 | $ 577,500 | $ 1,155,000 | | | | | |
| Stefan B. Schulz | RSU | 1/15/2019 | | | | | | 36,309 | $ 33.05 | $ 1,200,012 |
| | PSU(1) | 1/15/2019 | | | | 24,206 | 48,412 | | $ 33.05 | $ 800,008 |
| | Cash incentive | | $ 156,800 | $ 313,600 | $ 627,200 | | | | | |
| John C. P. Allessio | RSU | 11/6/2019 | | | | | | 38,632 | $ 51.77 | $ 1,999,979 |
| | Cash incentive(2) (3) | | $ 23,265 | $ 40,460 | $ 76,064 | | | | | |
| Thomas F. Dziersk | RSU | 1/15/2019 | | | | | | 29,047 | $ 33.05 | $ 960,003 |
| | PSU(1) | 1/15/2019 | | | | 19,365 | 38,730 | | $ 33.05 | $ 640,013 |
| | Cash incentive | | $ 191,500 | $ 383,000 | $ 766,000 | | | | | |
| Roberto Reiner | RSU | 1/15/2019 | | | | | | 54,463 | $ 33.05 | $ 1,800,002 |
| | Cash incentive(2) | | $ 136,045 | $ 236,600 | $ 444,808 | | | | | |

(1) The 2019 PRSUs are subject to both a performance condition and a time-based vesting condition. The number of PRSUs that may be earned, up to 200% of target award, is based upon achievement by the Company against total recurring revenue targets over a performance period ending December 31, 2020. Such earned PRSUs then vest on January 15, 2022. Grant Date Fair Value was calculated using at target number of PRSUs with the fair value of $33.05 per unit determined on grant date.

(2) Messrs. Allessio & R. Reiner became named executive officers in November 2019. For 2019, they participated in an incentive plan that did not have a maximum payout of 200%.

(3) Mr. Allessio's target cash incentive was prorated to reflect his start date of October 22, 2019.

## Outstanding Equity Awards at Fiscal Year End

The following table presents the number of options to purchase shares of our Common Stock, SARs, RSUs, and MSUs held by our NEOs as of December 31, 2019:

| Name | Stock Awards: Equity incentive plan awards: number of unearned shares, units or other rights that have not vested (#) | | Stock Awards: Equity incentive plan awards: market or payout value of unearned shares, units or other rights that have not vested ($) | |
|---|---|---|---|---|
| Andres D. Reiner | 22,500 | (1) | $ | 1,348,200 |
| | 84,000 | (2) | $ | 5,033,280 |
| | 42,000 | (3) | $ | 2,516,640 |
| | 62,211 | (6) | $ | 3,727,683 |
| | 82,948 | (7) | $ | 4,970,244 |
| | 70,348 | (8) | $ | 4,215,252 |
| | 70,348 | (9) | $ | 4,215,252 |
| Stefan B. Schulz | 15,625 | (1) | $ | 936,250 |
| | 26,100 | (2) | $ | 1,563,912 |
| | 19,600 | (3) | $ | 1,174,432 |
| | 31,251 | (6) | $ | 1,872,560 |
| | 27,778 | (7) | $ | 1,664,458 |
| | 24,206 | (8) | $ | 1,450,424 |
| | 36,309 | (9) | $ | 2,175,635 |
| John C. P. Allessio | 38,632 | (10) | $ | 2,314,829 |
| Thomas F. Dziersk | 39,669 | (4) | $ | 2,376,966 |
| | 29,752 | (5) | $ | 1,782,740 |
| | 6,945 | (6) | $ | 416,144 |
| | 6,173 | (7) | $ | 369,886 |
| | 19,365 | (8) | $ | 1,160,351 |
| | 29,047 | (9) | $ | 1,740,496 |
| Roberto Reiner | 30,000 | (1) | $ | 1,797,600 |
| | 32,650 | (3) | $ | 1,956,388 |
| | 40,509 | (6) | $ | 2,427,299 |
| | 54,463 | (9) | $ | 3,263,423 |

(1) Represents 2016 RSUs awarded to Messrs. A. Reiner, Schulz, and R. Reiner on March 24, 2016. These 2016 RSUs continue to vest annually in one-fourth installments on March 1st of each year through 2020.

(2) 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 of 2017 MSUs that would be earned if the performance goals related to these awards were met at the target level at the end of the 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 March 1, 2017 to February 28, 2020 as compared to the Russell 2000 Index.

(3) Represents 2017 RSUs awarded to Messrs. A. Reiner, Schulz, and R. Reiner on January 20, 2017. These 2017 RSUs continue to vest annually in one-fourth installments on January 1st of each year through 2021.

(4) Represents MSUs awarded on October 9, 2017 to Mr. Dziersk. These 2017 MSUs vest on October 9, 2020. The amount shown above reflects the number of 2017 MSUs that would be earned if the performance goals related to this award were met at the target level at the end of the 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 for the period from October 9, 2017 to October 9, 2020 as compared to the Russell 2000 Index.

(5) Represents the unvested portion of the 2017 RSUs awarded to Mr. Dziersk on October 9, 2017. The 2017 RSUs continue to vest annually in one-fourth installments on October 9th of each year through 2021.

(6) Represents 2018 RSUs awarded to Messrs. A. Reiner, Schulz, Dziersk and R. Reiner on January 8, 2018. These RSUs continue to vest annually in one-fourth installments on January 10th of each year through 2022.

(7) Represents 2018 MSUs awarded to Messrs. A. Reiner, Schulz, and Dziersk on January 12, 2018. These 2018 MSUs vest on January 10, 2021. The amounts shown above reflect the number of 2018 MSUs that would be earned if the performance goals related to these awards were met at the target level at the end of the 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 Russell 2000 Index.

(8) Represents 2019 PRSUs awarded to Messrs. A. Reiner, Schulz, Dziersk, and R. Reiner on January 15, 2019. These 2019 PRSUs are subject to both a performance condition and a time-based vesting condition. The number of 2019 PRSUs which may be earned, up to 200% of target award, is based upon achievement by the Company against total recurring revenue targets over a performance period ending December 31, 2020. Such earned 2019 PRSUs then vest on January 15, 2022.

(9) Represents 2019 RSUs awarded to Messrs. A. Reiner, Schulz, Dziersk and R. Reiner on January 15, 2019. These 2019 RSUs vest annually in one-fourth installments on January 15th of each year through 2023.

(10) Represents 2019 RSUs awarded to Mr. Allessio on November 6, 2019. These 2019 RSUs vest annually in one-fourth installments on November 6th of each year through 2023.

## 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, 2019:

| Name | Option Awards | | Stock Awards | | |
|---|---|---|---|---|---|
| | Number of shares acquired on exercise[(1)] (#) | Value realized on exercise ($) | Number of shares acquired on RSU vesting (#) | Number of shares acquired on PRSU and MSU vesting (#) | Value realized on vesting ($) |
| Andres D. Reiner | 200,000 | $ 10,499,000 | 78,537 | 280,000 | $ 15,563,583 |
| Stefan B. Schulz | — | — | 56,466 | 155,000 | $ 9,107,044 |
| John C. P. Allessio | — | — | — | — | $ — |
| Thomas F. Dziersk | — | — | 17,190 | — | $ 985,124 |
| Roberto Reiner | — | — | 59,828 | 25,000 | $ 3,508,682 |

(1) Represents the exercise of Stock Appreciation Rights (SARs)

## 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, 2019 for each of the NEOs:

| Name | Severance ($) | Annual Bonus Payment | Equity Grants ($) | Welfare Benefits ($) | Total Payment ($) |
|---|---|---|---|---|---|
| **Andres D. Reiner** | | | | | |
| Death or Disability (1) | — | — | 35,212,048 | — | 35,212,048 |
| Termination (2) | 1,102,500 | 1,155,000 | 31,814,824 | 23,217 | 34,095,541 |
| Termination on Change of Control (3) | 1,653,750 | 1,155,000 | 36,030,076 | 34,826 | 38,873,652 |
| Vesting on Change of Control (4) | — | — | 12,285,937 | — | 12,285,937 |
| **Stefan B. Schulz** | | | | | |
| Death or Disability (1) | — | — | 13,952,552 | — | 13,952,552 |
| Termination (2) | 705,600 | 627,200 | 5,819,385 | 20,485 | 7,172,670 |
| Termination on Change of Control (3) | 1,058,400 | 627,200 | 14,066,040 | 30,728 | 15,782,368 |
| Vesting on Change of Control (4) | — | — | 4,038,069 | — | 4,038,069 |
| **John C. P. Allessio** | | | | | |
| Death or Disability (1) | — | — | 2,314,829 | — | 2,314,829 |
| Termination (2) | 320,000 | — | — | 22,882 | 342,882 |
| Termination on Change of Control (3) | 480,000 | 74,851 | 2,314,829 | 34,322 | 2,904,002 |
| **Tom Dziersk** | | | | | |
| Death or Disability (1) | — | — | 5,217,115 | — | 5,217,115 |
| Termination (2) | 383,000 | — | — | 23,217 | 406,217 |
| Termination on Change of Control (3) | 574,500 | 766,000 | 10,593,437 | 34,826 | 11,968,763 |
| Vesting on Change of Control (4) | — | — | 3,169,768 | — | 3,169,768 |
| **Roberto Reiner** | | | | | |
| Death or Disability (1) | — | — | 5,690,722 | — | 5,690,722 |
| Termination (2) | 338,000 | — | — | 14,140 | 352,140 |
| Termination on Change of Control (3) | 507,000 | 437,710 | 9,444,710 | 21,210 | 10,410,630 |

(1) Death or Disability - in the event of a termination of the executive officer's employment due to death or disability certain equity awards will vest. For an explanation of these benefits by executive, see "Employment Agreements" above.

(2) Termination - in the event of an involuntary termination of the executive officer's employment by the Company without Cause or a termination of employment by the executive officer for Good Reason, certain severance, bonus, equity vesting and other benefits are due to the executive officer. For an explanation of these benefits by executive and the definitions of Cause and Good Reason, see "Employment Agreements" above.

(3) Termination on Change of Control - in the event of an involuntary termination of the executive officer's employment by the Company without Cause or a termination of employment by the executive officer for Good Reason, in either event during the six-month period prior to a Change of Control or after a Change of Control, certain severance, bonus, equity vesting and other benefits are due the executive officer. For an explanation of these benefits by executive, see "Employment Agreements" above.

(4) Vesting on Change of Control - in the event of a Change of Control, certain performance-based equity awards accelerate their vesting by their terms because the respective performance period is deemed to have ended as of the date of the Change of Control. For PRSUs, if a Change of Control occurs prior to the one-year anniversary of the beginning of a performance period, the award vests at 100% of the target award amount and the earned shares are delivered, or paid out, to the executives as of the Change of Control. For MSUs, a Change of Control triggers a measurement of performance as of the Change of Control. Earned MSUs based on this measurement are paid out to the executives as of the Change of Control pro rata based on the length of the performance period concluded prior to the Change of Control. The remaining earned MSUs vest at the end of the original performance period.

# Equity Compensation Plan Information

The following table sets forth information as of December 31, 2019 with respect to compensation plans under which our equity securities are authorized for issuance. For additional information on our equity compensation plans, see Note 14 of the Notes to the Consolidated Financial Statements in our 2019 Annual Report.

| Plan Category | I<br>Number of securities to be issued upon exercise of outstanding options and rights (2) | II<br>Weighted-average exercise price of outstanding options and rights ($) (3) | III<br>Number of securities remaining available for future issuance under plans (excluding securities listed in Column (I)) (4) |
|---|---|---|---|
| All compensation plans previously approved by security holders | 2,719,064 | 10.38 | 2,606,524 |
| All compensation plans not previously approved by security | 0 | N/A | 0 |
| Total | 2,719,064 | 10.38 | 2,606,524 |

(1) Includes awards from the 2007 Plan and the 2017 Plan. No further grants will be made from the 2007 Plan.

(2) Includes 1,892,890 RSUs, 533,336 MSUs, 227,838 PRSUs, and 65,000 SARs.

(3) Includes the weighted average as it pertains to outstanding SARs only.

(4) Includes unissued award pools from the 2017 Plan and the 2013 Employee Stock Purchase Plan.

# 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 2021.

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 24 of this Proxy Statement and related compensation tables for detailed information about our executive compensation programs, including information about the fiscal year 2019 compensation of our NEOs*.

For the reasons discussed above, the Board unanimously recommends that stockholders vote in favor of the following resolution:

Resolved, that the stockholders approve, on an advisory basis, the compensation paid to the Company's NEOs, as disclosed in this Proxy Statement pursuant to the compensation disclosure rules of the SEC, including the Compensation Discussion and Analysis, compensation tables, and narrative discussion.

This vote is advisory and therefore not binding. However, the CLD 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 CLD 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.**

# 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 of our NEOS, each director and director nominee, and our NEOs, directors and director nominee as a group, each as of the Record Date unless otherwise noted below. Applicable percentage of ownership is based on 43,280,194 shares of our Common Stock outstanding as of the Record Date.

| Principal Shareholders and Address | Common Stock and Nature of Beneficial Ownership | Percentage |
|---|---|---|
| Brown Capital Management, LLC, 1201 N. Calvert Street, Baltimore, MD 21202 | 6,526,453[1] | 15.1% |
| The Vanguard Group, 100 Vanguard Blvd., Malvern, PA 19355 | 3,641,146[2] | 8.4% |
| PRIMECAP Management Company, 177 E. Colorado Blvd., 11th Floor, Pasadena, CA 91105 | 3,131,100[3] | 7.2% |
| Ronald F. and Mariette M. Woestemeyer, 3100 Main, Suite 900, Houston, TX 77002 | 2,860,135[4] | 6.6% |
| BlackRock, Inc., 55 East 52nd Street, New York, NY 10055 | 2,602,151[5] | 6.0% |
| D.F. Dent and Co Inc., 400 East Pratt Street, Baltimore, MD 21202 | 2,288,354[6] | 5.3% |

(1) Based solely upon a Schedule 13G/A filed by Brown Capital Management, LLC (Brown) with the SEC on February 14, 2020 reporting that Brown beneficially owned 6,526,453 shares of our Common Stock as of December 31, 2019, with sole voting power with respect to 4,001,243 shares of our Common Stock and sole dispositive power with respect to 6,526,453 shares of our Common Stock.

(2) Based solely upon a Schedule 13G filed by The Vanguard Group (Vanguard) with the SEC on February 11, 2020 reporting that Vanguard owned 3,641,164 shares of our Common Stock as of December 31, 2019, with sole voting power with respect to 70,458 shares of our Commons Stock, shared voting power with respect to 9,018 shares of our Common Stock, sole dispositive power with respect to 3,565,916 shares of our Common Stock and shared dispositive power with respect to 75,248 shares of our Common Stock.

(3) Based solely upon a Schedule 13G/A filed by PRIMECAP Management Company (PRIMECAP) with the SEC on February 12, 2020 reporting that PRIMECAP beneficially owned 3,131,100 shares of our Common Stock as of December 31, 2019, with sole voting and sole dispositive power with respect to 3,131,100 shares of our Common Stock.

(4) Includes 2,846,855 shares held by various trusts for the benefit of certain family members and 3,320 shares from RSUs which are scheduled to vest as of the Annual Meeting.

(5) Based solely upon a Schedule 13G/A filed by BlackRock, Inc. (BlackRock) with the SEC on February 5, 2020 reporting that BlackRock beneficially owned 2,602,151 shares of our Common Stock as of December 31, 2019, with sole voting power with respect to 2,521,242 shares of our Common Stock and sole dispositive power with respect to 2,602,151 shares of our Common Stock.

(6) Based solely upon a Form 13F filed by D.F. Dent & Co Inc. (DF Dent) with the SEC on February 14, 2020 reporting that DF Dent beneficially owned 2,288,354 shares of our Common Stock as of December 31, 2019, with sole voting and sole dispositive power with respect to 2,288,354 shares of our Common Stock.

| Name of Beneficial Owner | Common Stock Beneficially Owned[1] | Percentage |
|---|---|---|
| **Named Executive Officers** | | |
| Andres D. Reiner | 791,730 | 1.8% |
| Stefan B. Schulz | 246,636 | * |
| John C. P. Allessio | — | * |
| Thomas F. Dziersk | 20,429 | * |
| Roberto Reiner | 80,143 | * |
| **Non-Employee Directors and Director Nominees** | | |
| Penelope Herscher | 10,242[2] | * |
| Greg B. Petersen | 108,016[2] | * |
| Leslie Rechan | 35,352[2] | * |
| William Russell | 133,211[2] | * |
| Timothy V. Williams | 111,968[2] | * |
| Mariette M. Woestemeyer[3] | 2,860,135[3] | 6.6% |
| Ronald F. Woestemeyer[3] | 2,860,135[3] | 6.6% |
| Carlos Dominguez | — | * |
| **All NEOs, directors and director nominees as a group** | **4,397,862** | **10.2%** |

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

(1) Beneficial ownership represents sole voting and investment power.

(2) Includes 1,660 shares from RSUs which are scheduled to vest as of the Annual Meeting.

(3) Mr. and Mrs. Woestemeyer jointly beneficially own an aggregate of 2,860,135 shares or our Common Stock, including 3,220 shares from RSUs which are scheduled to vest as of the Annual Meeting.

# 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 2019, 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, 2019, 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. Roberto Reiner, who serves as our Executive Vice President and Chief Technology Officer is the brother of Andres Reiner, our President and CEO. Prior to his appointment as Executive Vice President, Mr. R. Reiner's compensation was regularly reviewed by the CLD Committee and all his equity awards were approved by the CLD Committee. In conjunction with his appointment as Executive Vice President, Mr. R. Reiner's compensation and amended and restated employment agreement were approved by the CLD Committee.

### 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 ir.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 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, 2019. 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.

### 2019 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 2019, the Audit Committee reviewed and discussed with management the Company's consolidated financial statements for the fiscal year ended December 31, 2019, 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 Standards 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 2019 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, 2019 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 2019 and 2018. A description of these various fees and services follows the table:

| | 2019 | 2018 |
|---|---|---|
| Audit fees | $ 1,953,252 | $ 1,845,680 |
| Audit-related fees | 233,650 | — |
| Tax fees | 78,970 | 41,992 |
| All other fees | 2,893 | 1,919 |
| Total fees | $ 2,268,765 | $ 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 $1,953,252 and $1,845,680 for the years ended December 31, 2019 and 2018, 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 $233,650 and zero audit-related fees billed for the years ended December 31, 2019 and 2018, respectively.

***Tax fees.*** The aggregate tax fees billed to us by PwC related to tax compliance, tax advice and tax planning, and were $78,970 and $41,992 for the years ended December 31, 2019 and 2018, respectively.

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

**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 2019, 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 THREE

## 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, 2020. 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, as a matter of good corporate governance practice. 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, 2020.**

# 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 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 2021 annual meeting of our stockholders (2021 Annual Meeting) may do so by following the procedures set forth in Rule 14a-8 under the Exchange Act. To be eligible for inclusion in such proxy materials, stockholder proposals must be received by our Corporate Secretary no later than November 17, 2020.

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 2021 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 2021 Annual Meeting or the 10th day following the date on which public announcement of the date of the 2021 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 2021 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 17, 2020

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. Eastern Time on April 28, 2020 for shares held directly and by 11:59 p.m. Eastern Time on April 24, 2020 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 our company 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. Eastern Time on April 28, 2020 for shares held directly and by 11:59 p.m. Eastern Time on April 24, 2020 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:

E95385-P35014

KEEP THIS PORTION FOR YOUR RECORDS

DETACH AND RETURN THIS PORTION ONLY

**THIS PROXY CARD IS VALID ONLY WHEN SIGNED AND DATED.**

**PROS HOLDINGS, INC.**

**The Board recommends voting "FOR" the election of each of the three Class I and one Class III director nominees.**

| | For All | Withhold All | For All Except |
|---|---|---|---|
| 1. Greg B. Petersen, Timothy V. Williams, and Mariette M. Woestemeyer as Class I directors, each to hold office until the 2023 Annual Meeting and until their successor has been duly elected and qualified or until the earlier of their death, resignation or removal. | ☐ | ☐ | ☐ |

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.

________________________________

**Nominees:**

01) Greg B. Petersen
02) Timothy V. Williams
03) Mariette M. Woestemeyer

Carlos Dominguez to serve as a Class III director. If elected, Mr. Dominguez will serve a two-year term until the 2022 Annual Meeting.

**Nominee:**

04) Carlos Dominguez

**The Board of Directors recommends you vote FOR the following proposals:**

| | For | Against | Abstain |
|---|---|---|---|
| 2. To conduct an advisory vote on executive compensation. | ☐ | ☐ | ☐ |
| 3. 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, 2020. | ☐ | ☐ | ☐ |

**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, 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, and IN FAVOR OF the appointment of PricewaterhouseCoopers LLP.

For address changes and/or comments, please check this box and write them on the back where indicated. ☐

Please indicate if you plan to attend this meeting. ☐ Yes ☐ No

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 |
|---|---|---|---|

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

E95386-P35014

**PROS HOLDINGS, INC.**
**THIS PROXY IS SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS**
**ANNUAL MEETING OF STOCKHOLDERS APRIL 29, 2020**

The stockholder(s) hereby appoint(s) Damian W. Olthoff and Christopher C. Chaffin, 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 April 29, 2020, 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, 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, and IN FAVOR OF the appointment of PricewaterhouseCoopers LLP.**

**Address Changes/Comments:** ______________________________

______________________________

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

**Continued and to be signed on reverse side**

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# 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, 2019**

**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**<br>**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 | Trading Symbol | Name of Each Exchange on Which Registered |
|---|---|---|
| Common Stock, $0.001 par value per share | PRO | 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 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 such files).

Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See definition of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth 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 $2,219,582,301 as of June 28, 2019 based upon the closing price for the registrant’s 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 10, 2020, there were outstanding 43,006,462 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 2020 Annual Stockholders Meeting, to be filed within 120 days of the end of the fiscal year ended December 31, 2019, are incorporated by reference into Part III of this Annual Report on Form 10-K.

**PROS Holdings, Inc.**
**Annual Report on Form 10-K**
**Table of Contents**
For the Year Ended December 31, 2019

## 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 Private Securities Litigation Reform Act of 1995, 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 selling, pricing, revenue optimization and eCommerce 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.

Our subscription-as-a-service ("SaaS") solutions are designed to achieve high levels of security, scalability, performance and availability. We believe our SaaS solutions provide an advantage over traditional enterprise software by allowing our customers to reduce their initial investment in third-party software, hardware, and administration requirements, and also allow smaller customers or business units to cost-effectively leverage our enterprise class infrastructure, infrastructure management, security and other strategic services.

Before 2015, we primarily offered on-premises 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.

More than half of our revenue in 2019 was derived from our cloud solutions, and since 2017 we have sold over 90% of our solutions as SaaS offerings. We manage all updates and upgrades of software deployed on the PROS cloud on behalf of our customers, which enables us to deliver our latest product innovations to our customers in a more uniform way. We focus the vast majority of our product development efforts on our SaaS solutions, and our next-generation solutions have been built natively in the cloud.

## Our Industry

Real-time 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 eCommerce, 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 cloud solutions enable a consistent buyer experience across direct, partner and eCommerce channels to support digital selling. Our solutions help 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 recommend and configure the correct solution(s), set the right price and quickly get a quote into the hands of a buyer.

### *Solutions for Selling Improvement*

PROS selling solutions are designed to improve sales productivity and accelerate deal velocity by automating common sales tasks. Utilizing a foundation of AI and machine learning algorithms, PROS selling solutions empower businesses to tailor every offer for every buyer, across all sales channels, leading to more personalized and engaging customer interactions:

- *PROS Smart CPQ* accelerates the sales process and provides a powerful, intuitive tool for sales teams and partners to respond to customer quotes within minutes. Leveraging state-of-the-art AI and machine learning algorithms, Smart CPQ enables users to find and tailor product recommendations, customize configurations, manage approvals, price just right and generate professional proposals to land and win the sale on the first quote. Smart CPQ supports all selling scenarios including spot-order purchases, subscription orders and setup and maintenance of negotiated sales agreements. Businesses can also integrate Smart CPQ into their eCommerce portals, empowering end users to self-serve with confidence. We also offer a *Sales Agreements* edition which automates the quoting process when a longer-term agreement on product, price and terms is negotiated between buyer and seller, supporting increased collaboration and approvals that are required when actual order quantity is uncertain but can be estimated over the agreement term period.
- *PROS Opportunity Detection* increases sales effectiveness and productivity while accelerating quota attainment by uncovering sales opportunities in existing accounts for sales teams. 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. Businesses can also integrate Opportunity Detection into their eCommerce portal, providing personalized product recommendations for every end user along their eCommerce journey.

### *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 management, 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, B2B and 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 and underlying component costs to leverage data science to systematically adjust pricing in real time.

- *PROS Guidance* leverages AI-powered algorithms to provide market-relevant price guidance across sales channels that is dynamically refined to adapt to changing market conditions and buyer behavior. This predictive and prescriptive price guidance provides optimized pricing for each unique buying scenario, which are designed to help businesses drive revenue growth, 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 revenue optimization solutions enable enterprises in the travel industry 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. Airlines leverage our forecasting and optimization capabilities to determine overbooking levels, manage opening and closing of booking classes and helping optimize revenue for each flight.
- *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 Optimizer* 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 and flexibility over how they sell and distribute offers. These solutions provide airlines with scalable shopping, booking 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 are 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.
- *PROS Airline Retail* offers a single, configurable end-to-end solution for airlines to optimize the user experience throughout the entire traveler journey from inspiration to post-trip. With this International Air Transport Association (IATA) New Distribution Capability (NDC) Level 4 capable solution, airlines can increase conversion rates and upsell opportunities while having the flexibility and control to optimize user interface across their internet booking engine and mobile application.

**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 United States, the Netherlands, Ireland, Germany, United Arab Emirates, 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"), eCommerce, 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-premises 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 manufacturing, transportation and logistics, chemicals and energy, 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 technology 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 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-premises 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.

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-premises 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 23%, 33%, and 41% of our total revenue in 2019, 2018 and 2017, respectively.

**Customers**

We sell our solutions to customers across many industries, including automotive and industrial manufacturing, transportation and logistics, chemicals and energy, 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 2019, 2018 and 2017, we had no single customer that accounted for 10% or more of our revenue. Our customers are also geographically diverse, as approximately 66%, 65%, and 63% of our total revenue came from customers outside the U.S. for the years ended December 31, 2019, 2018 and 2017, respectively.

We provide our customers with several service options including a customer success 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 solutions 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. 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, scale 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 a portion of our selling solutions, and vendors that compete against a portion of our revenue management, retail, 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, data security, 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;
- investment in research and development;
- 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 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 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 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 solutions and the development of solutions. We also believe that our long-term investments in AI and machine learning to power 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 2019, 2018 and 2017, we incurred expenses of $67.2 million, $55.7 million and $56.0 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, India, Romania and Mexico.

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 team to help keep our science efforts relevant to real-world demands.

**Employees**

As of December 31, 2019, we had 1,413 full-time personnel, which included 1,215 employees and 198 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 3, 2019, 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 incurred, 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, if these measures are breached as a result of third-party action, employee error or misconduct or otherwise, we could experience 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, may exploit vulnerabilities in third party systems or software which we interoperate with, 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. In the normal course of our business, we experience Security Incidents. To date, however, the identified Security Incidents have neither been material or significant to us, including to our business operations, nor had a material financial impact. There can be no assurance that future Security Incidents will not be material or significant.

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

Our subscription agreements are typically for an initial term of three years, and our legacy maintenance and support agreements are typically renewed for annual terms. Our customers have no obligation to renew their software subscriptions after the expiration of their initial term, and some customers elect not to renew. Subscription revenue represented the majority of our total revenue for the year ended December 31, 2019. Historically, maintenance and support revenue represented a more significant portion of our total revenue. As a percentage of total revenue, maintenance and support revenue for our legacy on-premises software products has been declining as it represented approximately 23%, 33% and 41% of our total revenue for the years ended December 31, 2019, 2018 and 2017, respectively.

We may not accurately predict future customer renewal rates, which can decline or fluctuate as a result of a number of factors, including customers' 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.

***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 manufacturing, transportation and logistics, chemicals and energy, 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 market demand 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 demand 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 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 certain 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.

Further, various factors, including our customers' business, integration, migration and security requirements, or errors by us, our partners, or our customers, may cause implementations to be delayed, inefficient or otherwise unsuccessful. For example, changes in customer requirements, delays, or deviation from recommended best practices may occur during an implementation project. As a result, we may incur significant costs in connection with the implementation of our products. If we are unable to successfully manage the implementation of our software solutions, and as a result those products or implementations do not meet customer needs or expectations, we may become involved in disputes with our customers, may be unable to sell additional products, or unable to secure a renewal of the customer's subscription 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 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 selling improvement, including configure-price-quote, pricing and airline eCommerce, including shopping, merchandising and retail. New functionality we develop may not be introduced timely and may not achieve market acceptance sufficient to generate material revenue. Furthermore, 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 will 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.

Furthermore, because our software solutions are intended to interoperate with a variety of third party front and back office software solutions, we must continue to modify and enhance our software to keep pace with changes in such solutions. Any inability of our software to operate effectively with third party software necessary to provide effective solutions to our customers, could reduce the demand for our software solutions, result in customer dissatisfaction and limit our revenue.

***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 and developing our personnel; however, as we continue to scale our business both organically and through potential acquisitions, it may be increasingly difficult to maintain 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.

***If we fail to manage our growth effectively, we may be unable to execute our business plan, maintain high levels of service and operational controls or adequately address competitive challenges.***

We have experienced, and are continuing to experience, substantial growth in our customers, headcount and operations. We expect to continue to expand our customer base, headcount and operations in the near term. This growth has placed, and future growth will place, a significant strain on our management, general and administrative resources and operational infrastructure. Our success will depend in part on our ability to effectively manage this growth and scale our operations. To manage this growth, we have and will continue to need to improve our operational, financial, management controls, reporting systems and procedures. As we continue to grow, we also need to ensure that our policies and procedures evolve to reflect our current operations and are appropriately communicated to and observed by employees, and that we continue to appropriately manage our assets. Failure to effectively manage growth could adversely impact our business performance and operating results.

***We depend on third-party data centers, software, data and other unrelated service providers and any disruption from such third party providers 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, IBM Softlayer and Amazon Web Services, 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, the Netherlands, Ireland, Germany, United Arab Emirates 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, 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.

Certain of our applications are essential to our customers' ability to quote, price, and/or sell their products and services. Any interruption in our service may affect the availability, accuracy or timeliness of quotes, pricing or other information and as a result could require us to issue service credits to our customers, damage our reputation, cause our customers to terminate their use of our solutions, require us to indemnify our customers against certain losses, and prevent us from gaining additional business from current or future customers. In addition, certain of our applications require access to our customer's data which may be held by third parties, some of whom are, or may become, our competitors. For example, many of our travel industry products rely upon access to airline data held by large airline IT providers which compete against certain of our travel products. Certain of these competitors have in the past, and may again in the future, make it difficult for our airline customers to access their data in a timely and/or cost-effective manner.

Any disruption from our third-party data center, software, data or other service providers could impair the delivery of our service and negatively affect our business and could damage our reputation, negatively impact our future sales and lead to legal liability and other costs.

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

Personal privacy, data localization and data security have become significant issues in the United States, Europe and in many other jurisdictions. We provide our cloud software solutions globally, including in countries that have, or may adopt in the future, stringent laws and regulations relating to data privacy, cyber security and data localization. The worldwide regulatory framework for these issues continues to rapidly evolve. For example, the EU's General Data Protection Regulation ("GDPR") imposes substantial requirements regarding the handling of personal data and provides for robust regulatory enforcement and sanctions for non-compliance. As another example, the California Consumer Privacy Act ("CCPA") provides new data privacy rights for consumers which creates new and uncertain operational requirements for our business. These and similar laws, as well as other data privacy, cyber security and data localization laws and regulations, are inconsistent across jurisdictions, may be subject to interpretation and future changes and are 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, the CCPA and other changes in laws and regulations entail substantial expenses and may 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, such non-compliance 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 and indemnification obligations, damage our reputation, inhibit sales of our solutions or 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.***

We have experienced substantial growth in the number of customers and data volumes serviced by our cloud infrastructure in recent years. 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, denial of service issues and other Security Incidents. 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. 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 or not renew 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 to renew or to delay or withhold payment to us, loss of future sales, 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 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. 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 19 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 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 operations are:

- economic conditions in various parts of the world;
- temporary or sustained disruption to international travel such as outbreaks of contagious diseases;
- differing labor and employment regulations, especially where labor laws are generally more advantageous to employees as compared to the U.S.;

- 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, including anti-corruption laws;

- the risk that illegal or unethical activities of our employees or business partners will be attributed to or result in liability to us or damage our reputation;

- 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 sufficient 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.

***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 personnel. The failure of our executives and key personnel to effectively manage our business or the loss of the services of our executive officers or other key personnel could harm our operations. In addition, our future success could depend on our ability to timely identify, attract and retain highly qualified personnel, and there can be no assurance that we will 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 artificial intelligence 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 qualified personnel is intense, and we compete for these individuals with other companies that may have greater resources than we do. If our key personnel are unable to effectively manage our business, or if we fail to identify, attract and retain additional qualified personnel, our operating results could be adversely affected.

***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 demand 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. We may be unable to timely adjust our cost structure to reflect changes in revenues. In addition, a significant majority of our costs are expensed as incurred, while subscription revenues are recognized over the term of the customer agreement. As a result, increased growth in the number of our customers could result in our recognition of more costs than revenues in the earlier periods of the terms of our agreements. 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.

***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 (including configure-price-quote solutions and pricing), airline revenue optimization (including revenue management solutions), and airline eCommerce (including shopping, merchandising and retail solutions) 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.

***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, merchandising and retailing 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, revenue management and airline eCommerce 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 software solutions for selling improvement (including our configure-price-quote solutions), pricing, airline revenue optimization (including our revenue management solutions), and airline eCommerce (including our shopping, merchandising and retail solutions), as well as providing implementation services and ongoing customer support. The selling improvement, pricing, revenue management and airline eCommerce markets are evolving rapidly, and it is uncertain whether software for these markets will achieve and sustain high levels of demand. Our success depends on the willingness of businesses in our target markets to use selling improvement, pricing, revenue management and airline eCommerce 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 sales and pricing processes through solutions obtained from their existing enterprise software providers, whose solutions are designed principally to address functional areas other than what our solutions provide. If businesses do not embrace the benefits of selling improvement, pricing, revenue management and airline eCommerce 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 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 software solutions or introduce new 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.

***If we fail to migrate customers with on-premises 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-premises 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 the PROS cloud. Although we intend to continue to support our legacy on-premises software customers under perpetual licenses for the foreseeable future, we continue to focus on migrating such customers to our cloud solutions. Historically, customers who purchased on-premises licenses for our solutions may have invested substantial personnel and financial resources in our legacy software. In addition, when considering whether to migrate, these customers may evaluate alternative solutions due to the additional change management and implementation costs associated with migrating to cloud-based applications. When on-premises software customers delay or decline to migrate to our cloud solutions, our internal development and customer support teams find it increasingly difficult and costly to support a declining number of on-premises customers. In addition, if our legacy on-premises license customers delay or decline to migrate to our cloud solutions, choose alternative solutions or otherwise choose to not continue doing business with us by, for example, canceling maintenance, our future revenue may be limited.

***Failure to adequately expand and train our direct and indirect sales force may impede our growth.***

To date, substantially all of our revenue has been attributable to the efforts of our direct sales force. We believe that our future growth will depend, to a significant extent, on the continued development of our direct sales force, and our sales team's ability to manage and retain our existing customer base, expand our sales to existing customers and obtain new customers. Our ability to achieve significant revenue growth in the future will depend, in large part, on our success in recruiting, training and retaining a sufficient number of direct sales personnel. New hires require significant training and may take a number of months before becoming fully productive, if at all. If we are unable to develop sufficient numbers of productive direct sales personnel, our growth may be impeded.

In addition to our direct sales force, we have developed, and expect to expand, our indirect sales force via channel partners, such as management consulting firms, systems integrators and other resellers, to market, sell and/or implement our solutions. We anticipate that channel partners will become an increasingly important driver of our sales growth, particularly as more channel partners become resellers of our solutions. We expect to invest significant resources to identify, establish, train and retain successful strategic resell partner relationships. If we are unable to establish and maintain our partner relationships, or otherwise develop and expand our indirect distribution channel, our sales growth rates may be limited.

***Our convertible debt repayment obligations may adversely affect our financial condition and cash flows from operations in the future.***

In May 2019, we issued $143.8 million principal amount of 1.0% convertible senior notes (“2024 Notes”) due May 15, 2024, unless earlier redeemed, purchased or converted in accordance with their terms prior to such date. As of December 31, 2019, the entire $143.8 million of aggregate principal amount of the 2024 Notes is outstanding. Our indebtedness could have important consequences because it may impair our ability to obtain additional financing for working capital, capital expenditures, acquisitions and general corporate or other purposes. 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 timely 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, and/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.

***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, 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.

***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 four acquisitions since 2013, and we plan to 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. In addition, we have in the past, and may in the future, 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.

***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 continued to improve relative to our prior historical averages since we shifted to a cloud strategy in 2015, our sales cycles may take a month to over a year for large 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.

***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.

***If our goodwill or amortizable intangible assets become impaired, 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.

***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. 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 may 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 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 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. Selling improvement (including configure-price-quote), pricing, airline revenue optimization (including revenue management) and airline eCommerce (including shopping, merchandising and retail) 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.

Our contract terms generally obligate us to indemnify and hold our customers harmless from certain costs arising from third party claims brought against our customers alleging that the use of our solutions infringe intellectual property rights of others. If we are unable to resolve our legal obligations by settling or paying an infringement claim, we may be required to compensate our customers.

***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, professional services, operational support and hosted services. Although we have contingency and business continuity plans in effect for natural disasters and other catastrophic events (including terrorist attacks, power loss, telecommunications failure, cyber-attacks, hurricanes and outbreaks of contagious diseases), 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 from business interruptions that exceed the coverage 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.

***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 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 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, 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 and the 2024 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.

***Our directors, executive officers, and certain significant stockholders hold a significant portion of our outstanding shares.***

At December 31, 2019, our directors and executive officers collectively control approximately 9.6% of our issued and outstanding common shares, and together with certain significant stockholders, including investment funds associated with Brown Capital Management, LLC, Vanguard Group Inc., Primecap Management Company, BlackRock, Inc. and D.F. Dent & Company, control approximately 52% 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.

***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 2024 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 2024 Notes and the previously issued convertible notes with original due dates in 2019 and 2047 (the "2019 Notes" and "2047 Notes," and together with the 2024 Notes, 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 2024 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 2024 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 2024 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 2024 Notes.

**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 in Houston, Texas, and we plan to relocate our headquarters to this new location. We also lease a number of smaller regional offices. 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

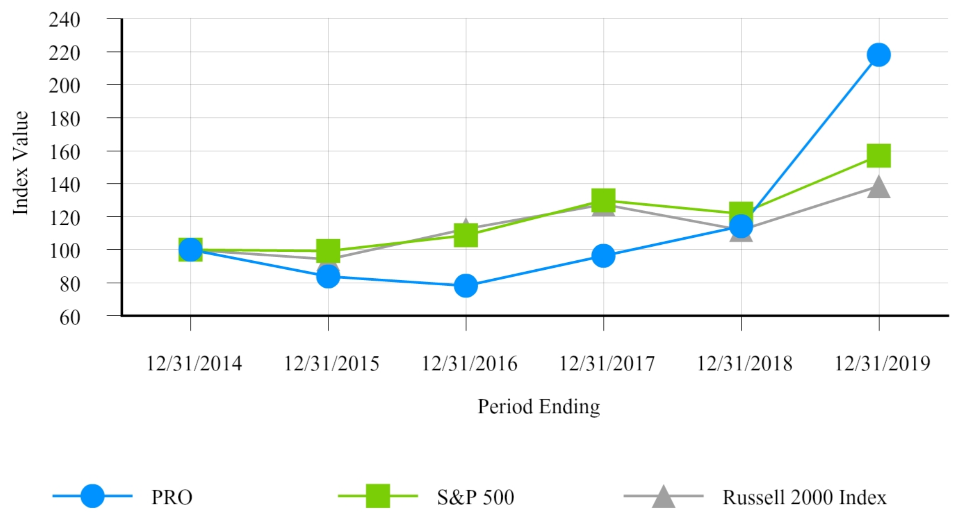
Our common stock is listed on the NYSE under the symbol "PRO". On February 10, 2020 there were 45 stockholders of record of our common stock. Since 2007, we have not declared or paid any dividends on our common stock. We currently expect to retain all remaining available funds and any future earnings 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, 2014, and ending December 31, 2019. 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, 2014 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 | 12/31/2014 | 12/31/2015 | 12/31/2016 | 12/31/2017 | 12/31/2018 | 12/31/2019 |
|---|---|---|---|---|---|---|
| PRO | $ 100.00 | $ 83.84 | $ 78.31 | $ 96.25 | $ 114.26 | $ 218.05 |
| S&P 500 | $ 100.00 | $ 99.27 | $ 108.74 | $ 129.86 | $ 121.76 | $ 156.92 |
| Russell 2000 Index | $ 100.00 | $ 94.29 | $ 112.65 | $ 127.46 | $ 111.94 | $ 138.50 |

### 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 2019, we did not make any purchases of our common stock under this program. As of December 31, 2019, $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, 2019.

**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, | | | | |
|---|---|---|---|---|---|
| | 2019 | 2018 | 2017 | 2016 | 2015 |
| **Selected consolidated statement of operations data:** | | | | | |
| Total revenue | $ 250,334 | $ 197,024 | $ 168,816 | $ 153,276 | $ 168,246 |
| Gross profit | 151,217 | 119,845 | 100,250 | 89,923 | 106,836 |
| Loss from operations | (53,338) | (49,215) | (64,943) | (65,398) | (55,497) |
| Net loss | (69,081) | (64,246) | (77,926) | (75,225) | (65,811) |
| Net loss per share: | | | | | |
| Basic and diluted | (1.72) | (1.86) | (2.46) | (2.47) | (2.23) |
| Weighted average number of shares: | | | | | |
| Basic and diluted | 40,232 | 34,465 | 31,627 | 30,395 | 29,578 |
| **Selected consolidated balance sheet data:** | | | | | |
| Cash and cash equivalents, unrestricted | $ 306,077 | $ 295,476 | $ 160,505 | $ 118,039 | $ 161,770 |
| Working capital | 189,811 | 71,393 | 100,031 | 76,936 | 124,571 |
| Total assets | 513,307 | 436,967 | 288,683 | 227,654 | 263,211 |
| Long-term obligations | 152,177 | 107,318 | 233,637 | 134,327 | 121,443 |
| Total stockholders' equity | $ 164,996 | $ 54,899 | $ (46,979) | $ (3,394) | $ 55,414 |

## 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 selling, pricing, revenue optimization and eCommerce 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 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 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 2019, we continued to achieve important milestones in our cloud transformation which began in 2015, while continuing to enable customers to leverage our AI-driven solutions to help them compete in the digital economy. In 2019, our subscription revenue surpassed 50% of total revenue and our total revenue increased by 27% year-over-year. Other notable items for the year included:

- Subscription revenue increased by 48% in 2019 over 2018, and accounted for 56%, 48% and 36% of total revenue for the years ended December 31, 2019, 2018 and 2017, respectively;
- Recurring revenue, which consists of maintenance and subscription revenue, accounted for 80% of our total revenue and grew by 25% in 2019 over 2018;
- Annual recurring revenue ("ARR") was $220.4 million on a constant currency basis ($219.8 million on an as reported basis) as of December 31, 2019, up 16% (16% as reported) year-over-year;
- Completed an offering of $143.8 million aggregate principal amount of 2024 Notes in a private placement; and
- Retired our outstanding convertible senior notes due in 2019 and our outstanding convertible senior notes due in 2047, in an aggregate principal amount of $143.8 million and $106.3 million, respectively.

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, and the same rates are used to measure both 2019 and 2018 ARR. Total ARR on a constant currency basis as of December 31, 2019 was $220.4 million, up from $190.5 million as of December 31, 2018, an increase of 16%. Total ARR on an as reported basis as of December 31, 2019 was $219.8 million, or approximately $0.6 million lower than our constant currency ARR.

Cash provided by operating activities was $5.2 million for the year ended December 31, 2019, as compared to $5.7 million for the year ended December 31, 2018. The decrease was primarily attributable to higher cash operating expenses driven mainly by an increase in headcount partially offset by an increase in sales and related cash collections.

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, 2019 was $0.9 million, compared to $0.5 million for the year ended December 31, 2018. The slight increase was primarily attributable to a $0.5 million decrease in net cash provided by operating activities primarily due to higher cash operating expenses driven mainly by an increase in headcount partially offset by an increase in sales and related cash collections. 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, | |
|---|---|---|
| | 2019 | 2018 |
| Net cash provided by operating activities | $ 5,245 | $ 5,703 |
| Purchase of property and equipment (excluding new headquarters) | (4,626) | (1,475) |
| Purchase of intangible asset | (50) | (125) |
| Capitalized internal-use software development costs | (1,436) | (4,613) |
| Free cash flow | $ (867) | $ (510) |

***Financial Performance Summary***

Recurring revenue, which is comprised of our subscription and maintenance revenue, accounted for 80% of our total revenue for the year ended December 31, 2019. Total recurring revenue was $199.3 million for the year ended December 31, 2019 as compared to $160.0 million for the year ended December 31, 2018, an increase of approximately $39.4 million, or 25%. This increase in recurring revenue was primarily attributable to a 48% increase in subscription revenue from new and existing customers.

Total revenue for the year ended December 31, 2019, increased approximately $53.3 million to $250.3 million from $197.0 million for the year ended December 31, 2018, representing a 27% increase. This increase in total revenue was primarily attributable to an increase of 48% in subscription revenue.

Total deferred revenue was $142.3 million as of December 31, 2019, as compared to $117.2 million as of December 31, 2018, an increase of $25.1 million, or 21%, primarily due to an increase in our subscription deferred revenue. Recurring deferred revenue, which includes both subscription and maintenance deferred revenue, was $123.9 million and $100.0 million as of December 31, 2019 and 2018, respectively, an increase of 24% year-over-year.

*Revenue by Geography*

The following geographic information is presented for the years ended December 31, 2019, 2018 and 2017. PROS categorizes geographic revenues based on the location of our customers' headquarters.

| | Year Ended December 31, | | | | | |
|---|---|---|---|---|---|---|
| | 2019 | | 2018 | | 2017 | |
| | Revenue | Percent | Revenue | Percent | Revenue | Percent |
| United States of America | $ 85,963 | 34% | $ 68,482 | 35% | $ 63,097 | 37% |
| Europe | 73,914 | 30% | 60,947 | 31% | 51,273 | 30% |
| The rest of the world | 90,457 | 36% | 67,595 | 34% | 54,446 | 32% |
| Total revenue | $ 250,334 | 100% | $ 197,024 | 100% | $ 168,816 | 100% |

***Convertible Debt***

In May 2019, the Company issued the 2024 Notes in an aggregate principal amount of $143.8 million. The Company used a portion of the net proceeds of the offering of the 2024 Notes to exchange and retire approximately $122.1 million in aggregate principal of 2.0% convertible senior notes due December 2019 (the "2019 Notes") for an aggregate cash consideration of $76.0 million and approximately 2.2 million shares of the Company's common stock (the "Exchange Transactions"). The Company recorded a $2.3 million loss on debt extinguishment related to the Exchange Transactions. In the fourth quarter, at maturity, the Company settled the remaining principal of the 2019 Notes in cash and distributed approximately 0.3 million shares of its common stock to the notes holders, which represented the conversion value in excess of the principal amount.

In August 2019, the Company issued a notice of redemption to the holders of its outstanding 2.0% convertible senior notes due June 2047 (the "2047 Notes", and together with the 2019 Notes and the 2024 Notes, the "Notes"), and during the third and fourth quarter of 2019, the Company converted the entire aggregate principal of $106.3 million of the 2047 Notes and delivered approximately 2.3 million shares of its common stock upon conversion. The Company recorded a $3.4 million loss on debt extinguishment related to the Redemption. The loss on extinguishment is included in the other (expense) income, net in the the Consolidated Statements of Comprehensive Income (Loss).

### *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*. Corporate buyers are increasingly demanding the same type of digital buying experience that they enjoy as consumers. For example, buyers often prefer not to interact with a sales representative as their primary source of research, and increasingly prefer to buy online when they have already decided what to buy. In response, we believe that businesses are increasingly modernizing 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 2019, we believe our market is large and underpenetrated and therefore we intend to continue investing in sales, marketing, customer success, cloud support, security, privacy, infrastructure and other long-term initiatives to expand our ability to sell and renew our subscription offerings globally. We also plan to continue investing in product development to enhance our existing technologies and develop new applications and technologies.

- *Cloud Migrations*. Sales of our cloud-based solutions have, and we expect future sales of our cloud-based solutions will continue to result in a decrease in our maintenance and support revenue, 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.

## 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 80% of our total revenue in 2019.

<u>*Subscription services.*</u> 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.

<u>*Maintenance and support.*</u> Maintenance and support revenue includes customer support for our on-premises 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.

<u>*License.*</u> Licenses for on-premises 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, primarily employee-related costs, third-party contractors, infrastructure costs to support our current subscription customer base, amortization of capitalized software and an allocation of depreciation, amortization of intangibles, facilities and information technology ("IT") support costs.

*Cost of maintenance and support.* Cost of maintenance and support consists largely of employee-related costs and an allocation of depreciation, amortization of intangibles, facilities and IT support costs.

*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, primarily employee-related costs, third-party contractors, billable and non-billable travel, amortization of capitalized software for internal use, and an allocation of depreciation, facilities and IT support costs. 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 primarily consist of employee-related costs, third-party contractors, sales commissions, sales and marketing programs such as lead generation programs, company awareness programs, our annual Outperform conference, participation in industry trade shows, and other sales and marketing programs, travel, amortization expenses associated with acquired intangible assets and an allocation of depreciation, facilities and IT support costs. 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.

*General and administrative.* General and administrative expenses primarily consist of employee-related costs for executive, accounting and finance, legal, human resources and internal IT support functions, professional fees, other corporate expenses and an allocation of depreciation, facilities and third-party IT support costs.

*Research and development.* Research and development expenses primarily consist of employee-related costs and third-party contractors who work on enhancements of existing solutions, the development of new solutions, scientific research, quality assurance and testing, and an allocation of depreciation, facilities and IT support costs and other costs.

## Results of Operations

***Comparison of year ended December 31, 2019 with year ended December 31, 2018***

*Revenue:*

| | For the Year Ended December 31, | | | | | |
|---|---|---|---|---|---|---|
| | 2019 | | 2018 | | | |
| (Dollars in thousands) | Amount | Percentage of total revenue | Amount | Percentage of total revenue | Variance $ | Variance % |
| Subscription | $ 141,165 | 56% | $ 95,192 | 48% | $ 45,973 | 48 % |
| Maintenance and support | 58,184 | 23% | 64,760 | 33% | (6,576) | (10)% |
| Total subscription, maintenance and support | 199,349 | 80% | 159,952 | 81% | 39,397 | 25 % |
| License | 4,162 | 2% | 3,516 | 2% | 646 | 18 % |
| Services | 46,823 | 19% | 33,556 | 17% | 13,267 | 40 % |
| Total revenue | $ 250,334 | 100% | $ 197,024 | 100% | $ 53,310 | 27 % |

*Subscription revenue*. Subscription revenue increased primarily due to an increase in the number of subscriptions purchased by new and existing customers during the year ended December 31, 2019. Our ability to maintain consistent customer attrition rates will directly impact our ability to continue to grow our subscription revenue.

*Maintenance and support revenue*. Maintenance and support revenue decreased primarily as result of customer maintenance churn and migrating existing maintenance contracts to the cloud during the year ended December 31, 2019. We expect maintenance revenue to continue to decline over time as we migrate existing maintenance customers to our cloud solutions.

*License revenue.* License revenue increased primarily due to an increase in license revenue with existing customers recognized upon software delivery during the year ended December 31, 2019.

*Services revenue.* Services revenue increased primarily as a result of performing implementation services for a greater number of customers than in the prior year. 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.*

| | For the Year Ended December 31, | | | | | |
|---|---|---|---|---|---|---|
| | 2019 | | 2018 | | | |
| (Dollars in thousands) | Amount | Percentage of total revenue | Amount | Percentage of total revenue | Variance $ | Variance % |
| Cost of subscription | $ 42,090 | 17% | $ 35,368 | 18% | $ 6,722 | 19 % |
| Cost of maintenance and support | 11,052 | 4% | 11,602 | 6% | (550) | (5)% |
| Total cost of subscription, maintenance and support | 53,142 | 21% | 46,970 | 24% | 6,172 | 13 % |
| Cost of license | 249 | —% | 251 | —% | (2) | (1)% |
| Cost of services | 45,726 | 18% | 29,958 | 15% | 15,768 | 53 % |
| Total cost of revenue | $ 99,117 | 40% | $ 77,179 | 39% | $ 21,938 | 28 % |
| Gross profit | $ 151,217 | 60% | $ 119,845 | 61% | $ 31,372 | 26 % |

*Cost of subscription*. Cost of subscription increased primarily due to increases in infrastructure costs to support our current subscription customer base, increases in employee-related costs driven by higher headcount and increases in amortization expense associated with our internal-use software. Our subscription gross profit percentage was 70% and 63%, respectively, for the years ended December 31, 2019 and 2018. The increase in gross profit percentage was primarily attributable to a 48% increase in subscription revenue combined with a smaller increase in cost of subscription driven by efficiencies we achieved in our cloud infrastructure.

*Cost of maintenance and support.* The cost of maintenance and support declined primarily due to a decrease in employee-related costs mainly due to a decrease in contract labor. Maintenance and support gross profit percentages for the years ended December 31, 2019 and 2018, were 81% and 82%, respectively.

*Cost of license.* Cost of license consists of third-party fees for licensed software and remained consistent year-over-year. License gross profit percentages for the years ended December 31, 2019 and 2018, were 94% and 93%, respectively.

*Cost of services.* Cost of services increased primarily due to an increase in employee-related costs driven by higher headcount and third party system integrators to support our current customer implementations, related travel expenses, other facility and overhead expenses. Services gross profit percentages for the years ended December 31, 2019 and 2018, were 2% and 11%, respectively. The decrease in services gross profit percentages was primarily attributed to an increase in third party system integrators to support an increased number of customer implementations in 2019 as compared to 2018. 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, our utilization of third party system integrators and the utilization of our professional services personnel.

*Gross profit.* Overall gross profit increased for the year ended December 31, 2019 principally attributable due to an increase of 27% in total revenue as compared to the same period in 2018 mainly due to an increase in our subscription revenue.

*Operating expenses:*

| | For the Year Ended December 31, | | | | | |
|---|---|---|---|---|---|---|
| | 2019 | | 2018 | | | |
| (Dollars in thousands) | Amount | Percentage of total revenue | Amount | Percentage of total revenue | Variance $ | Variance % |
| Selling and marketing | $ 89,553 | 36% | $ 72,006 | 37% | $ 17,547 | 24% |
| General and administrative | 47,254 | 19% | 41,302 | 21% | 5,952 | 14% |
| Research and development | 67,246 | 27% | 55,657 | 28% | 11,589 | 21% |
| Acquisition-related | 502 | —% | 95 | —% | 407 | 428% |
| Total operating expenses | $ 204,555 | 82% | $ 169,060 | 86% | $ 35,495 | 21% |

*Selling and marketing expenses.* Sales and marketing expenses increased primarily due to an increase of $13.9 million in employee-related costs driven by higher headcount, as we continue to focus on adding new customers and increasing penetration within our existing customer base. In addition, there was an increase of $3.6 million in expenses for sales and marketing events and sales related travel.

*General and administrative expenses.* General and administrative expenses increased primarily due to a $3.7 million increase in employee-related costs driven by higher headcount and an increase of $3.1 million in professional fees and facility expenses, partially offset by a decrease of $0.8 million related to a bad debt recovery in 2019.

*Research and development expenses.* Research and development expenses increased primarily due to a $9.3 million increase in employee-related costs driven by higher headcount, and a $2.3 million increase in facility and other overhead expenses.

*Acquisition-related expenses.* Acquisition-related expenses were $0.5 million and $0.1 million for the years ended December 31, 2019 and 2018, respectively, and consisted primarily of integration costs, professional fees and retention bonuses for our acquisition of Travelaer in 2019 and PROS Travel Commerce, Inc. (formerly Vayant Travel Technologies, Inc.) ("Vayant") in 2018.

*Other (expense) income, net:*

| | For the Year Ended December 31, | | | | | |
|---|---|---|---|---|---|---|
| | 2019 | | 2018 | | | |
| (Dollars in thousands) | Amount | Percentage of total revenue | Amount | Percentage of total revenue | Variance $ | Variance % |
| Convertible debt interest and amortization | $ (14,765) | (6)% | $ (16,986) | (9)% | $ 2,221 | (13)% |
| Other (expense) income, net | $ (354) | — % | $ 2,155 | 1 % | $ (2,509) | (116)% |

*Convertible debt interest and amortization.* Convertible debt interest and amortization expense for each of the years ended December 31, 2019 and 2018 related to coupon interest and amortization of debt discount and issuance costs attributable to our

Notes. Convertible debt interest and amortization decreased primarily as a result of our settlement of the 2019 Notes and 2047 Notes during the period.

Other (expense) income, net. The decrease in other (expense) income, net for the year ended December 31, 2019, primarily related to a $5.7 million loss on debt extinguishment related to our 2019 Notes and 2047 Notes recognized in 2019. This decrease was partially offset by an increase in interest income and the impact of movements in foreign currency exchange rates during the period.

Income tax provision:

| (Dollars in thousands) | For the Year Ended December 31, 2019 | 2018 | Variance $ | Variance % |
|---|---|---|---|---|
| Effective tax rate | (1)% | — % | n/a | (1)% |
| Income tax provision | $ 624 | $ 200 | $ 424 | 212 % |

Our tax provision for the year ended December 31, 2019 included both foreign income and withholding taxes, and state taxes not based on pre-tax income. No tax benefit was recognized on jurisdictions with a projected loss for the year due to the valuation allowances on our deferred tax assets.

Our 2019 and 2018 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 2019 and 2018 only included foreign income and withholding taxes, and state taxes not based on pre-tax income, resulting in an effective tax rate of (0.9)% and (0.3)%, respectively. The difference between the effective tax rates and the federal statutory rate of 34% for the years ended December 31, 2019 and 2018 was primarily due to the increase in our valuation allowance of $12.4 million and $20.4 million, respectively.

As of December 31, 2019 and 2018, we had a valuation allowance on our net deferred tax assets of $106.5 million and $94.2 million, respectively. The increase in the valuation allowance was principally attributable to an additional valuation allowance recorded on our current year's tax loss.

***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. 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. 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 recognized 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.

*Cost of revenue and gross profit:*

| | For the Year Ended December 31, | | | | | |
|---|---|---|---|---|---|---|
| | 2018 | | 2017 | | | |
| (Dollars in thousands) | Amount | Percentage of total revenue | Amount | 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 employee-related costs attributed to increased efficiencies. 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 employee-related costs driven by higher headcount 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.

*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:*

| | For the Year Ended December 31, | | | | | |
|---|---|---|---|---|---|---|
| | 2018 | | 2017 | | | |
| (Dollars in thousands) | Amount | Percentage of total revenue | Amount | 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 expenses.* The increase was primarily attributable to a $3.1 million increase in employee-related costs driven by higher headcount. In addition, there was an increase of $0.8 million in non employee-related costs, 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 employee-related costs 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 employee-related costs 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 period.

*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.

## Liquidity and Capital Resources

At December 31, 2019, we had $306.1 million of cash and cash equivalents and $189.8 million of working capital as compared to $295.5 million of cash and cash equivalents and $71.4 million of working capital at December 31, 2018.

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 2024 Notes in May 2019 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, 2019, 2018 and 2017:

| | For the Year Ended December 31, | | |
|---|---|---|---|
| **(Dollars in thousands)** | **2019** | **2018** | **2017** |
| Net cash provided by (used in) operating activities | $ 5,245 | $ 5,703 | $ (25,313) |
| Net cash used in investing activities | (17,560) | (6,258) | (22,346) |
| Net cash provided by financing activities | 22,991 | 135,352 | 90,654 |
| Cash and cash equivalents (beginning of period) | 295,476 | 160,505 | 118,039 |
| Cash and cash equivalents (end of period) | $ 306,077 | $ 295,476 | $ 160,505 |

***Operating Activities***

Cash provided by operating activities in 2019 was $5.2 million and declined slightly as compared to $5.7 million in 2018. The decrease was primarily attributable to higher cash operating expenses driven mainly by an increase in headcount and partially offset by an increase in sales and related cash collections.

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 cash coming from working capital changes and a $13.7 million improvement in our operating results. The working capital changes were primarily attributable to higher recurring deferred revenue driven by our sales of subscription services.

***Investing Activities***

Cash used in investing activities for 2019 was $17.6 million, which was primarily related to our acquisition of Travelaer. In addition, we incurred capitalized internal-use software development costs on our subscription service solutions of $1.4 million, capital expenditures of $5.3 million, investment in equity securities of $0.3 million and intangible (non-acquisition) asset of $0.1 million.

Cash used in investing activities for 2018 was $6.3 million, which was primarily related to cash outflow related to capitalized internal-use software development costs on our subscription service solutions of $4.6 million, capital expenditures of $1.5 million and intangible (non-acquisition) asset of $0.1 million.

***Financing Activities***

Cash provided by financing activities for 2019 was $23.0 million, which was attributable to the proceeds of $140.2 million from the issuance of our 2024 Notes, proceeds from the bond hedge termination of $64.8 million and proceeds from the exercise of employee stock plans of $2.0 million, which was partially offset by the settlement of our 2019 and 2047 Notes of $97.7 million, termination of warrant of $45.2 million, a payment of $23.8 million for tax withholdings on vesting of employee share-based awards and a $0.9 million payment for debt issuance costs related to the 2024 Notes.

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.

***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 under the program during the years ended December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019, $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, 2019 consist of obligations under operating leases and various service agreements. *See Note 18 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, 2019:

| | 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 | $ 150,163 | $ 1,438 | $ 2,875 | $ 145,850 | $ — |
| Operating leases | 67,281 | 6,965 | 16,947 | 9,310 | 34,059 |
| Purchase and contractual commitments | 65,968 | 26,195 | 39,210 | 563 | — |
| Total contractual obligations | $ 283,412 | $ 34,598 | $ 59,032 | $ 155,723 | $ 34,059 |

***Notes***

As of December 31, 2019, our outstanding Notes consist of the 2024 Notes. Interest on the 2024 Notes is payable semi-annually, in arrears on May 15 and November 15 of each year. At December 31, 2019, our maximum commitment for interest payments under the 2024 Notes was $6.4 million for their remaining duration.

***Covenants***

Our Revolver 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 Revolver 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, 2019, we were in compliance with all financial covenants in the Revolver.

**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, 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); and
- Recognition of revenue when, or as, we satisfy a performance obligation.

*Subscription services revenue*

Subscription services primarily include customer 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-premises 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 to three years in length, billed annually in advance, and non-cancelable.

*License revenue*

Licenses to on-premises 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 revenue is 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 revenue is 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), 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 employee-related 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 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, performance 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, 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 and performance-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 the 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 February 28, 2019, February 28, 2020, October 9, 2020 and December 31, 2020 ("Performance Period"), respectively. The MSUs vested on March 1, 2019 and are scheduled to vest on 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 the 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, 2019, we had $43.1 million of total unrecognized compensation costs related to noncash share-based compensation arrangements for stock awards granted. These costs will be recognized over a weighted-average period of 2.5 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, 2019, our deferred tax assets consisted primarily of temporary differences related to noncash share-based compensation, interest expense limited under Section 163(j), 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 2019, 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, 2019.

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 15 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 two-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 compare the fair value of our reporting unit with its carrying value. If the carrying amount exceeds the fair value, an impairment charge will be recognized, however, loss cannot exceed the total amount of goodwill allocated to the reporting unit.

**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, 2019, would have resulted in a $0.8 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, 2019 by approximately $1.1 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, 2019, we had no borrowings under the Revolver.

As of December 31, 2019, we had an outstanding principal amount of $143.8 million of 2024 Notes, which are fixed rate instruments. Therefore, our results of operations are not subject to fluctuations in interest rates. The fair value of the 2024 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**

In August 2019, we acquired Travelaer. For purposes of determining the effectiveness of our internal controls over financial reporting, management has excluded Travelaer from its evaluation of these matters. Travelaer represented approximately 0.4% of our consolidated total assets as of December 31, 2019 and approximately 0.2% of our consolidated revenues for the year ended December 31, 2019.

We implemented internal controls to ensure we adequately evaluated our lease contracts and properly assessed the impact of our adoption of Topic 842 on January 1, 2019. There were no significant changes to our internal control over financial reporting due to the adoption of Topic 842.

Other than the changes described above, there have been no changes in our internal control over financial reporting during the most recent fiscal quarter that have 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, 2019, 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, 2019 based upon the COSO criteria.

The effectiveness of our internal control over financial reporting as of December 31, 2019 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 2020 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, 2019.

**Item 11.** ***Executive Compensation***

The information required by this item is incorporated by reference from our proxy statement in connection with our 2020 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, 2019.

**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 2020 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, 2019.

**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 2020 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, 2019.

**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 2020 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, 2019.

# 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 below in the Exhibit Index. 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

## 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 (the "Company") as of December 31, 2019 and 2018, and the related consolidated statements of comprehensive income (loss), of stockholders' equity and of cash flows for each of the three years in the period ended December 31, 2019, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended December 31, 2019 appearing under Item 15(a)(2) (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2019, 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, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 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, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

*Changes in Accounting Principles*

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019 and 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.

***Critical Audit Matters***

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

*Revenue recognition - Identifying distinct performance obligations within customer contracts*

As described in Note 2 to the consolidated financial statements, for the year ended December 31, 2019, the Company recognized revenue of $250.3 million from customer contracts. A portion of these customer contracts contain multiple performance obligations. Significant judgment is required by management 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 principal considerations for our determination that performing procedures relating to identifying distinct performance obligations within customer contracts is a critical audit matter are there was a significant amount of judgment by management in determining whether multiple performance obligations contained in a single customer contract are capable of being distinct and are separately identifiable. This in turn led to significant auditor judgment and effort in performing procedures to evaluate whether the distinct performance obligations within a single customer contract were appropriately identified by management.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the revenue recognition process, including controls over the identification of distinct performance obligations. These procedures also included, among others, examining customer contracts on a test basis to identify whether the performance obligations were capable of being distinct and were separately identifiable, and evaluating management's conclusions through tests of underlying information.

/s/ PricewaterhouseCoopers LLP

San Jose, California
February 19, 2020

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, 2019 | December 31, 2018 |
|---|---|---|
| **Assets:** | | |
| Current assets: | | |
| Cash and cash equivalents | $ 306,077 | $ 295,476 |
| Trade and other receivables, net of allowance of $214 and $978, respectively | 65,074 | 41,822 |
| Deferred costs, current | 5,756 | 4,089 |
| Prepaid and other current assets | 9,038 | 4,756 |
| Total current assets | 385,945 | 346,143 |
| Property and equipment, net | 14,794 | 14,676 |
| Operating lease right-of-use assets | 26,550 | — |
| Deferred costs, noncurrent | 15,478 | 13,373 |
| Intangibles, net | 14,605 | 19,354 |
| Goodwill | 49,104 | 38,231 |
| Other assets, noncurrent | 6,831 | 5,190 |
| Total assets | $ 513,307 | $ 436,967 |
| **Liabilities and Stockholders' Equity:** | | |
| Current liabilities: | | |
| Accounts payable and other liabilities | $ 9,098 | $ 6,934 |
| Accrued liabilities | 22,748 | 9,506 |
| Accrued payroll and other employee benefits | 32,656 | 22,519 |
| Operating lease liabilities, current | 7,173 | — |
| Deferred revenue, current | 124,459 | 99,262 |
| Current portion of convertible debt, net | — | 136,529 |
| Total current liabilities | 196,134 | 274,750 |
| Deferred revenue, noncurrent | 17,801 | 17,903 |
| Convertible debt, net, noncurrent | 110,704 | 88,661 |
| Operating lease liabilities, noncurrent | 22,391 | — |
| Other liabilities, noncurrent | 1,281 | 754 |
| Total liabilities | 348,311 | 382,068 |
| Commitments and contingencies (Note 18) | | |
| 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; 47,310,846 and 41,573,491 shares issued, respectively; 42,630,123 and 37,155,906 shares outstanding, respectively | 47 | 42 |
| Additional paid-in capital | 560,496 | 364,877 |
| Treasury stock, 4,680,723 and 4,417,585 common shares, at cost, respectively | (29,847) | (13,938) |
| Accumulated deficit | (361,789) | (292,708) |
| Accumulated other comprehensive loss | (3,911) | (3,374) |
| Total stockholders' equity | 164,996 | 54,899 |
| Total liabilities and stockholders' equity | $ 513,307 | $ 436,967 |

*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, | | |
|---|---|---|---|
| | 2019 | 2018 | 2017 |
| **Revenue:** | | | |
| Subscription | $ 141,165 | $ 95,192 | $ 60,539 |
| Maintenance and support | 58,184 | 64,760 | 69,408 |
| Total subscription, maintenance and support | 199,349 | 159,952 | 129,947 |
| License | 4,162 | 3,516 | 5,562 |
| Services | 46,823 | 33,556 | 33,307 |
| Total revenue | 250,334 | 197,024 | 168,816 |
| **Cost of revenue:** | | | |
| Subscription | 42,090 | 35,368 | 27,858 |
| Maintenance and support | 11,052 | 11,602 | 11,693 |
| Total cost of subscription, maintenance and support | 53,142 | 46,970 | 39,551 |
| License | 249 | 251 | 282 |
| Services | 45,726 | 29,958 | 28,733 |
| Total cost of revenue | 99,117 | 77,179 | 68,566 |
| Gross profit | 151,217 | 119,845 | 100,250 |
| **Operating expenses:** | | | |
| Selling and marketing | 89,553 | 72,006 | 68,116 |
| General and administrative | 47,254 | 41,302 | 40,336 |
| Research and development | 67,246 | 55,657 | 56,021 |
| Acquisition-related | 502 | 95 | 720 |
| Loss from operations | (53,338) | (49,215) | (64,943) |
| Convertible debt interest and amortization | (14,765) | (16,986) | (13,218) |
| Other (expense) income, net | (354) | 2,155 | 384 |
| Loss before income tax provision | (68,457) | (64,046) | (77,777) |
| Income tax provision | 624 | 200 | 149 |
| Net loss | (69,081) | (64,246) | (77,926) |
| Net loss per share: | | | |
| Basic and diluted | (1.72) | (1.86) | (2.46) |
| Weighted average number of shares: | | | |
| Basic and diluted | 40,232 | 34,465 | 31,627 |
| | | | |
| **Other comprehensive (loss) income, net of tax:** | | | |
| Foreign currency translation adjustment | (537) | (558) | 2,107 |
| Unrealized gain on short-term investments | — | — | (13) |
| Other comprehensive loss, net of tax | (537) | (558) | 2,094 |
| Comprehensive (loss) income | $ (69,618) | $ (64,804) | $ (75,832) |

*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, | | |
|---|---|---|---|
| | 2019 | 2018 | 2017 |
| **Operating activities:** | | | |
| Net loss | $ (69,081) | $ (64,246) | $ (77,926) |
| Adjustments to reconcile net loss to net cash provided by operating activities: | | | |
| Depreciation and amortization | 13,870 | 13,055 | 10,531 |
| Amortization of debt discount and issuance costs | 11,115 | 12,027 | 9,264 |
| Share-based compensation | 24,680 | 21,453 | 22,796 |
| Deferred income tax, net | (119) | (463) | (520) |
| Provision for doubtful accounts | (754) | 212 | — |
| Loss on disposal of assets | — | 37 | 59 |
| Loss on debt extinguishment | 5,660 | — | — |
| Changes in operating assets and liabilities: | | | |
| Accounts and unbilled receivables | (22,273) | (9,550) | 2,022 |
| Deferred costs | (3,772) | (4,086) | — |
| Prepaid expenses and other assets | (5,044) | 87 | (3,715) |
| Accounts payable and other liabilities | 2,489 | 3,931 | 700 |
| Accrued liabilities | 15,455 | 2,764 | (1,055) |
| Accrued payroll and other employee benefits | 7,937 | 5,830 | (2,344) |
| Deferred revenue | 25,082 | 24,652 | 14,875 |
| Net cash provided by (used in) operating activities | 5,245 | 5,703 | (25,313) |
| **Investing activities:** | | | |
| Purchase of property and equipment | (5,271) | (1,475) | (1,286) |
| Purchase of equity securities | (293) | (45) | — |
| Acquisition of Travelaer, net of cash acquired | (10,510) | — | — |
| Acquisition of Vayant, net of cash acquired | — | — | (34,130) |
| Capitalized internal-use software development costs | (1,436) | (4,613) | (2,797) |
| Purchase of intangible asset | (50) | (125) | (125) |
| Proceeds from maturities of short-term investments | — | — | 15,992 |
| Net cash used in investing activities | (17,560) | (6,258) | (22,346) |
| **Financing activities:** | | | |
| Exercise of stock options | — | 1,142 | 6,331 |
| Proceeds from employee stock plans | 1,995 | 1,720 | 1,535 |
| Tax withholding related to net share settlement of stock awards | (23,753) | (9,410) | (7,375) |
| Proceeds from Secondary Offering, net | — | 141,954 | — |
| Payments of Notes payable | — | (54) | (209) |
| Proceeds from issuance of convertible debt, net | 140,156 | — | 93,500 |
| Debt issuance costs related to convertible debt | (860) | — | (2,978) |
| Purchase of Capped Call | (16,445) | — | — |
| Settlement of convertible debt | (97,678) | — | — |
| Proceeds from termination of Note Hedges | 64,819 | — | — |
| Payment for termination of Warrants | (45,243) | — | — |
| Debt issuance costs related to Revolver | — | — | (150) |
| Net cash provided by financing activities | 22,991 | 135,352 | 90,654 |

**PROS Holdings, Inc.**
**Consolidated Statements of Cash Flows**
(In thousands)

| | | | |
|---|---|---|---|
| Effect of foreign currency rates on cash | (75) | 174 | (529) |
| Net change in cash and cash equivalents | 10,601 | 134,971 | 42,466 |
| **Cash and cash equivalents:** | | | |
| Beginning of period | 295,476 | 160,505 | 118,039 |
| End of period | $ 306,077 | $ 295,476 | $ 160,505 |
| | | | |
| **Supplemental disclosure of cash flow information:** | | | |
| Cash (paid) refund during period for: | | | |
| Taxes | $ (308) | $ (262) | $ (271) |
| Interest | $ (3,499) | $ (5,252) | $ (4,013) |
| Noncash investing activities: | | | |
| Purchase of property and equipment accrued but not paid | $ 891 | $ 247 | $ 38 |

*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, 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 |
| Stock awards net settlement | 611,708 | — | (7,375) | — | — | — | — | (7,375) |
| Proceeds from employee stock plans | 92,209 | — | 1,535 | — | — | — | — | 1,535 |
| Equity component of the convertible debt 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 |
| Stock awards 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 |
| Stock awards net settlement | 958,264 | 1 | (23,754) | — | — | — | — | (23,753) |
| Proceeds from employee stock plans | 75,304 | — | 1,995 | — | — | — | — | 1,995 |
| Settlement of convertible debt | 4,703,787 | 4 | 140,845 | — | — | — | — | 140,849 |
| Exercise of Note Hedges | (263,138) | — | 15,911 | 263,138 | (15,909) | — | — | 2 |
| Termination of Note Hedges | — | — | 64,819 | — | — | — | — | 64,819 |
| Termination of Warrants | — | — | (45,243) | — | — | — | — | (45,243) |
| Equity component of convertible debt issuance, net | — | — | 32,883 | — | — | — | — | 32,883 |
| Purchase of Capped Call | — | — | (16,445) | — | — | — | — | (16,445) |
| Noncash share-based compensation | — | — | 24,608 | — | — | — | — | 24,608 |
| Other comprehensive loss | — | — | — | — | — | — | (537) | (537) |
| Net loss | — | — | — | — | — | (69,081) | — | (69,081) |
| Balance at December 31, 2019 | 42,630,123 | $ 47 | $ 560,496 | 4,680,723 | $ (29,847) | $ (361,789) | $ (3,911) | $ 164,996 |

*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 selling, pricing, revenue optimization and eCommerce 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 buyers 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. The complexity and judgment required in the Company's estimation process, as well as issues related to the assumptions, risks and uncertainties inherent in determining the nature and timing of satisfaction of performance obligations and determining the standalone selling price of performance obligations, 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, the determination of the period of benefit for deferred commissions, operating lease right-of-use assets and operating lease liabilities, useful lives of assets, depreciation and amortization, 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. Numerous internal and external factors can affect estimates. 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 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.

***Prepaid Expenses and Other Assets***

Prepaid expenses and other assets consist primarily of prepaid third-party software subscription 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.

***Leases***

The Company determines if an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use ("ROU") assets, current operating lease liabilities and noncurrent operating lease liabilities in the Company's Consolidated Balance Sheet.

ROU assets represent the Company’s right to use an underlying asset over the lease term and lease liabilities represent the Company’s obligation to make lease payments arising from the lease. ROU assets and lease liabilities are recognized at the lease commencement date based on the estimated present value of lease payments over the lease term. The Company includes any anticipated lease incentives in the determination of lease liability.

The Company uses its estimated incremental borrowing rate, which is derived from information available at the lease commencement date, in determining the present value of lease payments. The Company gives consideration to its recent debt issuances as well as publicly available data for instruments with similar characteristics when determining its incremental borrowing rates.

The Company’s lease terms will include options to extend the lease when it is reasonably certain that the Company will exercise that option. Leases with a term of 12 months or less are not recorded on the Company's unaudited condensed consolidated balance sheet. The Company’s lease agreements do not contain any residual value guarantees.

***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 employee-related 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 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 did not identify any impairment indicators and recorded no impairment charges in the year ended December 31, 2019, 2018 and 2017.

***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 the intangible 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 the intangible 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 two-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 the Company to compare the fair value of its reporting unit with its carrying value. If the carrying amount exceeds the fair value, an impairment charge will be recognized, however, loss cannot exceed the total amount of goodwill allocated to the reporting unit. Based on the results of the qualitative review of goodwill performed as of November 30, 2019, the Company did not identify any indicators of impairment. As such, the quantitative assessment described above was not necessary.

***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 equity investments approximates their fair values at December 31, 2019 and 2018. *For additional information on the Company's fair value measurements, see Note 10 to the Consolidated Financial Statements.*

***Convertible Senior Notes***

In accounting for the issuance of the Notes, the Company separates each of the Notes into liability and equity components. The carrying amounts of the liability components are calculated by measuring the fair value of similar liabilities that do not have associated convertible features. The carrying amount of the equity components representing the conversion option are determined by deducting the fair value of the liability components from the par value of the respective Notes. These differences represent debt discounts that are amortized to interest expense over the respective terms of the Notes using the effective interest rate method. The equity components are not remeasured as long as they continue to meet the conditions for equity classification. In accounting for the issuance costs related to the Notes, the Company allocates the total amount of issuance costs incurred to the liability and equity components based on their relative values. Issuance costs attributable to the liability components are being amortized on a straight-line basis, which approximates the effective interest rate method, to interest expense over the respective terms of the Notes. The issuance costs attributable to the equity components are netted against the respective equity components in additional paid-in capital.

***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 12 to the Consolidated Financial Statements.* There were no treasury stock repurchases under the program for the years ended December 31, 2019, 2018 and 2017.

***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-premises 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-premises 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 revenue is 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 revenue is 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 19 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, performance 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, performance 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, 2019 and 2018 (in thousands):

| | Year Ended December 31, | |
|---|---|---|
| **Award type** | **2019** | **2018** |
| Restricted stock units (time-based) | 1,893 | 1,969 |
| Restricted stock units (performance-based) | 114 | — |
| Restricted stock units (market-based) | — | 215 |
| Stock appreciation rights | 65 | 287 |
| Market stock units | 267 | 419 |

<u>Stock options.</u> The Company did not grant stock options during 2019 and 2018. The fair value of each stock option is estimated on the date of grant using the Black-Scholes option pricing model.

<u>Restricted stock units.</u> 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, (ii) performance-based awards in which the number of shares that vest are based upon achievement of certain internal performance metrics set by the Company, and (iii) 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 3-year period ending February 28, 2019, February 28, 2020, October 9, 2020 and December 31, 2020 ("Performance Period"), respectively. The MSUs vested on March 1, 2019, and will vest on 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 the 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, 2019, there were an estimated $43.1 million of total unrecognized compensation costs related to noncash share-based compensation arrangements. These costs will be recognized over a weighted average period of 2.5 years. *For further discussion of the Company's noncash share-based compensation plans, see Note 14 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-premises 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 15 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 giving effect to all dilutive potential common shares outstanding during the period using the treasury stock method and convertible notes using the if-converted method. Dilutive potential common shares consist of shares issuable upon the exercise of stock options, shares of unvested restricted stock units and market 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, restricted stock units, market stock units and convertible notes 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***

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") assets and lease 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 took effect in the first quarter of 2019, including interim periods within that reporting period. The Company adopted Topic 842 as of January 1, 2019 using the modified retrospective method by recognizing the cumulative effect of initially applying the new standard as an adjustment to the opening balances of operating ROU assets and lease liabilities, while prior period amounts are not adjusted and continue to be reported in accordance with the Company's historic accounting under the prior lease accounting rules in ASC 840, "*Leases*".

The Company elected the package of practical expedients permitted under the transition guidance within the new Topic 842 standard for all asset classes, which among other things, allowed the Company to carryforward the historical lease classification. The Company also elected the hindsight practical expedient to determine the reasonably certain lease term for existing leases. The Company made an accounting policy election to not recognize leases with an initial term of 12 months or less on the balance sheet and instead would recognize those lease payments on a straight-line basis over the lease term in the Consolidated Statement of Comprehensive Income (Loss).

The adoption of the standard had a material impact on the Company's Consolidated Balance Sheet as a result of the increase of $26.9 million in assets and liabilities from recognition of ROU assets and lease liabilities. The standard did not have a material impact on the Company's Consolidated Statement of Comprehensive Income (Loss).

In August 2018, the FASB issued ASU 2018-15, *"Intangibles - Goodwill and Other - Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That is a Service Contract"* ("Subtopic 350-40"). The amendment aligns the requirements for capitalizing implementation costs in a cloud computing arrangement service contract with the requirements for capitalizing implementation costs incurred to develop or obtain an internal-use software. The standard is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2019; early adoption is permitted. The Company early adopted Subtopic 350-40 prospectively effective January 1, 2019 and there was no impact on the Company's Consolidated Financial Statements as of the adoption date. During the year ended December 31, 2019, the Company capitalized implementation cost in result of adoption of the standard which affected the prepaid and other current assets and other assets, noncurrent line items in the 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 early adopted Topic 350 effective October 1, 2019 and there was no impact on its Consolidated Financial Statements in result of the standard adoption.

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 were not adjusted and continue to be reported in accordance with the Company's historic accounting under the Prior Guidance. *See Note 2 - Summary of Significant Accounting Policies to the Consolidated Financial Statements included in form 10-K for the year ended December 31, 2018, regarding the impact of Topic 606 adoption on the Consolidated Financial Statements.*

***Recent Accounting Pronouncements***

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments ("Topic 326")*, in order to improve financial reporting of expected credit losses on financial instruments and other commitments to extend credit. Topic 326 requires that an entity measure and recognize expected credit losses for financial assets held at amortized cost and replaces the incurred loss impairment methodology in current GAAP with a methodology that requires consideration of a broader range of information to estimate credit losses. While the Company is continuing to assess the potential impacts of Topic 326, it does not expect the new standard to have a material effect 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, 2019, that are of significance or potential significance to the Company.

**3. Business Combination**

***Travelaer***

On August 14, 2019, the Company acquired Travelaer SAS ("Travelaer"), a privately held company based near Nice, France, for a total cash consideration, net of cash acquired, of approximately $10.5 million. Travelaer is a digital innovator for the travel industry with a focus on improving the customer experience across all phases of travel, and brings an internet booking engine and NDC platform to the Company's portfolio. The Company has included the financial results of Travelaer in the Consolidated Financial Statements from the date of the acquisition, which have not been material to date. The transaction cost associated with the acquisition was $0.5 million for the year ended December 31, 2019.

The Company accounted for the transaction as a business combination and all of the assets acquired and the liabilities assumed in the transaction have been recognized at their acquisition date fair values. The Company recorded approximately $2 million for developed technology and customer relationships with estimated useful lives of seven years and five years, respectively. The Company recorded approximately $11 million of goodwill which is primarily related to the assembled workforce and expanded market opportunities from integrating Travelaer's technology with the Company's solutions. The goodwill balance is not deductible for U.S. income tax purposes. The Company expects to finalize the valuation as soon as practicable, but no later than one year from the acquisition date.

***Vayant***

On August 3, 2017, the Company acquired 100% of the issued and outstanding stock of 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.

Since the acquisition date, the Company included $3.3 million of revenue and $1.8 million of net loss related to Vayant in its Consolidated Statement of Comprehensive Income (Loss) for the year ended December 31, 2017. 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 |
|---|---|
| Total revenue | $ 173,866 |
| Net loss | (81,476) |
| Earnings per share - basic and diluted | $ (2.58) |

**4. Trade and Other Receivables, Net**

Accounts receivable at December 31, 2019 and 2018, consists of the following (in thousands):

| | December 31, 2019 | December 31, 2018 |
|---|---|---|
| Accounts receivable | $ 59,606 | $ 38,876 |
| Unbilled receivables and contract assets | 5,682 | 3,924 |
| Total receivables | 65,288 | 42,800 |
| Less: Allowance for doubtful accounts | (214) | (978) |
| Trade and other receivables, net | $ 65,074 | $ 41,822 |

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, 2019, 2018 and 2017, totaled approximately $(0.6) million, $0.2 million and zero, respectively.

**5. Deferred Costs**

Deferred costs, which primarily consist of deferred sales commissions, were $21.2 million and $17.5 million as of December 31, 2019 and December 31, 2018, respectively. Amortization expense for the deferred costs was $4.8 million and $3.0 million for the year ended December 31, 2019 and 2018, 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 $4.4 million and $3.9 million as of December 31, 2019 and December 31, 2018, respectively. Amortization expense for the deferred implementation costs was $1.4 million and $0.6 million for the year ended December 31, 2019 and 2018, 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, 2019 and 2018 consists of the following:

| | Estimated useful life | December 31, 2019 | December 31, 2018 |
|---|---|---|---|
| Furniture and fixtures | 5-10 years | $ 3,227 | $ 3,208 |
| Computers and equipment | 3-5 years | 15,388 | 19,644 |
| Software | 3-6 years | 7,302 | 5,432 |
| Capitalized internal-use software development costs | 3 years | 10,194 | 8,775 |
| Leasehold improvements | Shorter of lease term or useful life | 5,591 | 5,587 |
| Construction in progress | | 794 | 20 |
| Property and equipment, gross | | 42,496 | 42,666 |
| Less: Accumulated depreciation and amortization | | (27,702) | (27,990) |
| Property and equipment, net | | $ 14,794 | $ 14,676 |

Depreciation and amortization was approximately $7.1 million, $5.5 million and $5.4 million for the years ended December 31, 2019, 2018 and 2017, respectively. During the years ended December 31, 2019, 2018 and 2017, the Company disposed of approximately $7.4 million, $0.5 million and $1.8 million, respectively, of fully depreciated assets. During the year ended December 31, 2019, the Company recognized no loss on disposal of assets and during the years ended 2018 and 2017, the Company recognized immaterial amounts of loss on disposal of certain non-fully depreciated assets, respectively. As of December 31, 2019 and 2018, the Company had approximately $12.2 million and $14.0 million, respectively, of fully depreciated assets in use.

During the years ended December 31, 2019 and 2018, the Company capitalized internal-use software development costs of approximately $1.4 million and $4.7 million, respectively, related to its subscription solutions. As of December 31, 2019 and 2018, $9.6 million and $2.8 million, respectively, of capitalized internal-use software development costs were subject to amortization and $4.1 million and $1.1 million, respectively, of capitalized internal-use software development costs were included in accumulated depreciation and amortization for the years ended December 31, 2019 and 2018.

No impairment was recorded for the years ended December 31, 2019, 2018 and 2017.

**8. Leases**

The Company has operating leases for data centers, computer infrastructure, corporate offices and certain equipment. These leases have remaining lease terms ranging from 1 year to 14 years. Some of these leases include options to extend for up to 15 years, and some include options to terminate within 1 year. The Company includes options in the lease terms when it is reasonably certain that the Company will exercise that option.

In July 2019, the Company amended its existing agreement with a computing infrastructure vendor, the result of which was an increase in future consideration to be paid by the Company. The Company accounted for this change in consideration as a modification and remeasured the value of the right-of-use asset and related lease liability on such date, which resulted in an increase of $5.7 million to each respectively.

As of December 31, 2019, the Company did not have any finance leases.

The components of operating lease expense were as follows (in thousands):

| | Year Ended December 31, 2019 |
|---|---|
| Operating lease cost | $ 10,109 |
| Variable lease cost | 1,810 |
| Sublease income | (332) |
| Total lease cost | $ 11,587 |

Supplemental information related to leases was as follows (in thousands):

| | Year Ended December 31, 2019 |
|---|---|
| Cash paid for amounts included in the measurement of lease liability: | |
| Operating cash flows from operating leases | $ 5,883 |

| | December 31, 2019 |
|---|---|
| Weighted average remaining lease term: | |
| Operating leases | 7.1 years |
| Weighted average discount rate: | |
| Operating leases | 7.26% |

As of December 31, 2019, maturities of lease liabilities were as follows (in thousands):

| Year Ending December 31, | Amount |
|---|---|
| 2020 | $ 6,965 |
| 2021 | 8,745 |
| 2022 | 8,202 |
| 2023 | 4,630 |
| 2024 | 4,680 |
| 2025 and thereafter | 34,059 |
| Total operating lease payments | 67,281 |
| Less: Imputed interest | (23,510) |
| Less: Anticipated lease incentive | (14,207) |
| Total operating lease liabilities | $ 29,564 |

As of December 31, 2019, the Company has additional operating leases of approximately $1.5 million that have not yet commenced, as the lessor has not made the underlying assets available for use by the Company. These operating leases will commence in fiscal year 2020 with lease terms of 5 years to 14 years.

Operating lease expense was $4.3 million and $3.9 million for the years ended December 31, 2018 and 2017, respectively, under Topic 840, the predecessor of Topic 842.

As of December 31, 2018, the future minimum lease commitments related to lease agreements under Topic 840 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 |

**9. Goodwill and Intangible Assets**

The change in the carrying amount of goodwill for the years ended December 31, 2019 and 2018, was as follows (in thousands):

| | |
|---|---|
| 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 |
| Goodwill acquired | 11,077 |
| Foreign currency translation adjustments | (204) |
| Balance as of December 31, 2019 | $ 49,104 |

The goodwill balance related to PROS France and Travelaer 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, 2019 | | |
|---|---|---|---|---|
| | Weighted average useful life (years) | Gross Carrying Amount | Accumulated Amortization* | Net Carrying Amount |
| Developed technology | 7 | $ 26,839 | $ 17,653 | $ 9,186 |
| Maintenance relationships | 8 | 3,451 | 2,790 | 661 |
| Customer relationships | 6 | 12,439 | 8,478 | 3,961 |
| Acquired technology | 2 | 1,925 | 1,128 | 797 |
| Total | | $ 44,654 | $ 30,049 | $ 14,605 |

*Cumulative foreign currency translation adjustments, reflecting movement in the currencies of the underlying entities, decreased total intangible assets by approximately $0.1 million as of December 31, 2019.

| | | 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.

Intangible asset amortization expense for the years ended December 31, 2019, 2018 and 2017 was $6.8 million, $7.6 million and $5.2 million, respectively. As of December 31, 2019, 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 |
|---|---|
| 2020 | $ 6,272 |
| 2021 | 3,372 |
| 2022 | 2,179 |
| 2023 | 1,545 |
| 2024 | 970 |
| 2025 and thereafter | 267 |
| Total amortization expense | $ 14,605 |

**10. 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, 2019 and 2018, the Company had approximately $273.1 million and $268.6 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 16 for further detail regarding the Notes.*

As of December 31, 2019 and 2018, the Company had $2.3 million and $2.0 million, respectively, of equity securities in privately held companies. These investments are 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 the fair value of its equity investments by considering available information such as pricing in recent rounds of financing 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, 2019 and 2018, the Company determined there were no other-than-temporary impairments on its equity investments.

## 11. Deferred Revenue and Performance Obligations

### *Deferred Revenue*

For the year ended December 31, 2019 and 2018, the Company recognized approximately $96.4 million and $74.6 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, 2019, the Company expects to recognize approximately $403.7 million of revenue from remaining performance obligations. The Company expects to recognize revenue on approximately $188.3 million of these performance obligations over the next 12 months, with the balance recognized thereafter.

## 12. 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, 2019 and 2018. The remaining amount available to purchase common stock under this plan was $10.0 million as of December 31, 2019.

**13. Earnings Per Share**

The following table sets forth the computation of basic and diluted earnings per share:

| | For the Year Ended December 31, | | |
|---|---|---|---|
| | 2019 | 2018 | 2017 |
| Numerator: | | | |
| Net loss | $ (69,081) | $ (64,246) | $ (77,926) |
| Denominator: | | | |
| Weighted average shares (basic) | 40,232 | 34,465 | 31,627 |
| Dilutive effect of stock options, restricted stock units and stock appreciation rights | — | — | — |
| Weighted average shares (diluted) | 40,232 | 34,465 | 31,627 |
| Basic earnings per share | $ (1.72) | $ (1.86) | $ (2.46) |
| Diluted earnings per share | $ (1.72) | $ (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 2.1 million, 2.1 million and 2.0 million for the years ended December 31, 2019, 2018 and 2017, respectively. Potential common shares related to the Notes determined to be antidilutive and excluded from diluted weighted average shares outstanding were 2.2 million for the year ended December 31, 2019.

**14. 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, 2019, the Company had outstanding equity awards to acquire 726,451 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, 551,351 RSUs, 65,000 SARs and 110,100 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 4,550,000 shares for issuance. The Company may provide these incentives through the grant of: (i) restricted stock awards; (ii) RSUs (time, performance and market-based); (iii) stock options; (iv) SARs; (v) phantom stock; and (vi) performance awards, such as MSUs.

As of December 31, 2019, the Company had outstanding equity awards to acquire 1,612,026 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 1,455,458 RSUs and 156,568 MSUs. As of December 31, 2019, 2,466,273 shares remain available for grant under the 2017 Stock Plan. As of December 31, 2019, 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, 2019, 2018 and 2017 (in thousands).

| | For the Year Ended December 31, | | |
|---|---|---|---|
| | 2019 | 2018 | 2017 |
| Share-based compensation: | | | |
| Cost of revenue | $ 2,025 | $ 1,721 | $ 1,971 |
| Operating expenses: | | | |
| Selling and marketing | 5,995 | 4,396 | 4,348 |
| General and administrative | 11,451 | 10,717 | 11,163 |
| Research and development | 5,209 | 4,619 | 5,314 |
| Total included in operating expenses | 22,655 | 19,732 | 20,825 |
| Total share-based compensation expense | $ 24,680 | $ 21,453 | $ 22,796 |

At December 31, 2019, there was an estimated $43.1 million of total unrecognized compensation costs related to noncash share-based compensation arrangements. These costs will be recognized over a weighted average period of 2.5 years.

***Stock Options***

For the years ended December 31, 2019 and 2018, respectively, the Company did not grant any stock options and had no stock options outstanding. The total intrinsic value of stock options exercised for the years ended December 31, 2019, 2018 and 2017 was zero, $2.5 million and $7.2 million, respectively.

***RSUs (time-based)***

The Company has granted time-based 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, 2019, 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, 2018 | 1,969 | $ 21.77 | | |
| Granted | 816 | 35.38 | | |
| Vested | (790) | 21.01 | | |
| Forfeited | (102) | 23.98 | | |
| Unvested at December 31, 2019 | 1,893 | $ 27.83 | 2.02 | $ 113,422 |
| Expected to vest at December 31, 2019 | 1,775 | $ 27.57 | 1.98 | $ 106,340 |

(1) The aggregate intrinsic value was calculated based on the fair value of the Company’s common stock on December 31, 2019 of $59.92.

The weighted average grant-date fair value of the time-based RSUs granted during the years ended December 31, 2019, 2018 and 2017 was $35.38, $27.61 and $21.63, respectively.

***RSUs (performance-based)***

During 2019, under the 2017 Stock Plan, the Company granted 113,919 performance-based RSUs ("PRSUs") to certain executive employees. These PRSUs vest on January 15, 2022 and the actual number of PRSUs that will be eligible to vest is based upon achievement of certain internal performance metrics, as defined by each award's plan documents or individual award agreements. The maximum number of shares issuable upon vesting is 200% of the PRSUs initially granted.

The following table summarizes the Company's unvested PRSUs as of December 31, 2019, 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, 2018 | — | $ — | | |
| Granted | 114 | 33.05 | | |
| Vested | — | — | | |
| Forfeited | — | — | | |
| Unvested at December 31, 2019 | 114 | $ 33.05 | 2.04 | $ 6,826 |
| Expected to vest at December 31, 2019 | 228 | $ 33.05 | 2.04 | $ 13,652 |

(1) The aggregate intrinsic value was calculated based on the fair value of the Company's common stock on December 31, 2019 of $59.92.

***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, 2019, 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, 2018 | 215 | $ 9.98 | | |
| Granted | — | — | | |
| Vested | (215) | 9.98 | | |
| Forfeited | — | — | | |
| Unvested at December 31, 2019 | — | $ — | 0 | $ — |
| Expected to vest at December 31, 2019 | — | $ — | 0 | $ — |

(1) The aggregate intrinsic value was calculated based on the fair value of the Company's common stock on December 31, 2019 of $59.92.

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 was expensed over the derived service period for each separate vesting tranche. The derived service period for the vesting tranches of the market-based RSUs ranged 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, 2019 (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, 2018 | 287 | $ 10.92 | | |
| Granted | — | — | | |
| Exercised | (222) | 11.08 | | |
| Forfeited | — | — | | |
| Expired | — | — | | |
| Outstanding, December 31, 2019 | 65 | $ 10.38 | 0.74 | $ 3,220 |
| Exercisable at December 31, 2019 | 65 | $ 10.38 | 0.74 | $ 3,220 |
| Vested and expected to vest at December 31, 2019 | 65 | $ 10.38 | 0.74 | $ 3,220 |

(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, 2019 of $59.92 and the exercise price of the underlying SARs.

The Company did not grant SARs in 2019, 2018 and 2017.

***MSUs***

In 2018 and 2017, 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 3-year Performance Period. The MSUs vested on March 1, 2019 and will vest on 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 company did not grant any MSUs in 2019.

The following table summarizes the Company's MSUs activity for the year ended December 31, 2019 (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, 2018 | 419 | $ 25.90 | | |
| Granted | — | — | | |
| Vested | (152) | 14.29 | | |
| Forfeited | — | — | | |
| Expired | — | — | | |
| Unvested at December 31, 2019 | 267 | $ 32.54 | 0.64 | $ 15,979 |

(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, 2019 of $59.92 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 the 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 and 2017 are as follows:

| | For the Year Ended December 31, | |
|---|---|---|
| | 2018 | 2017 |
| Volatility | 43.67% | 45.38% |
| Risk-free interest rate | 2.12% | 1.56% |
| Expected option life in years | 2.97 | 3.07 |
| 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***

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 year ended December 31, 2019, the Company issued 75,304 shares under the ESPP. As of December 31, 2019, 140,251 shares remain authorized and available for issuance under the ESPP. As of December 31, 2019, the Company held approximately $1.4 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.

## 15. Income Taxes

The income tax provision consisted of the following for the years ended December 31, 2019, 2018 and 2017 (in thousands):

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2019 | 2018 | 2017 |
| Current: | | | |
| Federal | $ — | $ (252) | $ — |
| State and Foreign | 624 | 663 | 669 |
| | 624 | 411 | 669 |
| Deferred: | | | |
| Federal | — | (211) | (488) |
| State | — | — | (32) |
| Income tax provision | $ 624 | $ 200 | $ 149 |

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, 2019, 2018 and 2017, respectively, were as follows (in thousands):

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2019 | 2018 | 2017 |
| Provision at the U.S. federal statutory rate | $ (14,491) | $ (13,464) | $ (26,443) |
| Increase (decrease) resulting from: | | | |
| State income taxes, net of federal taxes | 17 | 46 | 18 |
| Nondeductible expenses | 468 | 414 | 373 |
| Acquisition-related expense | — | — | 245 |
| Statutory to GAAP income adjustment | (640) | (221) | (77) |
| Noncash share-based compensation | (570) | (394) | (3,405) |
| Other | (368) | (153) | — |
| Incremental benefits for tax credits | (990) | (1,656) | (1,711) |
| Change in tax rate/income subject to lower tax rates | 788 | (1,824) | 2,625 |
| Change related to prior tax years | 4,006 | (4,800) | (2,331) |
| Change related to US tax reform | — | 1,835 | 31,359 |
| Change in valuation allowance | 12,404 | 20,417 | (504) |
| Income tax provision | $ 624 | $ 200 | $ 149 |

The Company’s effective tax rate was (0.9)%, (0.3)% and (0.2)% for the years ended December 31, 2019, 2018 and 2017, respectively. During the year ended December 31, 2019, 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, 2019, 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, 2019. 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 for FDII is allowable for the current year.

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, 2019 and 2018 are as follows (in thousands):

| | Year Ended December 31, | |
|---|---|---|
| | 2019 | 2018 |
| Noncurrent deferred taxes: | | |
| Property and equipment | $ (158) | $ (528) |
| Noncash share-based compensation | 2,534 | 6,922 |
| Disallowed interest expense | 5,871 | 4,574 |
| Capitalized software | (1,905) | (1,533) |
| Amortization | (2,971) | (4,110) |
| R&E tax credit carryforwards | 11,594 | 10,603 |
| Deferred revenue | 2,264 | 2,680 |
| Federal Net Operating Losses ("NOLs") | 69,673 | 58,601 |
| State NOLs | 2,254 | 2,319 |
| State Credits | 2,005 | 2,005 |
| Foreign NOLs | 11,808 | 8,945 |
| Foreign tax credit carryforward | 2,168 | 2,462 |
| Other | 1,458 | 1,291 |
| Total noncurrent deferred tax assets | 106,595 | 94,231 |
| Less: Valuation allowance | (106,476) | (94,231) |
| Total noncurrent deferred tax asset | 119 | — |
| Total net deferred tax asset | $ 119 | $ — |

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 $379.2 million and $13.4 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 $47.2 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 2019, 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, 2019 and 2018.

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, 2019 and 2018. 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 the years ended December 31, 2019, 2018 and 2017, the Company had approximately zero, $0.2 million and $0.2 million, respectively, 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, 2019, 2018 and 2017, respectively. During 2019, the Company determined that the statute of limitations concluded for positions and removed these positions from the uncertain tax positions. The Company believes the remaining position will be removed from the schedule during the next twelve months as the statute expires on that position. The Company continually monitors tax positions and will evaluate if any new positions need to be added during 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 completed a transfer pricing review by the Bulgarian tax authorities during 2019. 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 2018, 2017, 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, 2019, 2018 and 2017 (in thousands):

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2019 | 2018 | 2017 |
| Beginning balance | $ 183 | $ 183 | $ 192 |
| Changes based on tax positions related to prior year | — | — | — |
| Changes due to settlement | (169) | — | (9) |
| Ending balance | $ 14 | $ 183 | $ 183 |

The table above has been updated to reflect gross tax liability, exclusive of interest and penalties and other offsetting amounts.

**16. Convertible Senior Notes**

The Company issued $143.8 million principal amount of the 2019 Notes in December 2014, $106.3 million principal amount of the 2047 Notes in June 2017, and $143.8 million principal amount of the 2024 Notes in May 2019. As disclosed below, as of December 31, 2019 there was no principal amount of either the 2019 Notes or the 2047 Notes outstanding. The interest rate for the 2024 Notes is fixed at 1% per annum and the effective interest rate related to the amortization of the liability component is 6.6%. Interest is payable semi-annually in arrears on May 15 and November 15 of each year, commencing on November 15, 2019. The 2024 Notes mature on May 15, 2024, unless redeemed or converted in accordance with their terms prior to such date.

Each $1,000 of principal of the 2019 Notes were initially 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 of the 2024 Notes will initially be convertible into 15.1394 shares of the Company’s common stock, which is equivalent to an initial conversion price of approximately $66.05 per share. Each $1,000 of principal amount at maturity of the 2047 Notes had an issue price of $880 and were initially 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.

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 of the Company's subsidiaries (including trade payables but excluding intercompany obligations owed to the Company or its subsidiaries).

On or after February 15, 2024 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 2024 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 2024 Notes.

Holders may convert their 2024 Notes at their option at any time prior to the close of business on the business day immediately preceding February 15, 2024 only under the following circumstances:

- during the five consecutive business day period immediately following any five consecutive trading day period (the "Measurement Period") in which the trading price per 2024 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;
- during any calendar quarter commencing after the calendar quarter ending on June 30, 2019, if the last reported sale price of the 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 is greater than or equal to 130% of the conversion price on each applicable trading day; or
- upon the occurrence of specified corporate events.

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 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.

In accordance with accounting guidance on embedded conversion features, the Company valued and bifurcated the conversion options associated with each of the 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, $3.4 million for the 2024 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, $1.1 million for the 2024 Notes and $0.3 million for the 2047 Notes, were netted with the equity component in stockholders' equity.

In May 2019, in accordance with the Exchange Transactions, the Company used a portion of the net proceeds of the offering of the 2024 Notes to exchange and retire approximately $122.1 million in aggregate principal of the 2019 Notes for an aggregate cash consideration of $76.0 million and approximately 2.2 million shares of the Company's common stock. The Company recorded a $2.3 million loss on debt extinguishment related to the Exchange Transactions. The loss on extinguishment is included in the other (expense) income, net in the Consolidated Statements of Comprehensive Income (Loss). In the fourth quarter, at maturity, the Company settled the remaining principal of the 2019 Notes in cash and distributed approximately 0.3 million shares of its common stock to the notes holders, which represented the conversion value in excess of the principal amount.

In August 2019, the Company issued a notice of redemption to the holders of its outstanding 2047 Notes and during the third and fourth quarter of 2019, the Company converted the entire aggregate principal of $106.3 million of the 2047 Notes and delivered approximately 2.3 million shares of its common stock upon conversion. The Company recorded a $3.4 million loss on debt extinguishment related to the Redemption. The loss on extinguishment is included in the other (expense) income, net in the Consolidated Statements of Comprehensive Income (Loss).

As of December 31, 2019, the 2024 Notes are not yet convertible, and their remaining life is approximately 52 months.

As of December 31, 2019 and December 31, 2018, the fair value of the principal amount of the Notes was $163.2 million and $251.5 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.

The Notes consist of the following (in thousands):

| | December 31, 2019 | December 31, 2018 |
|---|---|---|
| Liability component: | | |
| Principal | $ 143,750 | $ 250,000 |
| Less: debt discount, net of amortization | (33,046) | (24,810) |
| Net carrying amount | $ 110,704 | $ 225,190 |
| | | |
| Equity component [1] | $ 32,883 | $ 37,560 |

(1) Recorded within additional paid-in capital in the Consolidated Balance Sheet. As of December 31, 2019, it included $32.9 million related to the 2024 Notes, net of $1.1 million issuance cost in equity, respectively. 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, | |
|---|---|---|
| | 2019 | 2018 |
| Coupon | $ 3,691 | $ 5,000 |
| Amortization of debt issuance costs | 1,157 | 1,419 |
| Amortization of debt discount | 9,917 | 10,567 |
| Total | $ 14,765 | $ 16,986 |

***Note Hedge and Warrant Transactions***

Concurrently with the offering of the 2019 Notes, the Company entered into separate convertible note hedge (the "Note Hedges") and warrant (the "Warrants") transactions. Taken together, the purchase of the Note Hedges and the sale of the Warrants were 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 Hedges was $29.4 million. The Company received $17.1 million in cash proceeds from the sale of the Warrants. The Warrants were not part of the 2019 Notes or Note Hedges. Both the Note Hedges and Warrants have been accounted for as part of additional paid-in capital.

In May 2019, in connection with the Exchange Transactions, the Company entered into certain note hedge termination agreements (the “Note Hedge Termination Agreements”) and warrant termination agreements (the “Warrant Termination Agreements”). The Note Hedge Termination Agreements terminated certain of the Note Hedges, and the Warrant Termination Agreements terminated certain of the Warrants. The Company received cash proceeds of $64.8 million related to the Note Hedge Termination Agreements, and paid $45.2 million related to the Warrant Termination Agreements.

During the fourth quarter 2019, the Company received approximately 0.3 million shares of its common stock from the exercise of the remaining Note Hedges related to the 2019 Notes. These shares were recorded as treasury stock, at cost. The remaining warrants are expected to be exercised in the third quarter of 2020 and will settle on a net share basis.

***Capped Call Transactions***

In May 2019, in connection with the offering of the 2024 Notes, the Company entered into privately negotiated capped call transactions (collectively, the "Capped Call") with certain option counterparties. The Capped Call transactions cover, subject to customary anti-dilution adjustments, the number of shares of the Company’s common stock initially underlying the 2024 Notes, at a strike price that corresponds to the initial conversion price of the 2024 Notes, also subject to adjustment, and are exercisable upon conversion of the 2024 Notes. The Capped Call transactions are intended to reduce potential dilution of the Company's common stock and/or offset any cash payments the Company will be required to make in excess of the principal amount upon any conversion of 2024 Notes, and to effectively increase the overall conversion price of the 2024 Notes from $66.05 to $101.62 per share. As the Capped Call transactions meet certain accounting criteria, they are recorded in stockholders’ equity and are not accounted for as derivatives. The cost of the Capped Call was $16.4 million and was recorded as part of additional paid-in capital.

**17. Credit Facility**

The Company, through its wholly owned subsidiary PROS, Inc., entered into a $50 million secured Revolver with the lenders party thereto and Wells Fargo Bank, National Association as agent for the lenders party thereto. The Revolver's current five-year term expires 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, 2019, the Company was in compliance with all financial covenants in the Revolver.

As of both December 31, 2019 and 2018, $0.1 million 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. For the years ended December 31, 2019 and 2018, 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, 2019, the Company had no outstanding borrowings under the Revolver.

**18. 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 March 2019, the Company entered into a noncancelable agreement with a computing infrastructure vendor that amended the existing agreement dated June 2017. The amended agreement expires in March 2022. The purchase commitment as of December 31, 2019 was $64.1 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 within the next five years. As of December 31, 2019, there was $1.9 million remaining under the commitment.

***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.

**19. 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, 2019, 2018 and 2017, amounted to approximately $164.4 million, $128.5 million and $105.7 million, respectively, representing 66%, 65% and 63%, respectively, of annual revenue.

The following geographic information is presented for the years ended December 31, 2019, 2018 and 2017. The Company categorizes geographic revenues based on the location of the customer's headquarters.

| | Year Ended December 31, | | | | | |
|---|---|---|---|---|---|---|
| | 2019 | | 2018 | | 2017 | |
| | Revenue | Percent | Revenue | Percent | Revenue | Percent |
| The Americas: | | | | | | |
| United States of America | $ 85,963 | 34% | $ 68,482 | 35% | $ 63,097 | 37% |
| Other | 29,129 | 12% | 18,378 | 9% | 13,645 | 8% |
| Subtotal | 115,092 | 46% | 86,860 | 44% | 76,742 | 45% |
| Germany | 18,526 | 7% | 20,171 | 10% | 17,421 | 10% |
| The Rest of Europe | 55,388 | 22% | 40,776 | 21% | 33,852 | 20% |
| Asia Pacific | 43,908 | 18% | 32,090 | 16% | 26,528 | 16% |
| The Middle East | 16,170 | 6% | 15,092 | 8% | 11,437 | 7% |
| Africa | 1,250 | —% | 2,035 | 1% | 2,836 | 2% |
| Total revenue | $ 250,334 | 100% | $ 197,024 | 100% | $ 168,816 | 100% |

## 20. 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, 2019, no customer accounted for 10% or more of trade accounts receivables. For the years ended December 31, 2019, 2018 and 2017, no single customer accounted for 10% or more of revenue.

## 21. 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.

## 22. 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 2019, 2018 and 2017 totaled approximately $2.5 million, $2.4 million and $2.0 million, respectively.

**23. Quarterly Results (Unaudited)**

The following table presents certain unaudited quarterly financial data for the years ended December 31, 2019 and 2018. 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, 2019 | September 30, 2019 | June 30, 2019 | March 31, 2019 |
| Total revenue | $ 66,175 | $ 64,150 | $ 63,878 | $ 56,131 |
| Gross profit | $ 37,814 | $ 37,767 | $ 40,295 | $ 35,341 |
| Loss from operations | $ (15,071) | $ (12,512) | $ (12,145) | $ (13,610) |
| Net loss attributable to PROS Holdings, Inc. | $ (17,300) | $ (17,347) | $ (17,517) | $ (16,917) |
| Net loss attributable to common stockholders per share: | | | | |
| Basic | $ (0.41) | $ (0.42) | $ (0.44) | $ (0.45) |
| Diluted | $ (0.41) | $ (0.42) | $ (0.44) | $ (0.45) |

| | 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) |

## 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 | | | | | |
| 2019 | $ 978 | $ — | $ (760) | $ (4) | $ 214 |
| 2018 | $ 760 | $ 223 | $ — | $ (5) | $ 978 |
| 2017 | $ 760 | $ — | $ — | $ — | $ 760 |
| Valuation allowance | | | | | |
| 2019 | $ 94,231 | $ 12,404 | $ — | $ (159) | $ 106,476 |
| 2018 | $ 74,153 | $ 20,417 | $ — | $ (339) | $ 94,231 |
| 2017 | $ 69,049 | $ 5,872 | $ — | $ (768) | $ 74,153 |

(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.

## Exhibit Index

| Exhibit No. | Description | Provided Herewith | Incorporated by Reference Form | Incorporated by Reference 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 May 7, 2019 between Registrant and Wilmington Trust, National Association, as trustee. | | 8-K | 5/7/2019 |
| 4.3 | Global Note, dated May 7, 2019 between Registrant and Wilmington Trust, National Association, as trustee. | | 8-K | 5/7/2019 |
| 4.4 | Description of Registered Securities. | X | | |
| 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+ | Amended and Restated 2017 Equity Incentive Plan. | | DEF-14A | 3/25/2019 |
| 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 | 1/18/2019 |
| 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 | 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 |
| 10.19.1 | 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 |
| 10.19.2 | 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 |

| | | | | |
|---|---|---|---|---|
| 10.19.3 | 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 |
| 10.19.4 | 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 |
| 10.19.5 | Fifth Amendment to Office Lease, dated June 9, 2016, by and between PROS, Inc., and Houston Community College System. | | 8-K | 6/14/2016 |
| 10.20 | Office Lease Agreement, dated November 30, 2018, by and between PROS, Inc., and Thor Kirby 3 Group, LLC. | | 8-K | 12/4/2018 |
| 10.21+ | 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 |
| 10.22+ | Offer Letter, dated as of January 15, 2015, by and between PROS, Inc. and Stefan Schulz. | | 8-K | 1/20/2015 |
| 10.23+ | Amended and Restated Employment Agreement, dated December 3, 2018, by and between PROS, Inc., Registrant, and Stefan B. Schulz. | | 8-K | 12/4/2018 |
| 10.24+ | Offer Letter by and between PROS, Inc, and Thomas Dziersk, dated as of October 6, 2017. | | 8-K | 10/6/2017 |
| 10.25+ | Employment Agreement by and between PROS, Inc., Registrant and Thomas Dziersk, dated as of October 9, 2017. | | 8-K | 10/10/2017 |
| 10.26+ | Amended and Restated Employment Agreement, dated as of November 7, 2019, by and between PROS, Inc., PROS Holdings, Inc. and Roberto Reiner. | | 8-K | 11/8/2019 |
| 10.27+ | Employment Agreement, dated as of November 7, 2019, by and between PROS, Inc., PROS Holdings, Inc. and John Allessio. | | 8-K | 11/8/2019 |
| 10.28+ | Form of Indemnity Agreement entered into among Registrant, its affiliates and its directors and officers. | | 8-K | 8/21/2013 |
| 10.29+ | Form of Indemnification Agreement to be entered into among Registrant, its affiliates and its directors and officers. | | 10-K | 2/15/2017 |
| 10.30 | 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 |
| 10.31 | 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 |
| 10.31.1 | 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 |
| 10.31.2 | 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 |
| 10.31.3 | 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 |
| 10.31.4 | Tenth Amendment to Credit Agreement, dated April 30, 2019, by and among PROS, Inc., Wells Fargo Bank, National Association, as administrative agent, and the Lenders party thereto. | | 8-K | 5/2/2019 |
| 10.32 | Purchase Agreement, dated May 1, 2019 by and among Registrant, Goldman, Sachs & Co., as representative of the several initial purchasers named therein. | | 8-K | 5/7/2019 |
| 10.33 | Form of Base Capped Call Confirmation. | | 8-K | 5/7/2019 |
| 10.34 | Form of Additional Capped Call Confirmation. | | 8-K | 5/7/2019 |
| 10.35 | Form of Exchange Agreement. | | 8-K | 5/7/2019 |
| 10.36 | Form of Bond Hedge Termination Agreement. | | 8-K | 5/7/2019 |
| 10.37 | Form of Warrant Termination Agreement. | | 8-K | 5/7/2019 |
| 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.

**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 19, 2020.

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<br>Andres Reiner | President, Chief Executive Officer, and Director<br>(Principal Executive Officer) | February 19, 2020 |
| /s/ Stefan Schulz<br>Stefan Schulz | Executive Vice President and Chief Financial Officer<br>(Principal Financial Officer) | February 19, 2020 |
| /s/ Scott Cook<br>Scott Cook | Senior Vice President and Chief Accounting Officer<br>(Principal Accounting Officer) | February 19, 2020 |
| /s/ William Russell<br>William Russell | Chairman of the Board | February 19, 2020 |
| /s/ Penelope Herscher<br>Penelope Herscher | Director | February 19, 2020 |
| /s/ Greg B. Petersen<br>Greg B. Petersen | Director | February 19, 2020 |
| /s/ Leslie J. Rechan<br>Leslie J. Rechan | Director | February 19, 2020 |
| /s/ Timothy V. Williams<br>Timothy V. Williams | Director | February 19, 2020 |
| /s/ Mariette M. Woestemeyer<br>Mariette M. Woestemeyer | Director | February 19, 2020 |
| /s/ Ronald F. Woestemeyer<br>Ronald Woestemeyer | Director | February 19, 2020 |

# 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

**John C. P. Allessio**
Executive Vice President and Chief Customer Officer

**Roberto Reiner**
Executive Vice President and Chief Technology Officer

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

**Andres D. Reiner**
President, Chief Executive Officer and Director

**Penelope Herscher** (2) (3)
Director

**Greg B. Petersen** (1) (2)
Director

**Leslie Rechan** (1) (3)
Director

**Timothy V. Williams** (1) (3)
Director

**Mariette M. Woestemeyer**

**Ronald F. Woestemeyer**

1 *Audit Committee*
2 *Compensation and Leadership Development Committee*
3 *Nominating and Corporate Governance Committee*

PROS®

# Stockholder Information

## CORPORATE OFFICES

**PROS Holdings, Inc.**
3100 Main Street, Suite 900
Houston, TX 77002
713.335.5151
www.PROS.com

## ANNUAL MEETING

Our 2020 annual stockholders meeting will be held at 8:00 a.m. Central Daylight Time on Wednesday, April 29, 2020 at our corporate offices in Houston, Texas. Only stockholders of record at the close of business on March 5, 2020 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

Stockholders 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

## 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.**