PEGASYSTEMS INC

FORM 10-K
(Annual Report)

Filed 02/12/20 for the Period Ending 12/31/19

Address	ONE ROGERS STREET
	CAMBRIDGE, MA, 02142-1209
Telephone	6173749600
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Sector	Technology
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

☒ **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**

Commission File No. 1-11859

PEGASYSTEMS INC.
(Exact name of Registrant as specified in its charter)

Massachusetts	**04-2787865**
(State or other jurisdiction of incorporation or organization)	*(IRS Employer Identification No.)*

One Rogers Street, Cambridge, MA 02142-1209
(Address of principal executive offices, including zip code)

(617) 374-9600
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading symbol(s)	Name of each exchange on which registered
Common Stock, $.01 par value per share	**PEGA**	**NASDAQ Global Select Market**

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 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 emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging 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 Exchange Act). Yes ☐ No ☒

The aggregate market value of the Registrant's common stock held by non-affiliates, based upon the closing price of the Registrant's common stock on the NASDAQ Global Select Market of $71.21, on June 28, 2019 was approximately $2.7 billion.

There were 79,657,420 shares of the Registrant's common stock, $0.01 par value per share, outstanding on February 3, 2020.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's definitive proxy statement related to its 2020 annual meeting of stockholders to be filed subsequently are incorporated by reference into Part III of this report.

PEGASYSTEMS INC.

ANNUAL REPORT ON FORM 10-K

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PART I

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K ("Annual Report"), including without limitation, "Item 1. Business," "Item 1A. Risk Factors," "Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities," and "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations," along with other reports that we have filed with the Securities and Exchange Commission (SEC), external documents and oral presentations, contains or incorporates forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, Section 21E of the Securities Exchange Act of 1934, and the Private Securities Litigation Reform Act of 1995. We claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995 for all forward-looking statements.

These forward-looking statements are based on current expectations, estimates, forecasts, and projections about the industry and markets in which we operate and management's beliefs and assumptions. In addition, other written or oral statements that constitute forward-looking statements may be made by us or on our behalf. Words such as "expect," "anticipate," "intend," "plan," "believe," "could," "estimate," "may," "target," "strategy," "project," "guidance," "likely," "usually," or variations of such words and similar expressions are intended to identify such forward-looking statements.

They include, among other things, statements regarding:

- our future financial performance and business plans;
- the adequacy of our liquidity and capital resources;
- the continued payment of our quarterly dividends;
- the timing of revenue recognition under license and cloud arrangements;
- our expectations as to the amount of revenue we will recognize in future periods from existing client contracts;
- the expected benefits to our existing and potential clients of our product and service offerings;
- the growth of our business and revenues and our expectations about the factors that influence our success and trends in our business;
- our expectation that revenue will continue to shift in favor of our subscription offerings, particularly cloud arrangements;
- our pipeline of potential future client agreements;
- our expectations regarding the impact of recent accounting pronouncements on our consolidated financial statements;
- our expectation that our net deferred tax assets will be realized in the foreseeable future, that we have adequately provided under U.S. generally accepted accounting principles for uncertain tax benefits, and that the undistributed earnings of our international subsidiaries are considered permanently reinvested; and
- the exposure to foreign currency exchange rates and continued realization of related gains or losses.

Factors that could cause our actual results to differ from those expressed in forward-looking statements include, but are not limited to, those identified in "Item 1A. Risk Factors" of this Annual Report.

Investors are cautioned not to place undue reliance on such forward-looking statements, and there are no assurances that the results contained in such statements will be achieved. Although new information, future events, or risks may cause actual results to differ materially from future results expressed or implied by such forward-looking statements, except as required by applicable law, we do not undertake and expressly disclaim any obligation to publicly update or revise these forward-looking statements whether as the result of new information, future events, or otherwise.

ITEM 1. BUSINESS

Our Business

We develop, market, license, host, and support enterprise software applications that help organizations transform the way they engage with their customers and process work across their enterprise. We also license our low-code Pega Platform™ for rapid application development to clients that wish to build and extend their business applications. Our cloud-architected portfolio of customer engagement and digital process automation applications leverages artificial intelligence ("AI"), case management, and robotic automation technology, built on our unified low-code Pega Platform, empowering businesses to quickly design, extend, and scale their enterprise applications to meet strategic business needs.

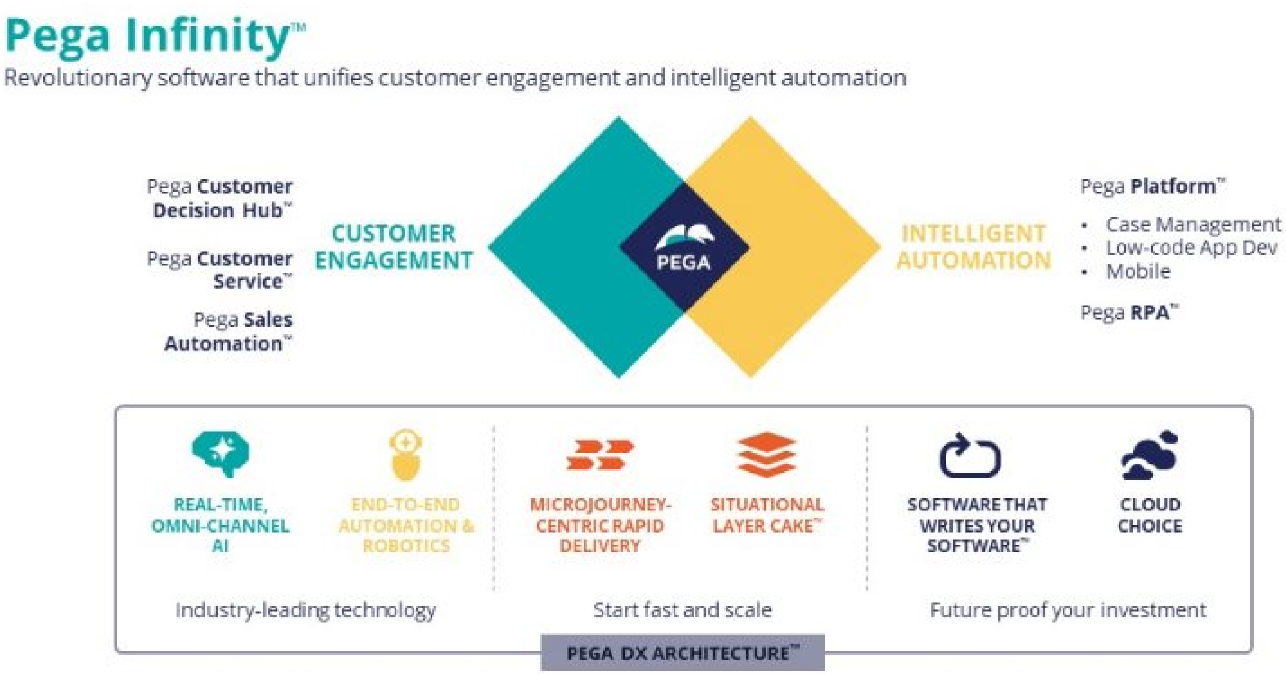
To grow our business, we intend to:

- increase market share by developing and delivering market-leading applications for marketing, sales, service, and operations that can work together seamlessly with maximum competitive differentiation;
- execute new-market growth initiatives, further expanding go-to-market coverage within the Global 3000; and
- continue to scale our marketing efforts to support the way today's clients discover, evaluate, and buy products and services.

Whether we are successful depends, in part, on our ability to:

- successfully execute our marketing and sales strategies;
- appropriately manage our expenses as we grow our organization;
- effectively develop new products and enhance our existing products; and
- successfully incorporate acquired technologies into our applications and unified Pega Platform.

Our Products



Pega Infinity™, the latest version of our software, helps connect enterprises to their customers in real-time across channels, streamline business operations, and adapt to meet changing requirements.

Our applications and platform intersect with and encompass several software markets, including:

- Customer Engagement, including Customer Relationship Management ("CRM");

- Digital Process Automation ("DPA"), including Business Process Management ("BPM") and Dynamic Case Management ("DCM");
- Robotic Process Automation ("RPA");
- Business Rules Management Systems ("BRMS");
- Decision Management, including predictive and adaptive analytics;
- Low-code application development platforms, including Mobile Application Development Platforms ("MADP"); and
- Vertical-Specific Software ("VSS") market of industry solutions and packaged applications.

Customer engagement

Our omnichannel customer engagement applications are designed to maximize the lifetime value of customers and help reduce the costs of serving customers while ensuring a consistent, unified, and personalized customer experience. At the center of our customer engagement applications is the Pega Customer Decision Hub™, our real-time AI engine, which can predict a customer's behavior and recommend the "next best action" to take across channels in real time.

- *Pega Marketing*™ is designed to enable enterprises to improve customer acquisition and experiences across inbound, outbound, and paid media channels. It incorporates AI in the form of predictive and machine-learning analytics, as well as business rules, and executes these decisions in real time to evaluate the context of each customer interaction and dynamically deliver the most relevant action, offer, content, and channel.
- *Pega Sales Automation*™ automates and manages the entire sales process, from prospecting to product fulfillment. It allows enterprises to capture best practices and leverages AI to guide sales teams through the sales and customer onboarding processes.
- *Pega Customer Service*™ is designed to anticipate customer needs, connect customers to the right people and systems, and automate or intelligently guide customer interactions, to rapidly and continuously evolve the customer service experience, and to allow enterprises to deliver consistent interactions across channels and improve employee productivity. The application consists of a contact center desktop, case management for customer service, chat, knowledge management, mobile field service, omnichannel self-service, AI-powered virtual assistants, and industry-specific processes ("microjourneys") and data models.

Digital process automation

We offer software that supports Digital Process Automation (DPA), an architecture that allows organizations to take an end-to-end approach to transformation by using intelligence and design thinking to streamline processes and create better experiences for their customers and employees. DPA goes beyond traditional Business Process Management (BPM) to unify technology and enable organization-wide digital transformation. The Pega Platform, with its intelligent automation capabilities, allows clients to break down silos, improve customer-centricity, add agility to legacy technology, and provide end-to-end automation to support the needs of customers and employees.

Our Capabilities

We drive better business outcomes in two ways:

- *Making decisions:* delivering real-time customer engagement, powered by real-time, omnichannel AI
- *Getting work done:* making customer and employee-facing processes more efficient through end-to-end automation and robotics

Real-time, omnichannel AI

AI has been around for many years, in many forms, yet only in the past decade have businesses started using its practical applications, fueled by the new abundance of data to power decisions and ever-increasing customer expectations. Our customer engagement and other applications built on the Pega Platform leverage predictive and adaptive analytics to deliver more personalized customer experiences and maximize business objectives. The Pega Customer Decision Hub, a centralized, always-on "brain," unleashes the power of predictive analytics, machine learning, and real-time decisioning across our clients' data, systems, and touchpoints - orchestrating engagement across customer interaction channels.

End-to-end robotic automation

We bring together both human-assisted robotic desktop automation and unattended robotic process automation with our unified DPA and case management capabilities. This gives our platform and applications the ability to automate both customer-facing and back-office operational processes from "end to end," connecting across organizational and system silos to seamlessly connect customers and employees to successful customer experiences.

Journey-centric rapid delivery

Our customer engagement and DPA solutions are designed to improve targeted customer outcomes, quickly and with out-of-the-box functionality that connects enterprise data and systems to customer experience channels. From there, organizations can scale, one customer experience at a time, to realize greater value while delivering increasingly consistent and personalized customer experiences. We prescribe a “Microjourney™” approach to delivery that breaks customer journeys into discrete processes that drive meaningful outcomes, such as “inquiring about a bill” or “updating an insurance policy.” This allows us to combine design-thinking and out-of-the-box functionality to deliver rapid results and ensure the ability to enhance the application going forward.

Software That Writes Your Software®

Our approach bypasses the error-prone and time-consuming process of manually translating requirements into code. Users design software in low-code visual models that reflect the needs of the business. The software application is created and optimized automatically and directly from the model, helping to close the costly gap between vision and execution. Changes to the code are made by altering the model, and application documentation is generated directly from the model. The Pega Platform is standards-based and can leverage a client’s existing technology to create new business applications that cross technology silos and bridge the front and back-office.

Unified future-proof platform

We offer a unified DPA platform, combining robotics, process automation, and case management together in a unified architecture. We build in powerful decision analytics, designed to allow our clients to automate any process while working faster and smarter. Our low-code architecture is designed to empower organizations to scale across all dimensions of their business, including product lines, departments, and geographies, by reusing components and avoiding the traditional method of deploying multiple customer engagement and DPA instances that lead to even more silos and disjointed customer experiences.

Cloud choice

Pega Cloud® allows clients to develop, test, and deploy, on an accelerated basis, our applications and the Pega Platform using a secure, flexible internet-based infrastructure, minimizing cost while focusing on core revenue-generating competencies.

Clients can also choose to manage the Pega deployment themselves (“client cloud”) using the cloud architecture they prefer. This cloud choice between Pega and client managed cloud gives our clients the ability to select, and change as needed, the best cloud architecture for the security, data access, speed-to-market, and budget requirements of each application they deploy.

Our Services and Support

We offer services and support through our Global Client Success, Global Service Assurance, Global Client Support, and Pega Academy™ groups. We also use third-party contractors to assist us in providing these services.

Global Client Success

Our Global Client Success group guides our clients on how to maximize their investment in our technology and realize the business outcomes they are targeting. This includes building implementation expertise and creating awareness of product features and capabilities.

Global Service Assurance

Our Global Service Assurance group addresses risks to client success because of technical concerns. By providing technical staff dedicated to client success, we reduce the time to resolve technical issues, eliminate lengthy deliberations of technical resource logistics, and increase clients’ confidence in our technology and client service.

Global Client Support

Our Global Client Support group provides technical support for our products and Pega Cloud services. Support services include cloud service reliability management, online support community management, self-service knowledge, proactive problem prevention through information and knowledge sharing, problem tracking, prioritization, escalation, diagnosis, and resolution.

Pega Academy

The success of our sales strategy for repeat sales to target clients depends on our ability to train a large number of partners and clients to implement our technology.

We offer both instructor-led and online training to our employees, clients, and partners. We have also partnered with universities to provide our courseware as part of the student curriculum to expand our ecosystem.

Our Partners

We collaborate with global systems integrators and technology consulting firms that provide consulting services to our clients. Strategic partnerships with these firms are important to our sales efforts, because they influence buying decisions, help us to identify sales opportunities, and complement our software with their domain expertise and services capabilities. These partners may deliver strategic business planning, consulting, project management, and implementation services to our clients.

Currently, our partners include well-respected major firms, such as Accenture PLC, Amazon.com, Inc., Capgemini SA, Cognizant Technology Solutions Corporation, EY, Infosys Limited, Merkle, PwC, Tata Consultancy Services Limited, Tech Mahindra Limited, Virtusa Corporation, and Wipro Limited.

Our Markets

Target Clients

Our target clients are Global 3000 organizations and government agencies that require applications to differentiate themselves in the markets they serve. Our applications achieve and facilitate differentiation by increasing business agility, driving growth, improving productivity, attracting and retaining customers, and reducing risk. We deliver applications tailored to our clients' specific industry needs.

Our clients represent many industries, including:

- *Financial services* - Financial services organizations rely on software to market, onboard, cross-sell, retain, and service their customers, as well as automate the operations that support these customer interactions. Our customer service, sales, new account onboarding, Know Your Customer ("KYC"), marketing, collections, and dispute management applications allow clients to be responsive to changing business requirements.
- *Healthcare* - Healthcare organizations seek software that integrates their front and back-offices and helps them deliver personalized care and customer service while reducing costs, automating processes, and increasing operational efficiency. Our applications allow healthcare clients to address the sales, service, operational, financial, administrative, and regulatory requirements of healthcare consumerism and reform.
- *Manufacturing and high tech* - Manufacturers and high tech companies worldwide are transforming their businesses to better engage customers and suppliers, as well as to directly manage product performance throughout the product lifecycle. Our manufacturing applications address customer service and field service, manage warranties, recalls, repairs, returns, improve the performance of direct sales forces, and extend existing enterprise resource planning system capabilities.
- *Communications and media* - Communications and media organizations need to address high levels of customer churn, growing pressure to increase revenue, and an ability to respond quickly to changing market conditions. Our applications enable organizations to reshape the way they engage with customers and increase customer lifetime value throughout the customer lifecycle by delivering omnichannel, personalized customer experiences. Our applications are designed to solve the most critical business issues, including acquiring more customers at a higher margin, increasing cross-sell/upsell, improving the efficiency and effectiveness of customer service, and streamlining sales and quoting.
- *Insurance* - Insurance companies, whether competing globally or nationally, need software to automate the key activities of distribution management, quoting, underwriting, claims, and policy servicing. Insurers are also becoming increasingly sensitive to ways to improve customer service and the overall customer experience. Our applications for insurance carriers are designed to help increase business value by delivering customer-focused experiences and personalized interactions that help drive higher sales, lower expense ratios, and mitigate risk.
- *Government* - Government agencies need to modernize legacy systems and processes to meet the growing demands for improved constituent service, lower costs, reduced fraud, and greater levels of transparency. Our applications deliver advanced capabilities to help streamline operations and optimize service delivery through an agile, omnichannel approach.
- *Consumer services* - Consumer services organizations provide services to a range of consumers in industries such as transportation, utilities, consumer-focused internet companies, retail, hospitality, and entertainment. Our marketing, customer service, and sales applications help these organizations personalize their customer engagement to acquire more customers, drive revenue through cross-sell/upsell, and increase service efficiency while increasing customer satisfaction.
- *Life sciences* - Life sciences organizations are looking for solutions to improve customer engagement, as well as increase efficiencies and transparency across the product development lifecycle. Our customer engagement, clinical, and pharmacovigilance applications are designed to deliver customer engagement, safety and risk management, and regulatory transparency.

Competition

The markets for our offerings are intensely competitive, rapidly changing, and highly fragmented, as current competitors expand their product offerings and new companies enter the market. See "The market for our offerings is intensely and increasingly competitive, rapidly changing, and fragmented" in Item 1A of this Annual Report for additional information.

We encounter competition from:

- customer engagement, including CRM application vendors;
- DPA, including BPM vendors, low-code application development platforms, and service-oriented architecture middleware vendors;
- case management vendors;
- decision management, data science, and AI vendors, as well as vendors of solutions that leverage decision making and data science in managing customer relationships and marketing;
- robotic automation and workforce intelligence software providers;

- companies that provide application-specific software for financial services, healthcare, insurance, and other specific markets;
- mobile application platform vendors;
- co-browsing software providers;
- social listening, text analytics, and natural language processing vendors;
- commercialized open source vendors;
- professional service organizations that develop their own products or create custom software in conjunction with rendering consulting services; and
- clients' in-house information technology departments, which may seek to modify their existing systems or develop their own proprietary systems.

Competitors vary in size, scope, and breadth of the products and services they offer and include some of the largest companies in the world, such as Salesforce.com, Microsoft Corporation, Oracle Corporation, SAP SE, and International Business Machines Corporation ("IBM").

We have been most successful in competing for clients whose businesses are characterized by a high degree of change, complexity, or regulation. We believe the principal competitive factors within our market include:

- product adaptability, scalability, functionality, and performance;
- proven success in delivering cost-savings and efficiency improvements;
- proven success in enabling improved customer interactions;
- ease-of-use for developers, business units, and end-users;
- timely development and introduction of new products and product enhancements;
- establishment of a significant base of reference clients;
- ability to integrate with other products and technologies;
- customer service and support;
- product price;
- vendor reputation; and
- relationships with systems integrators.

We believe we are competitively differentiated from our competitors because our unified Pega Platform is designed to allow client business and IT staff, using a single, intuitive user interface, to build and evolve enterprise applications in a fraction of the time it would take with disjointed architectures and tools offered by many of our competitors. In addition, our applications, built on the Pega Platform, provide the same level of flexibility and ability to adapt to our clients' needs as our Pega Platform. We believe we compete favorably due to our expertise in our target industries and our long-standing client relationships. We believe we compete less favorably on some of the above factors against our larger competitors, many of which have greater sales, marketing, and financial resources, more extensive geographical presence, and greater name recognition than we do. In addition, we may be at a competitive disadvantage against our larger competitors with respect to our ability to provide expertise outside our target industries.

Intellectual Property

We rely primarily on a combination of copyright, patent, trademark, and trade secrets laws, as well as confidentiality and intellectual property agreements to protect our proprietary rights. We have obtained patents relating to our system architecture and products in strategic global markets. We enter into confidentiality, intellectual property ownership, and license agreements with our employees, partners, clients, and other third parties. We also control access to and ownership of software, services, documentation, and other proprietary information to protect our proprietary rights.

Sales and Marketing

We sell our software and services primarily through a direct sales force. In addition, strategic partnerships with management consulting firms and major systems integrators are important to our sales efforts, because they influence buying decisions, help us identify sales opportunities, and complement our software and services with their domain expertise and consulting capabilities. We also partner with technology providers and application developers.

To support our sales efforts, we conduct a broad range of marketing programs, including awareness advertising, client and industry-targeted solution campaigns, trade shows, including our PegaWorld® user conference, solution seminars and webinars, industry analyst and press relations, web and digital marketing, community development, social media presence, and other direct and indirect marketing efforts. Our consulting employees, business partners, and other third parties also conduct joint and separate marketing campaigns that generate sales leads for us.

Research and Development

Our research and development organization is responsible for product architecture, core technology development, product testing, and quality assurance. Our product development priority is to continue expanding the capabilities of our technology and ensure we deliver superior cloud native solutions. We intend to maintain and extend the support of our existing applications, and we may choose to invest in additional strategic applications that incorporate the latest business innovations. We also intend to maintain and extend the support of popular hardware platforms, operating systems, databases, and connectivity options to facilitate easy and rapid deployment in diverse IT infrastructures. Our goal with all products is to enhance product capabilities, ease of implementation, long-term flexibility, and the ability to provide improved client service.

Employees

As of January 31, 2020, we had 5,155 employees worldwide, of which 2,175 were based in the Americas, 1,148 were based in Europe, and 1,832 were based in Asia-Pacific.

Backlog

As of December 31, 2019, we expected to recognize $836 million in revenue in future periods from backlog on existing contracts. We must fulfill certain conditions related to these agreements before recognizing revenue, and there can be no assurance when, if ever, we will be able to satisfy all such conditions.

See "Remaining performance obligations ("Backlog")" in Item 7 of this Annual Report for additional information.

Corporate Information

Pegasystems Inc. was incorporated in Massachusetts in 1983. Our stock is traded on the NASDAQ Global Select Market under the symbol “PEGA.” Our website is located at www.pega.com, and our investor relations website is located at www.pega.com/about/investors.

Available Information

We make available our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to these reports, free of charge through our website as soon as reasonably practicable after we electronically file such material with, or furnish such material to, the SEC. We also make available on our website reports filed by our executive officers and directors on Forms 3, 4, and 5 regarding their ownership of our securities. Our Code of Conduct is available on our website in the “Governance” section.

The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at www.sec.gov.

ITEM 1A. RISK FACTORS

The risks and uncertainties described below are not the only ones we face. Events that we do not currently anticipate or that we currently expect to be immaterial may also affect our results of operations, cash flows, and financial condition.

Risks Related to Our Business and Industry

If we fail to manage our transition to a more subscription-based business model successfully, our results of operations and/or cash flows could be negatively impacted.

We are transitioning to a more subscription-based business model, which may have negative revenue and/or cash flow implications. The subscription model prices and delivers our software differently than a perpetual license model. These changes reflect a significant shift from perpetual license sales in favor of providing our clients the right to access our software in a hosted environment or use downloaded software for a specified subscription period. The potential shift of our clients’ preference to a cloud-based subscription model requires considerable investment of technical, financial, legal, managerial and sales resources, and a scalable organization. Market acceptance of our subscription-based offering will depend on our ability to (1) continue to innovate and include new functionality and improve usability of our products in a manner that addresses our clients’ needs and requirements, and (2) optimally price our products in light of marketplace conditions, competition, our costs, and client demand.

Our cloud-based subscription model also requires that we rely on third parties to host our products for our clients. We incur significant recurring third-party hosting expenses to deliver our cloud offering that we do not incur for our perpetual and term license products. These expenses may cause the gross margin we realize from our cloud sales to be lower than the gross margin we realize from our perpetual license software. If we are unable to meet these challenges effectively, our operating results and financial condition could be materially adversely affected.

The transition to a subscription-based business model gives rise to a number of risks, including the following:

- our revenues and cash flows may fluctuate more than anticipated in the near term;

- if the increased demand for our offerings does not continue, we could experience decreased profitability or losses and reduced or negative cash flow because of our continued significant investments in our cloud offering;
- if new or current clients desire only perpetual licenses, our subscription sales may lag behind our expectations;
- we may be unsuccessful in maintaining or implementing our target pricing or new pricing models, product adoption and projected renewal rates, or we may select a target price or new pricing model that is not optimal and could negatively affect our sales or earnings;
- if our clients do not renew their subscriptions, our revenue may decline, and our business may be materially adversely affected; and
- we may incur sales compensation costs at a higher than forecasted rate if the pace of our subscription transition is faster than anticipated.

The metrics our investors and we use to gauge the status of our business model transition may evolve over the course of the transition as significant trends emerge. It may be difficult, therefore, to accurately determine the impact of this transition on our business on a contemporaneous basis, or to clearly communicate the appropriate metrics to our investors.

We may not be able to achieve the key elements of our strategy and grow our business as anticipated.

We currently intend to grow our business by pursuing strategic initiatives. Key elements of our strategy include growing our market share by developing and delivering robust applications that can work together seamlessly with maximum differentiation and minimal customization, offering versatility in our Pega Platform and application deployment and licensing options to meet the specific needs of our clients, growing our network of partner alliances, and developing the talent and organizational structure capable of supporting our revenue and earnings growth targets. We may not be able to achieve one or more of our key initiatives. Our success depends on our ability to appropriately manage our expenses as we grow our organization, successfully execute our marketing and sales strategies, successfully incorporate acquired technologies into our unified Pega Platform and develop new products or product enhancements. If we are not able to execute these actions, our business may not grow as we anticipate, and our operating results and financial condition could be materially adversely affected.

We depend on key personnel and must be able to attract and retain qualified personnel in the future.

Our business is dependent on key, highly skilled technical, managerial, consulting, sales, and marketing personnel, including our Chief Executive Officer, who is also our founder and majority stockholder. The loss of key personnel could be disruptive to our operations and materially adversely affect financial performance. We do not have any significant key-person life insurance on any officers or employees and do not plan to obtain any. Our success will depend in large part on the ability to attract and retain qualified personnel and rapidly replace and develop new management. The number of potential employees who have the extensive knowledge needed to develop, sell, and maintain our offerings is limited, and competition for their services is intense. There can be no assurance that we will be able to attract and retain such personnel. If we are unable to do so, our business, operating results, and financial condition could be materially adversely affected.

The timing of our license and cloud revenue is difficult to predict accurately, which may cause our operating results to vary considerably.

A change in the size or volume of license and cloud arrangements, or a change in the mix between perpetual licenses, term licenses, and cloud arrangements can cause our revenues and cash flows to fluctuate materially between periods. Should a client choose to enter into a cloud arrangement, revenue and cash flows are typically recognized and received over the service period of the cloud arrangement. In contrast with a perpetual or term license, the revenue is typically recognized upfront when the license rights become effective.

Factors that may influence the predictability of our license and cloud revenue include:

- changes in clients' budgets and decision-making processes that could affect both the timing and size of transactions;
- deferral of license revenue to future periods due to the timing of the execution of an agreement or our ability to deliver the products or services;
- changes in our business model; and
- our ability to execute on our marketing and sales strategies.

We budget for our selling and marketing, product development, and other expenses based upon anticipated future bookings and revenue. If the timing or amount of revenue fails to meet our expectations in a given period, our financial performance is likely to be materially adversely affected because only a small portion of our expenses vary with revenue. Other factors that may cause our operating results to vary considerably include changes in foreign currency exchange rates, income tax effects, and the impact of new accounting pronouncements.

As a result, period-to-period comparisons of our operating results are not necessarily meaningful and should not be relied upon to predict future performance. If our revenues and operating results do not meet the expectations of our investors or securities analysts or fall below guidance we may provide to the market, or due to other factors discussed elsewhere in this section, the price of our common stock may decline.

The number of license and cloud arrangements has been increasing, and we may not be able to sustain this growth unless our partners and we can provide sufficient high-quality consulting, training, and maintenance resources to enable our clients to realize significant business value from our software.

Our clients typically request consulting and training to assist them in implementing our license and cloud offerings. Our clients also typically purchase maintenance on our perpetual and term licenses. As a result, an increase in the number of license and cloud arrangements is likely to increase demand for consulting, training, and maintenance related to our offerings. Given that the number of our license and cloud arrangements has been increasing, we will need to provide our clients with more consulting, training, and maintenance to enable them to realize significant business value from our software. We have been increasing our partner and client enablement through training to create an expanded ecosystem of people that are skilled in the implementation of our products. However, if our partners and we are unable to provide sufficient high-quality consulting, training, and maintenance resources, our clients may not realize sufficient business value from our offerings to justify follow-on sales, which could impact our future financial performance. Further, some of our client engagements have high public visibility. If we or our partners encounter problems in helping these clients implement our license and cloud offerings or if there is negative publicity regarding these engagements (even if unrelated to our services or offerings) our reputation could be tarnished and our future financial performance could be negatively impacted. Finally, the investments required to meet the increased demand for our consulting services could strain our ability to deliver our consulting engagements at desired levels of profitability, thereby impacting our overall profitability and financial results.

We may not be able to maintain our retention rate for cloud clients.

An increasing percentage of our revenue has been derived from our cloud offerings. Our clients have no obligation to renew their cloud subscriptions, although historically most have elected to do so. If our retention rate for those clients were to decrease, our business, operating results, and financial condition could be materially adversely affected.

We are investing heavily in sales and marketing, research and development, and support resources in anticipation of continued growth in license and cloud arrangements, and we may experience decreased profitability or losses and reduced or negative cash flow if we do not continue to increase the value of our license and cloud arrangements to balance our growth in expenses.

We have been expanding our sales and marketing capacity to meet the increasing demand for our software and to broaden our market coverage by hiring additional sales and marketing personnel. We anticipate that we will need to provide our clients with more maintenance support because of this increase in demand and have been hiring additional personnel in this area. We continue to invest significantly in research and development to expand and improve the Pega Platform and applications. These investments have resulted in increased fixed costs that do not vary with the level of revenue. If the increased demand for our offerings does not continue, we could experience decreased profitability or losses and reduced or negative cash flow because of these increased fixed costs. Conversely, if we are unable to hire sales and marketing personnel to meet future demand or research and development personnel to enhance our current products or develop new products, we may not be able to achieve our sales and profitability targets.

We face risks from operations and clients based outside of the U.S.

We market our products and services to clients based outside of the U.S., which represent an average of 44% of our total revenue over the last three fiscal years. We have established offices in the Americas, Europe, Asia, and Australia. We believe that growth will necessitate expanded international operations, resulting in increased managerial attention and costs. We anticipate hiring additional personnel to accommodate increased international market demand, and we may also enter into agreements with local distributors, representatives, or resellers. If we are unable to do one or more of these things in a timely and effective manner, the growth, if any, of our international operations may be restricted, and our business, operating results, and financial condition could be materially adversely affected.

Additional risks inherent in our international business activities generally include:

- laws and business practices favoring local competitors;
- compliance with multiple, conflicting, and changing governmental laws and regulations, including employment, tax, privacy and data privacy and protection, and increased tariffs and other trade barriers;
- the costs of localizing offerings for local markets, including translation into foreign languages and associated expenses;
- longer payment cycles and credit and collectability risk on our foreign trade receivables;
- economic and political uncertainty around the world, such as the U.K.'s exit from the European Union (EU), commonly referred to as "Brexit";

- difficulties in enforcing contractual and intellectual property rights;
- heightened fraud and bribery risks;
- treatment of revenue from international sources and changes to tax codes, including being subject to foreign tax laws, being liable for paying withholding, income or other taxes in foreign jurisdictions, and other potentially adverse tax consequences (including restrictions on repatriating earnings and the threat of "double taxation");
- management of our international operations, including increased accounting, internal control, and compliance expenses;
- heightened risks of political and economic instability; and
- foreign currency exchange rate fluctuations and controls.

There can be no assurance that one or more of these factors will not have a material adverse effect on our international operations and, consequently, on our business, operating results, and financial condition.

We rely on certain third-party relationships.

We have a number of relationships with third parties that are significant to our sales, marketing, support, and product development efforts, including hosting facilities for our cloud offering. We rely on software and hardware vendors, large system integrators, and technology consulting firms to supply marketing and sales opportunities for our direct sales force and to strengthen our products using industry-standard tools and utilities. We also have relationships with third parties that distribute our products. There can be no assurance that these companies, many of which have far greater financial and marketing resources than us, will not develop or market offerings that compete with ours in the future or will not otherwise end or limit their relationships with us. Further, the use of third-party hosting facilities requires us to rely on the functionality and availability of the third parties' services, as well as their data security, which despite our due diligence, may be or become inadequate.

We are exposed to fluctuations in currency exchange rates that could negatively impact our financial results and cash flows.

Because a significant portion of our business is conducted outside of the U.S., we face exposure to movements in foreign currency exchange rates. Our international sales are usually denominated in foreign currencies. The operating expenses of our foreign operations are also primarily denominated in foreign currencies, which partially offset our foreign currency exposure on our international sales. Our results of operations and cash flows are subject to fluctuations due to changes in foreign currency exchange rates, particularly changes in the U.S. dollar, the Euro, and the Australian dollar relative to the British Pound. These exposures may change over time as business practices evolve.

We have historically used but do not currently use foreign currency forward contracts to hedge our exposure to changes in foreign currency exchange rates associated with our foreign currency-denominated cash, accounts receivable, and intercompany receivables and payables held by our U.S. parent company and its U.K. subsidiary. We may enter into hedging contracts again in the future if we believe it is appropriate.

Our realized gain or loss for foreign currency fluctuations will generally depend on the size and type of cross-currency exposures that we enter into, the currency exchange rates associated with these exposures and changes in those rates, whether we have entered into forward contracts to offset these exposures and other factors. All of these factors could materially impact our operating results, financial condition, and cash flows.

Our consulting revenue is significantly dependent upon our consulting personnel implementing new license and cloud arrangements.

We derive a substantial portion of our consulting revenue from implementations of new license and cloud arrangements managed by our consulting personnel and consulting for partner and client-led implementation efforts. Our strategy is to support and encourage partner-led and client-led implementations to increase the breadth, capability, and depth of market capacity to deliver implementation services to our clients. Accordingly, if our consulting personnel's involvement in future implementations decreases, this could materially adversely affect our consulting revenue.

We frequently enter into a series of license or cloud arrangements that are each focused on a specific purpose or area of operations. If we are not successful in obtaining follow-on business from these clients, our financial performance could be materially adversely affected.

Once a client has realized the value of our software, we work with the client to identify opportunities for follow-on sales. However, we may not be successful in demonstrating this value for a number of reasons, including the performance of our products, the quality of the services and support provided by our partners and us, or external factors. Also, some of our smaller clients may have limited additional sales opportunities available. We may not obtain follow-on sales, or the follow-on sales may be delayed, and our future revenue could be limited. This could lower the total value of all transactions and materially adversely affect our financial performance.

We will need to acquire or develop new products, evolve existing ones, address any defects or errors, and adapt to technology changes.

Technical developments, client requirements, programming languages, industry standards, and regulatory requirements frequently change in the markets in which we operate. The introduction of third-party solutions embodying new technologies and the emergence of new industry standards could make our existing and future software solutions obsolete and unmarketable. As a result, our success will depend upon our ability to enhance current products, address any product defects or errors, acquire or develop and introduce new products that meet client needs, keep pace with technology and regulatory changes, respond to competitive products, and achieve market acceptance. Product development requires substantial investments for research, refinement, and testing. We may not have sufficient resources to make the necessary product development investments. We may experience technical or other difficulties that will delay or prevent the successful development, introduction, or implementation of new or enhanced products. We may also experience technical or other difficulties in the integration of acquired technologies into our existing platform and applications. Inability to introduce or implement new or enhanced products in a timely manner could result in loss of market share if competitors are able to provide solutions to meet client needs before we do, give rise to unanticipated expenses related to further development or modification of acquired technologies, and materially adversely affect our financial performance. We may also fail to adequately anticipate and prepare for the development of new markets and applications for our technology and the commercialization of emerging technologies such as blockchain and thereby fail to take advantage of new market opportunities or fall behind early movers in those markets.

The market for our offerings is intensely and increasingly competitive, rapidly changing, and fragmented.

We compete in the CRM, including marketing, sales, and customer service, DPA, including BPM, case management, decision management, robotic automation, co-browsing, social engagement, and mobile application development platform software markets, as well as in markets for the vertical applications we provide (e.g., Pega KYC™ for Financial Services, Pega Underwriting™ for Insurance). These markets are intensely competitive, rapidly changing, and highly fragmented, as current competitors expand their product offerings and new companies enter the market.

We encounter significant competition from other technology vendors, as well as clients' internal information systems departments, that seek to modify their existing systems or develop their own proprietary systems, and professional service organizations that develop their own products or create custom software in conjunction with rendering consulting services. Competition for market share and pressure to reduce prices and make sales concessions is likely to increase. Many of our competitors, such as Salesforce.com, Microsoft Corporation, Oracle Corporation, SAP SE, and International Business Machines Corporation ("IBM"), have far greater resources than we do and may be able to respond more quickly and efficiently to new or emerging technologies, programming languages, or standards, or changes in client requirements or preferences. Competitors may also be able to devote greater managerial and financial resources to develop, promote, and distribute products and to provide related consulting and training services. There can be no assurance that we will be able to compete successfully against current or future competitors or that the competitive pressures faced by us will not materially adversely affect our business, operating results, and financial condition. See "Competition" in Item 1 of this Annual Report for additional information.

The continued uncertainties in the global economy may negatively impact our sales to, and the collection of receivables from, our clients.

Our sales to, and the collection of receivables from, our clients may be impacted by adverse changes in global economic conditions. The U.S. and other key international economies have experienced cyclical downturns from time to time, during which economic activity has been impacted by falling demand for goods and services, restricted credit, poor liquidity, reduced corporate profitability, volatility in credit, equity, and foreign exchange markets, bankruptcies, and economic uncertainty. These changes in global economic conditions could impact the ability and willingness of our clients to make investments in technology, which in turn may delay or reduce the purchases of our software and services. These factors could also impact the ability and willingness of these clients to pay their trade obligations and honor their contractual commitments. These clients may also become subject to increasingly restrictive regulatory requirements, which could limit or delay their ability to proceed with technology purchases and may result in longer sales cycles, increased price competition, and reductions in sales of our products and services. The financial uncertainties facing many of our clients and the industries in which they operate could negatively impact our business, operating results, and financial condition.

Risks Related to Information Technology Resilience and Security

We face risks related to outages, data losses, and disruptions of our online services if we fail to maintain an adequate operations infrastructure.

The increasing user traffic for our cloud offering demands more computing power. It requires that we maintain an internet connectivity infrastructure that is robust and reliable within competitive and regulatory constraints that continue to evolve. Inefficiencies or operational failures, including temporary or permanent loss of client data, power outages, or telecommunications infrastructure outages, by us or our third-party service providers could diminish the quality of our user experience resulting in contractual liability, claims by clients and other third parties, damage to our reputation, loss of current and potential clients, and harm to our operating results and financial condition.

Security of our systems and global client data is a growing challenge on many fronts. Cyber-attacks and security breaches may expose us to significant legal and financial liabilities.

Our cloud offering provides environments that are provisioned, monitored, and maintained for individual clients to create and deploy Pega-based applications using an Internet-based infrastructure. These services involve the storage and transmission of clients' data and other confidential information. Security breaches could expose our clients and us to a risk of loss or misuse of this information. Any security breach could result in a loss of confidence in the security of our services, damage our reputation, disrupt our business, lead to legal liability, and negatively impact our future sales. High-profile security breaches at other companies have increased in recent years, and security industry experts and government officials have warned about the risks of hackers and cyber-attackers targeting information technology products and businesses. Threats to IT security can take a variety of forms. Individual hackers, groups of hackers, and sophisticated organizations including state-sponsored organizations, or nation-states themselves, may take steps that pose threats to our clients and IT structure.

Our security measures and those of our clients may be breached because of third-party actions or that of employees, consultants, or others, including intentional misconduct by computer hackers, system error, human error, technical flaws in our products, or otherwise. The techniques used to obtain unauthorized access or to sabotage systems change frequently and generally are not recognized until launched against a target. While we have invested in the protection of our data and systems and our clients' data to reduce these risks, there can be no assurance that our efforts will prevent breaches. We carry data breach insurance coverage to mitigate the financial impact of a breach, though this may prove insufficient in the event of a breach.

Our cloud offering involves the hosting of clients' applications on the servers of third-party technology providers. We also rely on third-party systems and technology, including encryption, virtualized infrastructure, and support, and we employ a shared security model with our clients and our third-party technology providers. Because we do not control the configuration of Pega applications by our clients, the transmissions between our clients and our third-party technology providers, the processing of data on the servers at third-party technology providers, or the internal controls maintained by our clients and third-party technology providers that could prevent unauthorized access or provide appropriate data encryption, we cannot fully ensure the complete integrity or security of such transmissions processing or controls. In addition, privacy, security, and data transmission concerns in some parts of the world may inhibit demand for our cloud offering or lead to requirements to provide our products or services in configurations that may increase the cost of serving such markets.

To defend against security threats, we need to continuously engineer products and services with enhanced security and reliability features, improve the deployment of software updates to address security vulnerabilities, apply technologies that mitigate the risk of attacks, and maintain a digital security infrastructure that protects the integrity of our network, products, and services. The cost of these steps could negatively impact our operating results.

We may experience significant errors or security flaws in our products and services and could face privacy, product liability, and warranty claims as a result.

Despite quality testing prior to its release, our software frequently contains errors or security flaws, especially when first introduced or when new versions are released. Errors in our software could affect its ability to work with hardware or other software or could delay the development or release of new products or new versions of our software. Additionally, the detection and correction of any security flaws can be time-consuming and costly. Errors or security flaws in our software could result in the inadvertent disclosure of confidential information or personal data relating to our clients, employees, or third parties. Software errors and security flaws in our products or services could expose us to privacy, product liability, and/or warranty claims as well as harm our reputation, which could impact our future sales of products and services. Typically, we enter into license agreements that contain provisions intended to limit the nature and extent of our risk of product liability and warranty claims. There is a risk that a court might interpret these terms in a limited way or could hold part or all of these terms to be unenforceable. Also, there is a risk that these contract terms might not bind a party other than the direct client. Furthermore, some of our licenses with our clients are governed by non-U.S. law, and there is a risk that foreign law might give us less or different protection. Although we have not experienced any material product liability claims to date, a product liability suit or action claiming a breach of warranty, whether meritorious, could result in substantial costs and a diversion of management's attention and our resources.

Any failure to meet our debt obligations or a disruption in our cash flows could have an adverse effect on our financial condition, results of operations, or cost of borrowing.

Our ability to fulfill our financial obligations, including the repayment of any amounts we borrow, will depend on market conditions, our future performance, and our ability to fund working capital, capital expenditures, acquisitions, and other general corporate requirements, which are subject to economic, financial, competitive, and other factors beyond our control. If we are not profitable in the future, or if we use more cash than we generate in the future, our level of indebtedness at such time could materially adversely affect our operations by increasing our vulnerability to adverse changes in general economic and industry conditions and by limiting or prohibiting our ability to obtain additional financing for additional capital expenditures, acquisitions, and general corporate and other purposes. If we incur significantly more debt, this could intensify the risks described above.

We are required to comply with certain financial and operating covenants under our revolving credit facility. Any failure to comply with these covenants could cause amounts borrowed to become immediately due and payable and/or prevent us from borrowing under the credit facility.

We are required to comply with specified financial and operating covenants under our credit facility and to make payments, which limit our ability to operate our business as we otherwise might. Our failure to comply with any of these covenants or to meet any debt payment obligations could result in an event of default which, if not cured or waived, would result in any amounts outstanding, including any accrued interest and/or unpaid fees, becoming immediately due and payable. We might not have sufficient working capital or liquidity to satisfy any repayment obligations in the event of an acceleration of those obligations. In addition, if we are not in compliance with the financial and operating covenants under the credit facility at the time we wish to borrow funds, we will be unable to borrow funds. The financial and operating covenants under the credit facility also may limit our ability to borrow funds or capital, including for strategic acquisitions, share repurchases, and other general corporate purposes.

Risks Related to Government Regulation and Intellectual Property

Our success depends in part on maintaining and increasing our sales to customers in the public sector.

We derive a portion of our revenues from contracts with federal, state, local, and foreign governments and agencies, and we believe that the success and growth of our business will continue to depend on our successful procurement of government contracts. Selling to government entities can be highly competitive, expensive, and time-consuming, often requiring significant upfront time and expense without any assurance that our efforts will produce any sales. Factors that could impede our ability to maintain or increase the amount of revenues derived from government contracts include:

- changes in fiscal or contracting policies;
- decreases in available government funding;
- changes in government programs or applicable requirements;
- the adoption of new laws or regulations or changes to existing laws or regulations;
- potential delays or changes in the government appropriations or other funding authorization processes;
- governments and governmental agencies requiring contractual terms that are unfavorable to us, such as most-favored-nation pricing provisions; and
- delays in the payment of our invoices by government payment offices.

The occurrence of any of the foregoing could cause governments and governmental agencies to delay or refrain from purchasing our software in the future or otherwise have an adverse effect on our business, results of operations, financial condition, and cash flows.

Further, to increase our sales to customers in the public sector, we must comply with laws and regulations relating to the formation, administration, performance, and pricing of contracts with the public sector, including U.S. federal, state and local governmental bodies, which affect how we and our channel partners do business in connection with governmental agencies. These laws and regulations may impose added costs on our business, and failure to comply with these laws and regulations or other applicable requirements, including non-compliance in the past, could lead to claims for damages from our channel partners or government customers, penalties, termination of contracts, loss of intellectual property rights and temporary suspension or permanent debarment from government contracting. Any such damages, penalties, disruptions, or limitations in our ability to do business with the public sector could have a material adverse effect on our business, results of operations, financial condition, and cash flows.

The U.K.'s withdrawal from the EU (commonly referred to as "Brexit") on January 31, 2020 could have a material impact on our business, including our relationships with existing and future clients, suppliers, and employees, which could have an adverse effect on our financial results and operations.

The final terms of the U.K.'s relationship with the EU are not currently known. We have material operations in the U.K. and EU. The ultimate effects, or perceived effects, of the U.K.'s decision could potentially disrupt the markets we serve and the tax jurisdictions in which we operate. In addition, Brexit could lead to legal uncertainty as the U.K. determines which EU laws to replace or replicate.

We are subject to increasingly complex U.S. and foreign laws and regulations, requiring costly compliance measures, and any failure to comply with these laws and regulations could subject us to, among other things, penalties and legal expenses that could harm our reputation or have a material adverse effect on our business, financial condition, and results of operations.

We are subject to extensive federal, state, and foreign laws and regulations, including but not limited to the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act, data privacy and security laws, and similar laws and regulations. The Foreign Corrupt Practices Act, the U.K. Bribery Act, and similar foreign anti-bribery laws generally prohibit companies and their intermediaries from making improper payments to obtain or retain business. Similar laws and regulations exist in many other countries throughout the world in which we do or intend to do business. Data privacy laws and regulations in Europe, Australia, Latin America, and elsewhere are undergoing a rapid transformation toward increased restrictions.

In April 2016, the European Parliament adopted the General Data Protection Regulation ("GDPR"). It became effective in May 2018. The GDPR extends the scope of European privacy laws to any entity which controls or processes personal data of EU residents in connection with the offer of goods or services or the monitoring of behavior and imposes new compliance obligations concerning the handling of personal data. Complying with the GDPR and other emerging and changing requirements caused us to incur additional costs in fiscal year 2019 and may cause us to incur substantial additional costs or require us to change our business practices. Compliance also depends on how regulators choose to interpret and apply the new requirements. Moreover, non-compliance, or if regulators assert we have not complied, with GDPR could result in significant monetary penalties of up to the higher of 20 million Euro or 4% of annual worldwide revenue, private lawsuits, and damage to our reputation, which could have a material adverse effect on our business, financial condition, and results of operation.

In June 2018, California enacted the California Consumer Privacy Act ("CCPA"), which creates new individual privacy rights for California consumers (as defined in the law) and places increased privacy and security obligations on entities handling certain personal data of consumers or households. The CCPA requires, among other things, covered companies to provide new disclosure to consumers about such companies' data collection, use and sharing practices, provide such consumers new ways to opt-out of certain sales or transfers of personal information, and provide consumers with additional causes of action. The CCPA went into effect on January 1, 2020, and the California Attorney General may bring enforcement actions for violations beginning July 1, 2020. The CCPA was amended on September 23, 2018, and it remains unclear what, if any, further modifications will be made to this legislation or how it will be interpreted. The CCPA may increase our compliance costs and potential liability.

We have developed and implemented a compliance program based on what we believe are current best practices, including the background checking of our current partners and prospective clients and partners. We cannot guarantee, however, that we, our employees, our consultants, our partners, or our contractors are or will be compliant with all federal, state, and foreign regulations, particularly as we expand our operations outside of the U.S. If we or our representatives fail to comply with any of these laws or regulations, a range of fines, penalties, and/or other sanctions could be imposed on us, which could have a material adverse effect on our business, financial condition, and results of operations. Even if we are determined not to have violated these laws, government inquiries into these issues typically require the expenditure of significant resources and generate negative publicity, which could also have an adverse effect on our business. In addition, regulation of data privacy and security laws is increasing worldwide, including various restrictions on cross-border access or transfer of data, including personal data of our employees, our clients, and customers of our clients. Compliance with such regulations may increase our costs and there is a risk of enforcement of such laws resulting in damage to our brand, as well as financial penalties and potential loss of business, which could be significant.

We may have exposure to greater than anticipated tax liabilities.

The determination of our worldwide provision for income taxes and other tax liabilities requires estimation and significant judgment, and there are many transactions and calculations where the ultimate tax determination is uncertain. Like many other multinational corporations, we are subject to tax in multiple U.S. and foreign jurisdictions. Our determination of our tax liability is always subject to audit and review by applicable domestic and foreign tax authorities, and we are currently undergoing a number of inquiries, audits, and reviews by taxing authorities throughout the world. Any adverse outcome of any such audit or review could harm our business, and the ultimate tax outcome may differ from the amounts recorded in our financial statements and may materially affect our financial results in the period or periods for which such determination is made. While we have established reserves based on assumptions and estimates that we believe are reasonable to cover such eventualities, these reserves may prove to be insufficient.

In addition, our future income taxes could be materially adversely affected by a shift in our jurisdictional income mix, by changes in the valuation of our deferred tax assets and liabilities, as a result of changes in tax laws, regulations, or accounting principles, as well as by certain discrete items.

In light of continuing fiscal challenges in many jurisdictions, various levels of government are increasingly focused on tax reform and other legislative action to increase tax revenue, including corporate income taxes. A number of U.S. states have attempted to increase corporate tax revenues by taking an expansive view of corporate presence to attempt to impose corporate income taxes and other direct business taxes on companies that have no physical presence in their state, and taxing authorities in foreign jurisdictions may take similar actions. Many U.S. states are also altering their apportionment formulas to increase the amount of taxable income or loss attributable to their state from certain out-of-state businesses. Similarly, in Europe, and elsewhere in the world, there are various tax reform efforts underway designed to ensure that corporate entities are taxed on a larger percentage of their earnings.

If it becomes necessary or desirable to repatriate any of our foreign cash balances to the United States, we may be subject to increased taxes, other restrictions, and limitations.

As of December 31, 2019, approximately $44.9 million of our cash and cash equivalents was held in our foreign subsidiaries. If it becomes necessary or desirable to repatriate these funds, we may be required to pay U.S. federal, state, and local income and foreign withholding taxes upon repatriation. We consider the earnings of our foreign subsidiaries to be permanently reinvested and, as a result, U.S. federal, state, and local, and foreign withholding taxes on such earnings have not been provided in our financial statements. It is not practical to estimate the amount of tax we would have to pay upon repatriation due to the complexity of the tax laws and other factors.

We face risks related to intellectual property claims or appropriation of our intellectual property rights.

We rely primarily on a combination of patent, copyright, trademark, and trade secrets laws, as well as intellectual property and confidentiality agreements to protect our proprietary rights. We also try to control access to and distribution of our technologies and other proprietary information. We have obtained patents in strategically important global markets relating to the architecture of our systems. We cannot assure that such patents will not be challenged, invalidated, or circumvented or that rights granted thereunder, or the claims contained therein will provide us with competitive advantages. Moreover, despite our efforts to protect our proprietary rights, unauthorized parties may attempt to copy aspects of our software or to obtain the use of information that we regard as proprietary. Although we generally enter into intellectual property and confidentiality agreements with our employees and strategic partners, despite our efforts our former employees may seek employment with our business partners, clients, or competitors, and there can be no assurance that the confidential nature of our proprietary information will be maintained. In addition, the laws of some foreign countries do not protect our proprietary rights as effectively as they do in the U.S. There can be no assurance that our means of protecting our proprietary rights will be adequate or that our competitors will not independently develop similar technology.

Other companies or individuals have obtained proprietary rights covering a variety of designs, processes, and systems. There can be no assurance that third parties, including clients, will not claim infringement by us with respect to current or future products. Although we attempt to limit the amount and type of our contractual liability for infringement of the proprietary rights of third parties and assert ownership of work product and intellectual property rights as appropriate, there are often exceptions, and limitations may not be applicable and enforceable in all cases. Even if limitations are found to be applicable and enforceable, our liability to our clients for these types of claims could be material given the size of certain of our transactions. We expect that software product developers will increasingly be subject to infringement claims as the number of products and competitors in our industry segment grows and the functionality of products in different industry segments overlaps. Any such claims, with or without merit, could be time-consuming, result in costly litigation, cause product shipment and delivery delays, require us to enter into royalty or licensing agreements, or be precluded from making and selling the infringing software, if such proprietary rights are found to be valid. Royalty or licensing agreements, if required, may not be available on terms acceptable to us or at all. These claims could also subject us to significant liability for damages, potentially including treble damages if we are found to have willfully infringed patents or copyrights. Even if a license were available, we could be required to pay significant royalties, which would increase our operating expenses. As a result, we may be required to develop alternative non-infringing technology, which could require significant effort and expense. If we cannot license or develop technology for any infringing aspect of our business, we would be forced to limit or stop sales of our software and may be unable to compete effectively, which could have a material adverse effect upon our business, operating results, and financial condition.

We may be subject to intellectual property rights claims by third parties, which are extremely costly to defend, could require us to pay significant damages, and could limit our ability to use certain technologies.

Companies in the software and technology industries, including some of our current and potential competitors, own large numbers of patents, copyrights, trademarks, and trade secrets and frequently enter into litigation based on allegations of infringement or other violations of intellectual property rights. In addition, many of these companies have the capability to dedicate substantially greater resources to enforce their intellectual property rights and to defend claims that may be brought against them. The litigation may involve patent holding companies or other adverse patent owners that have no relevant product revenues and against which our patents may, therefore, provide little or no deterrence. We have received, and may in the future receive, notices that claim we have misappropriated, misused, or infringed other parties' intellectual property rights, and, to the extent we gain greater market visibility, we face a higher risk of being the subject of intellectual property infringement claims.

Risks Related to Ownership of our Common Stock

Our Chief Executive Officer is our majority shareholder and can exert significant influence over matters submitted to our shareholders, which could materially adversely affect our other shareholders.

As of December 31, 2019, our Chief Executive Officer beneficially owned approximately 50% of our outstanding shares of common stock. As a result, he has the ability to exert significant influence over all matters submitted to our shareholders for approval, including the election and removal of directors and any merger, consolidation, or sale of our assets. This concentration of ownership may delay or prevent a change in control, impede a merger, consolidation, takeover, or other business combination involving us, discourage a potential acquirer from making a tender offer or otherwise attempting to obtain control of us, or result in actions that may be opposed by other shareholders.

The market price of our common stock has been and is likely to continue to be volatile.

The market price of our common stock may be highly volatile and may fluctuate substantially as a result of a variety of factors, some of which are related in complex ways.

Factors that may affect the market price of our common stock include:

- actual or anticipated fluctuations in our financial condition and operating results;
- variance in our financial performance from expectations of securities analysts;
- changes in our projected operating and financial results;
- changes in the prices of our products and professional services;
- changes in laws or regulations applicable to our products or services;
- announcements by us or our competitors of significant business developments, acquisitions or new offerings;
- our involvement in any litigation or investigations by regulators;
- our sale of our common stock or other securities in the future;
- changes in our Board of Directors, senior management or key personnel;
- trading volume of our common stock;
- price and volume fluctuations in the overall stock market;
- changes in the anticipated future size and growth rate of our market; and
- general economic, regulatory, political, and market conditions.

Broad market and industry fluctuations, as well as general economic, political, regulatory, and market conditions, may negatively impact the market price of our common stock. In the past, companies that have experienced volatility in the market price of their securities have been subject to securities class action litigation. We may be the target of this type of litigation in the future, which could result in substantial costs and divert our management's attention.

We may fail to meet our publicly announced guidance or other expectations about our business and future operating results, which could cause our stock price to decline.

We have provided and may continue to provide guidance about our business, future operating results, and other business metrics. In developing this guidance, our management must make certain assumptions and judgments about our future performance. Furthermore, analysts and investors may develop and publish their own projections of our business, which may form a consensus about our future performance. Our business results may vary significantly from such guidance or that consensus due to a number of factors, many of which are outside of our control, and which could materially adversely affect our operations and operating results. Furthermore, if we make downward revisions of our previously announced guidance, or if our publicly announced guidance of future operating results fails to meet expectations of securities analysts, investors, or other interested parties, the price of our common stock would decline.

If securities or industry analysts do not publish research or reports about our business, or publish negative reports about our business, our stock price and trading volume could decline.

The trading market for our common stock depends, in part, on the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. If our financial performance fails to meet analyst estimates or one or more of the analysts who cover us downgrade our shares or change their opinion of our shares, our share price would likely decline. If one or more of these analysts cease coverage of us or fail to publish reports on us regularly, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our principal administrative, sales, marketing, support, and research and development operations are in Cambridge, Massachusetts and Hyderabad, India. We also maintain offices elsewhere in the Americas, Europe, and the Asia-Pacific regions. All our properties are currently leased. We expect to expand our facilities' capacities as our employee base grows. We believe we will be able to obtain such space on acceptable and commercially reasonable terms.

See "19. Commitments And Contingencies" in Item 8 of this Annual Report for additional information.

ITEM 3. LEGAL PROCEEDINGS

None.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Market information

Our common stock is quoted on the NASDAQ Global Select Market under the symbol "PEGA."

Holders

As of February 3, 2020, we had approximately 36 stockholders of record.

Dividends

During 2019, 2018, and 2017, we paid quarterly cash dividends of $0.03 per share of common stock.

It is our intention to pay a quarterly cash dividend of $0.03 per share; however, the Board of Directors may terminate or modify this dividend program at any time without prior notice.

Issuer purchases of equity securities

Common stock repurchased in the three months ended December 31, 2019:

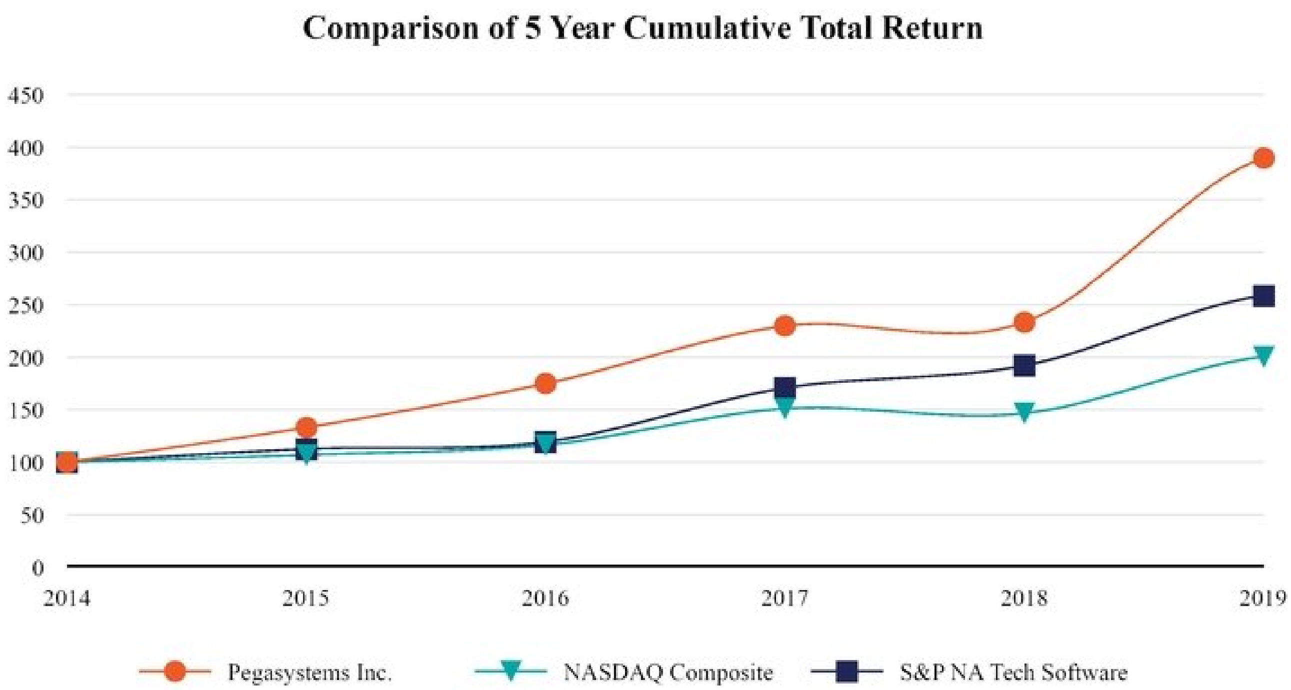
(in thousands, except per share amounts)	Total Number of Shares Purchased (1) (2)	Average Price Paid per Share (1) (2)	Total Number of Shares Purchased as Part of Publicly Announced Share Repurchase Program (2)	Approximate Dollar Value of Shares That May Yet Be Purchased at Period End Under Publicly Announced Share Repurchased Programs (2)
October 1, 2019 - October 31, 2019	24	$ 71.89	12	$ 45,484
November 1, 2019 - November 30, 2019	108	$ 75.63	—	$ 45,484
December 1, 2019 - December 31, 2019	144	$ 76.64	—	$ 45,484
Total	276	$ 75.83		

(1) Shares withheld to cover the option exercise price and tax withholding obligations under the net settlement provisions of our stock compensation awards have been included in these amounts.

(2) See "Stock repurchase program" in Item 7 of this Annual Report for additional information.

Stock performance graph and cumulative total stockholder return (1)

The following performance graph represents a comparison of the cumulative total stockholder return, assuming the reinvestment of dividends, for a $100 investment on December 31, 2014 in our common stock, the Total Return Index for the NASDAQ Composite, a broad market index, and the Standard & Poor's ("S&P") North American Technology Sector - Software Index™ ("S&P NA Tech Software"), a published industry index.



	December 31,					
	2014	2015	2016	2017	2018	2019
Pegasystems Inc.	$ 100.00	$ 133.06	$ 174.92	$ 229.64	$ 233.45	$ 389.43
NASDAQ Composite	$ 100.00	$ 106.96	$ 116.45	$ 150.96	$ 146.67	$ 200.49
S&P NA Tech Software	$ 100.00	$ 112.49	$ 119.47	$ 170.61	$ 192.18	$ 258.65

(1) The lines of the graph merely connect measurement dates and do not reflect fluctuations between those dates.

(2) We paid total dividends of $0.12 per share during 2019, 2018, 2017, 2016, and 2015 and $0.09 per share in 2014. The dividends paid per share have been adjusted for the two-for-one common stock split effected in the form of a common stock dividend on April 1, 2014.

ITEM 6. SELECTED FINANCIAL DATA

The selected financial data presented below has been derived from our audited consolidated financial statements. This data should be read in conjunction with "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" and "Item 8. Financial Statements and Supplementary Data" of this Annual Report.

(in thousands, except per share amounts)	2019	2018	2017	2016	2015
Consolidated Statements of Operations Data [1] [2]:					
Revenue:					
Perpetual license	$ 80,015	$ 109,863	$ 132,883	$ 145,053	$ 166,305
Term license	199,433	178,256	206,411	152,231	109,283
Maintenance	280,580	263,875	242,320	218,635	202,802
Cloud	133,746	82,627	51,097	40,647	30,626
Consulting	217,609	256,960	255,756	205,663	173,679
Total revenue	$ 911,383	$ 891,581	$ 888,467	$ 762,229	$ 682,695
(Loss) income from operations	$ (134,878)	$ (17,032)	$ 93,177	$ 50,644	$ 64,661
Net (loss) income	$ (90,433)	$ 10,617	$ 98,548	$ 45,015	$ 36,322
(Loss) earnings per share					
Basic	$ (1.14)	$ 0.14	$ 1.27	$ 0.59	$ 0.47
Diluted	$ (1.14)	$ 0.13	$ 1.19	$ 0.56	$ 0.46
Cash dividends declared per common share	$ 0.12	$ 0.12	$ 0.12	$ 0.12	$ 0.12

	December 31,				
(in thousands)	2019	2018	2017	2016	2015
Consolidated Balance Sheet Data [2] [3]:					
Total cash, cash equivalents, and marketable securities	$ 68,363	$ 207,423	$ 223,748	$ 133,761	$ 219,078
Goodwill	$ 79,039	$ 72,858	$ 72,952	$ 73,164	$ 46,776
Total assets	$ 984,812	$ 982,553	$ 1,012,753	$ 867,135	$ 627,758
Total stockholders' equity	$ 539,010	$ 621,531	$ 655,870	$ 548,940	$ 322,859

(1) We elected to early adopt Accounting Standards Update ("ASU") 2016-09 "Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting" ("ASU 2016-09") in 2016, which requires us, among other things, to prospectively record excess tax benefits as a reduction of the provision for income taxes in the consolidated statement of operations, whereas they were previously recognized in equity.

(2) We retrospectively adopted ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)" in 2018. As a result, we have adjusted balances for 2017 and 2016. We have not adjusted 2015 for ASU 2014-09.

(3) On January 1, 2019,we adopted Accounting Standards Codification 842 "Leases" ("ASC 842") using the modified retrospective method, reflecting any cumulative effect as an adjustment to equity. Results for reporting periods beginning on or after January 1, 2019 are presented under ASC 842, while prior period amounts were not adjusted and continue to be reported in accordance with the Company's historical accounting under ASC 840 "Leases."

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

BUSINESS OVERVIEW

We develop, market, license, host, and support enterprise software applications that help organizations transform the way they engage with their customers and process work across their enterprise. We also license our low-code Pega Platform™ for rapid application development to clients that wish to build and extend their business applications. Our cloud-architected portfolio of customer engagement and digital process automation applications leverages artificial intelligence ("AI"), case management, and robotic automation technology, built on our unified low-code Pega Platform, empowering businesses to quickly design, extend, and scale their enterprise applications to meet strategic business needs.

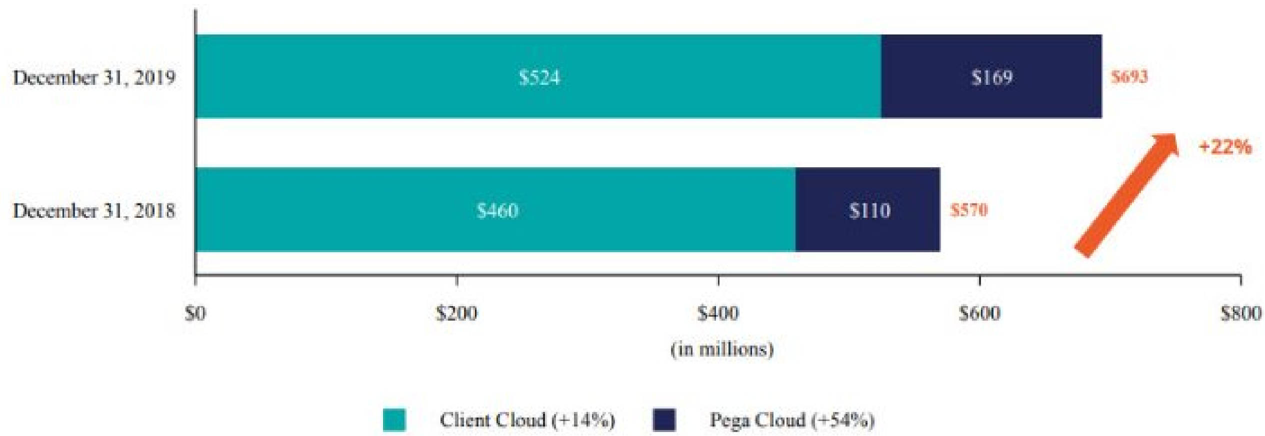
Our target clients are Global 3000 organizations and government agencies that require applications to differentiate themselves in the markets they serve. Our applications achieve and facilitate differentiation by increasing business agility, driving growth, improving productivity, attracting and retaining customers, and reducing risk. We deliver applications tailored to our clients' specific industry needs.

Performance metrics

We utilize several performance metrics in analyzing and assessing our overall performance, making operating decisions, and forecasting and planning for future periods.

Annual Contract Value ("ACV") [(1) (2)]

The change in ACV measures the growth and predictability of future cash flows from committed Pega Cloud and Client Cloud arrangements as of the end of the particular reporting period.



[(1)] Data Table

	December 31,		Change		
(Dollars in thousands)	2019	2018	Reported		Constant currency
Maintenance	$ 292,696	$ 269,708	$ 22,988	9%	8%
Term	231,267	190,349	40,918	21%	21%
Client Cloud	523,963	460,057	63,906	14%	14%
Pega Cloud	169,329	109,973	59,356	54%	54%
Total ACV	$ 693,292	$ 570,030	$ 123,262	22%	22%

Total ACV, as of a given date, is the sum of the following two components:

- Client Cloud: the sum of (1) the annual value of each term license contract in effect on such date, which is equal to its total license value divided by the total number of years and (2) maintenance revenue reported for the quarter ended on such date, multiplied by four. We do not provide hosting services for Client Cloud arrangements.
- Pega Cloud: the sum of the annual value of each cloud contract in effect on such date, which is equal to its total value divided by the total number of years.

(2) As foreign currency exchange rates are an important factor in understanding period to period comparisons, we believe the presentation of ACV growth rates on a constant currency basis enhances the understanding of our results and evaluation of our performance in comparison to prior periods.

Remaining performance obligations ("Backlog")

Expected future revenue on existing contracts:

(Dollars in thousands)	December 31, 2019						
	Perpetual license	Term license	Maintenance	Cloud	Consulting	Total	
1 year or less	$ 2,305	$ 97,826	$ 206,882	$ 165,571	$ 20,798	$ 493,382	58%
1-2 years	2,179	12,014	30,291	128,109	1,439	174,032	21%
2-3 years	—	3,132	17,844	84,788	132	105,896	13%
Greater than 3 years	—	3,861	13,277	43,702	1,993	62,833	8%
	$ 4,484	$ 116,833	$ 268,294	$ 422,170	$ 24,362	$ 836,143	100%
Change in Backlog Since December 31, 2018							
	$ (14,185)	$ 32,453	$ 60,380	$ 123,353	$ 3,169	$ 205,170	
	(76)%	38%	29%	41%	15%	33%	

(Dollars in thousands)	December 31, 2018						
	Perpetual license	Term license	Maintenance	Cloud	Consulting	Total	
1 year or less	$ 14,665	$ 72,378	$ 192,274	$ 103,354	$ 17,235	$ 399,906	63%
1-2 years	2,343	10,355	10,436	80,214	2,810	106,158	17%
2-3 years	1,661	1,414	3,644	61,906	940	69,565	11%
Greater than 3 years	—	233	1,560	53,343	208	55,344	9%
	$ 18,669	$ 84,380	$ 207,914	$ 298,817	$ 21,193	$ 630,973	100%

RESULTS OF OPERATIONS

Revenue

(Dollars in thousands)	2019		2018		Change	
Cloud	$ 133,746	15%	$ 82,627	9%	$ 51,119	62 %
Term license	199,433	22%	178,256	20%	21,177	12 %
Maintenance	280,580	30%	263,875	30%	16,705	6 %
Subscription (1)	613,759	67%	524,758	59%	89,001	17 %
Perpetual license	80,015	9%	109,863	12%	(29,848)	(27)%
Consulting	217,609	24%	256,960	29%	(39,351)	(15)%
	$ 911,383	100%	$ 891,581	100%	$ 19,802	2 %

(1) Reflects client arrangements (term license, cloud, and maintenance) that are subject to renewal.

We expect our revenue mix to continue to shift in favor of our subscription offerings, particularly cloud arrangements, which could result in slower total revenue growth in the near term. Revenue from cloud arrangements is generally recognized over the service period, while revenue from term and perpetual license arrangements is generally recognized upfront when the license rights become effective.

Subscription revenue

The increase in cloud revenue in 2019 reflects the shift in client preferences to cloud arrangements from other types of arrangements. The increase in term license revenue in 2019 was due to several large, multi-year term license contracts executed in 2019. This increase was partially offset by term license contracts with multi-year committed maintenance periods, where a greater portion of the contract value is allocated to maintenance.

The increase in maintenance revenue in 2019 was primarily due to the continued growth in the aggregate value of the installed base of our software and strong renewal rates in excess of 90%.

Perpetual license

The decrease in perpetual license revenue in 2019 reflects the shift in client preferences in favor of our subscription offerings, particularly cloud arrangements.

Consulting

Our consulting revenue fluctuates depending upon the mix of new implementation projects we perform as compared to those performed by our enabled clients or led by our partners. See "Our consulting revenue is significantly dependent upon our consulting personnel implementing new license and cloud arrangements" in Item 1A of this Annual Report for additional information.

The decrease in consulting revenue in 2019 was primarily due to a decrease in billable hours.

Gross profit

(Dollars in thousands)	2019		2018		Change	
Software license	$ 275,792	99%	$ 282,950	98%	$ (7,158)	(3)%
Maintenance	254,924	91%	239,310	91%	15,614	7 %
Cloud	67,918	51%	45,218	55%	22,700	50 %
Consulting	2,727	1%	22,338	9%	(19,611)	(88)%
	$ 601,361	66%	$ 589,816	66%	$ 11,545	2 %

The recent shift in our revenue mix toward cloud arrangements has resulted in slower total gross profit growth as our cloud business continues to grow and scale. Revenue from cloud arrangements is generally recognized over the service period, while revenue from term and perpetual license arrangements is generally recognized upfront when the license rights become effective.

Gross profit

The increase in total gross profit in 2019 was primarily due to increases in cloud and maintenance revenue.

Gross profit percent

The decrease in cloud gross profit percent in 2019 was driven by an increase in costs as we accelerated our investments in cloud infrastructure and service delivery to support future growth. The decrease in consulting gross profit percent in 2019 was driven by a decrease in billable hours as consulting resources were transitioning to new projects after completing a large project and an increase in consulting resource availability as we continue growing and leveraging our partner network.

Operating expenses

Selling and marketing

(Dollars in thousands)	2019	2018	Change	
Selling and marketing [1]	$ 474,459	$ 373,495	$ 100,964	27%
As a percent of total revenue [2]	52%	42%		
Selling and marketing headcount, end of period	1,631	1,224	407	33%

[1] Includes compensation, benefits, and other headcount-related expenses associated with selling and marketing activities, as well as advertising, promotions, trade shows, seminars, and the amortization of client-related intangibles. [2] Selling and marketing as a percent of total revenue has been impacted by a shift in revenue in favor of our subscription offerings, particularly cloud arrangements, which has resulted in slower total revenue growth in the near term. Revenue from cloud arrangements is generally recognized over the service period, while revenue from term and perpetual license arrangements is generally recognized upfront when the license rights become effective.

The increase in 2019 was primarily due to $81.2 million in compensation and benefits, attributable to an increase in headcount and $11.9 million in deferred contract cost amortization. The increase in headcount reflects our efforts to increase our sales capacity to deepen relationships with existing clients and target new accounts.

Research and development

(Dollars in thousands)	2019	2018	Change	
Research and development [1]	$ 205,210	$ 181,710	$ 23,500	13%
As a percent of total revenue	23%	20%		
Research and development headcount, end of period	1,657	1,621	36	2%

[1] Includes compensation, benefits, contracted services, and other headcount-related expenses associated with the development of our products, as well as enhancements and design changes to existing products and the integration of acquired technologies.

The increase in 2019 was primarily due to $14.7 million in compensation and benefits, attributable to an increase in headcount and equity compensation, and $5.1 million in cloud hosting expenses as we expand our cloud-focused research and development activities.

General and administrative

(Dollars in thousands)	2019		2018		Change	
General and administrative [1]	$	56,570	$	51,643	$ 4,927	10%
As a percent of total revenue		6%		6%		
General and administrative headcount, end of period [2]		419		348	71	20%

[1] Includes compensation, benefits, and other headcount-related expenses associated with finance, legal, corporate governance, and other administrative headcount. It also includes accounting, legal, and other professional consulting and administrative fees. [2] The headcount includes employees in corporate services departments, whose costs are partially allocated to other operating expense areas.

The increase in 2019 was primarily due to $5.5 million in compensation and benefits due to an increase in headcount.

Stock-based compensation

We recognize stock-based compensation expense associated with equity awards in our consolidated statements of operations based on the fair value of these awards at the date of grant using the accelerated recognition method, while treating each vesting tranche as if it were an individual grant.

(Dollars in thousands)	2019		2018		Change	
Cost of revenues	$	18,822	$	16,862	$ 1,960	12%
Selling and marketing		32,665		23,237	9,428	41%
Research and development		18,938		15,274	3,664	24%
General and administrative		10,484		8,489	1,995	24%
	$	80,909	$	63,862	$ 17,047	27%

The increase in 2019 was primarily due to the increased value of our annual periodic equity awards granted in March 2019 and 2018 and an increase in headcount. These awards generally have a five-year vesting schedule. See "14. Stock-Based Compensation" in Item 8 of this Annual Report for additional information.

Other income (expense), net

(Dollars in thousands)	2019		2018		Change	
Foreign currency transaction (loss) gain	$	(2,335)	$	2,421	$ (4,756)	*
Interest income, net		1,808		2,705	(897)	(33)%
Other income, net		559		363	196	54 %
	$	32	$	5,489	$ (5,457)	(99)%

* not meaningful

The changes in foreign currency transaction (loss) gain were primarily due to the impact of fluctuations in foreign currency exchange rates associated with our foreign currency-denominated cash, accounts receivable, and intercompany receivables and payables held by our United Kingdom (“U.K.”) subsidiary.

(Benefit from) income taxes

(Dollars in thousands)	2019		2018	
(Benefit from) income taxes	$	(44,413)	$	(22,160)
Effective income tax rate		33%		192%

The decrease in our effective income tax rate was primarily due to the excess stock option benefit relative to our overall worldwide loss.

As of December 31, 2019, we had approximately $23.3 million of total unrecognized tax benefits, which would decrease our effective tax rate if recognized. We expect that the changes in the unrecognized benefits within the next twelve months will be approximately $0.1 million due to an anticipated settlement with tax authorities. See "16. Income Taxes" in Item 8 of this Annual Report for additional information.

LIQUIDITY AND CAPITAL RESOURCES

(in thousands)	2019	2018
Cash (used in) provided by		
Operating activities	$ (42,165)	$ 104,356
Investing activities	70,074	(48,196)
Financing activities	(74,258)	(101,460)
Effect of exchange rate on cash and cash equivalents	290	(2,557)
Net (decrease) in cash and cash equivalents	$ (46,059)	$ (47,857)

	December 31,	
(in thousands)	2019	2018
Held in U.S. entities	$ 23,437	$ 143,533
Held in foreign entities	44,926	63,890
Total cash, cash equivalents, and marketable securities	$ 68,363	$ 207,423

On November 6, 2019, we entered into a five year $100 million senior secured revolving credit agreement (the "Credit Facility") with PNC Bank, National Association. We may use borrowings to finance working capital needs and for general corporate purposes. Under certain circumstances, the Credit Facility allows us to increase the aggregate commitment up to $200 million. As of December 31, 2019, we had no borrowings under the credit facility.

We believe that our current cash, cash flow from operations, and borrowing capacity will be sufficient to fund our operations and quarterly cash dividends for at least the next 12 months. Whether these resources are adequate to meet our liquidity needs beyond that period will depend on our growth, operating results, and the investments required to meet possible increased demand for our services. If we require additional capital resources to grow our business, we may seek to finance our operations from available funds or additional external financing.

If it became necessary to repatriate foreign funds, we may be required to pay U.S and foreign taxes upon repatriation. Due to the complexity of income tax laws and regulations, and the effects of the Tax Reform Act, it is impracticable to estimate the amount of taxes we would have to pay. See "If it becomes necessary or desirable to repatriate any of our foreign cash balances to the United States, we may be subject to increased taxes, other restrictions, and limitations" in Item 1A of this Annual Report for additional information.

Cash (used in) provided by operating activities

As client preferences shift in favor of our cloud and term subscription arrangements, we could continue to experience reduced or negative operating cash flow. Cash from subscription arrangements is generally collected over the service period, while cash from perpetual license arrangements is often collected shortly after contract execution.

The primary driver of the decrease in 2019 was the recent shift in our revenue mix toward cloud arrangements, which are generally collected over an average service period of three years, and increased costs as we accelerated investments in our cloud offerings and selling and marketing activities to support future growth.

The primary cash drivers during 2018 were net income of $10.6 million and $25.8 million from receivables and contract assets, largely due to increased cash collections and the timing of billings.

Cash provided by (used in) investing activities

Cash used in investing activities is primarily driven by the timing of investment maturities and purchases of new investments.

During 2019, $91.6 million in cash was generated from investments, primarily marketable debt securities, which was partially offset by investments of $10.6 million in property and equipment and $10.9 million to acquire In the Chat Communications Inc. in May 2019.

During 2018, $35.5 million of cash was used for investments, primarily marketable securities, and $11.9 million was used to purchase property and equipment.

Cash (used in) financing activities

We used cash primarily for repurchases of our common stock under our stock repurchase programs, stock repurchases for tax withholdings for the net settlement of our equity awards, and the payment of our quarterly dividend.

Net cash used in financing activities during 2019 and 2018 was primarily for repurchases of our common stock and the payment of our quarterly dividend.

Dividends

(in thousands)	2019	2018
Dividend payments to shareholders	$ 9,486	$ 9,432

It is our current intention to pay a quarterly cash dividend of $0.03 per share, however, the Board of Directors may terminate or modify this dividend program at any time without prior notice.

Stock repurchase program

Remaining authority under existing programs is:

(in thousands)	2019
January 1,	$ 6,620
Authorizations [1]	60,000
Repurchases [2]	(21,136)
December 31,	$ 45,484

[1] On March 15, 2019, we announced that our Board of Directors extended the expiration date of the current stock repurchase program to June 30, 2020 and increased the amount of common stock we are authorized to repurchase by $60 million.

[2] Purchases may be made from time to time on the open market or in privately negotiated transactions. All stock repurchases under the Current Program during closed trading window periods are made pursuant to established pre-arranged stock repurchase plans, intended to comply with the requirements of Rule 10b5-1and Rule 10b-18 under the Exchange Act.

Common stock repurchases

The following table is a summary of our repurchase activity:

	2019		2018	
(in thousands)	Shares	Amount	Shares	Amount
Tax withholdings for net settlement of equity awards	645	$ 44,857	667	$ 39,588
Repurchases paid	333	21,136	980	54,276
Repurchases unsettled at period end	—	—	21	999
Total stock repurchase program [1]	333	21,136	1,001	55,275
Activity in period [2]	978	$ 65,993	1,668	$ 94,863

[1] Represents activity under our publicly announced stock repurchase program.

[2] During 2019 and 2018, instead of receiving cash from the equity holders, we withheld shares with a value of $41.7 million and $29.5 million, respectively, for the exercise price of options. These amounts have been excluded from the table above.

Contractual obligations

As of December 31, 2019, our contractual obligations were:

	Payments due by period					
(in thousands)	2020	2021-2022	2023-2024	2025 and thereafter	Other	Total
Operating lease obligations [1]	19,373	36,373	19,683	1,666	—	$ 77,095
Purchase obligations [2]	$ 24,800	$ 8,129	$ 438	$ —	$ —	$ 33,367
Liability for uncertain tax positions [3]	—	—	—	—	5,386	$ 5,386
Investment commitments [4]	1,754	205	—	—	—	$ 1,959
Total	$ 45,927	$ 44,707	$ 20,121	$ 1,666	$ 5,386	$ 117,807

[1] See "9. Leases" in Item 8 of this Annual Report for additional information.

[2] Represents the fixed or minimum amounts due under purchase obligations for hosting services and sales and marketing programs.

[3] We are unable to reasonably estimate the timing of the cash outflow due to uncertainties in the timing of the effective settlement of tax positions.

[4] Represents the maximum funding that would be expected under existing investment agreements with privately-held companies. Our investment agreements generally allow us to withhold unpaid committed funds at our discretion.

A detailed discussion and analysis of the fiscal year 2017 year-over-year changes can be found in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations of our Annual Report on Form 10-K for the year ended December 31, 2018.

CRITICAL ACCOUNTING ESTIMATES AND SIGNIFICANT JUDGMENTS

Management's discussion and analysis of the financial condition and results of operations is based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the U.S. and the rules and regulations of the SEC for annual financial reporting. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. We base our estimates and judgments on historical experience, knowledge of current conditions, and beliefs of what could occur in the future given available information.

We believe that, of our significant accounting policies, which are described in “2. Significant Accounting Policies” in Item 8 of this Annual Report, the following accounting policies are most important to the portrayal of our financial condition and require the most subjective judgment. Accordingly, these are the policies we believe are the most critical to aid in fully understanding and evaluating our consolidated financial condition and results of operations. If actual results differ significantly from management’s estimates and projections, there could be a material effect on our financial statements.

Revenue recognition

Our contracts with clients typically contain promises by us to provide multiple products and services. Specifically, contracts associated with sales of Pega Platform and other software applications, sold either as licenses to use functional intellectual property or as a cloud-based solution, typically include consulting services. Determining whether such products and services within a client contract are considered distinct performance obligations that should be accounted for separately requires significant judgment. We review client contracts to identify all separate promises to transfer goods and services that would be considered performance obligations. Judgment is also required in determining whether an option to acquire additional products and services within a client contract represents a material right that the client would not receive without entering into the contract.

A contract modification is a legally binding change to the scope, price, or both of an existing contract. Contract modifications are reviewed to determine whether they should be accounted for as part of the original contract or as a separate contract. This determination requires significant judgment which could impact the timing of revenue recognition. We typically account for contract modifications prospectively as a separate contract, as the additional performance obligation(s) in our contract modifications are generally distinct and priced at their stand-alone selling price.

We allocate the transaction price to the distinct performance obligations, including options in contracts that are determined to represent a material right, based on relative standalone selling price of each performance obligation. Judgment is required in estimating standalone selling prices. We maximize the use of observable inputs by maintaining pricing analysis that includes our pricing policies, historical standalone sales when they exist, and historical renewal prices charged to clients. We have concluded that the standalone selling prices of certain performance obligations, specifically the standalone selling prices for software licenses and cloud arrangements, are highly variable. In these instances, we estimate the standalone selling prices using the residual approach, determined based on total transaction price minus the standalone selling price of other performance obligations promised in the contract. We update our standalone selling price analysis periodically, which includes a re-assessment as to whether the residual approach used to determine the standalone selling prices for software licenses and cloud arrangements remains appropriate.

Changes in the assumptions or judgments used in determining the performance obligations in client contracts and used in determining standalone selling prices could have a significant impact on the timing and amount of revenue we report in a particular period.

Goodwill and intangible assets impairment

Our goodwill and intangible assets result from our previous business acquisitions. Goodwill and intangible assets with indefinite useful lives are not amortized but are tested for impairment at least annually or as circumstances indicate their value may no longer be recoverable. We do not carry any intangible assets with indefinite useful lives other than goodwill. We perform our annual goodwill impairment test as of November 30th. To assess if goodwill is impaired, we first perform a qualitative assessment to determine whether further impairment testing is necessary. If, based on the qualitative assessment, we consider it more-likely-than-not that the fair value of our reporting unit is less than its carrying amount, we perform a quantitative impairment test in a two-step process. For the first step, we screen for impairment, and if any possible impairment exists, we undertake a second step of measuring such impairment by performing discounted cash flow analysis. This analysis is based on cash flow assumptions that are consistent with the plans and estimates being used to manage our business. In the first step, we review the carrying amount of our reporting unit compared to the “fair value” of the reporting unit. An excess carrying value over fair value would indicate that goodwill may be impaired. If we determined that goodwill may be impaired, then we would compare the “implied fair value” to the carrying value of the goodwill. We periodically reevaluate our business and have determined that we have one operating segment and one reporting unit. If our assumptions change in the future, we may be required to record impairment charges to reduce the carrying value of our goodwill. Changes in the valuation of goodwill could materially impact our operating results and financial position. We evaluate our intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. In evaluating potential impairment of these assets, we specifically consider whether any indicators of impairment are present, including, but not limited to:

- whether there has been a significant adverse change in the business climate that affects the value of an asset;
- whether there has been a significant change in the extent or way an asset is used; and
- whether there is an expectation that the asset will be sold or disposed of before the end of its originally estimated useful life.

If indicators of impairment are present, we compare the estimated undiscounted cash flows that the specific asset is expected to generate to its carrying value. The key assumptions of the cash flow model involve significant subjectivity. If such assets are impaired, the impairment recognized is measured by the amount by which the carrying amount of the asset exceeds its fair value.

As of December 31, 2019, we had $79.0 million of goodwill and $19.7 million of intangible assets. Changes in the valuation of long-lived assets could materially impact our operating results and financial position. To date, there have been no impairments of goodwill or intangible assets.

Accounting for income taxes

Significant judgment is required in determining our provision for income taxes and income tax assets and liabilities, including evaluating uncertainties in the application of accounting principles and complex tax laws. Changes in tax laws or our interpretation of tax laws and the resolution of any tax audits could significantly impact our financial statements.

We regularly assess the need for a valuation allowance against our deferred tax assets. Future realization of our deferred tax assets ultimately depends on the existence of sufficient taxable income within the available carryback or carryforward periods. We record a valuation allowance to reduce our deferred tax assets to an amount we believe is more likely than not to be realized. Changes in our valuation allowance impact income tax expense in the period of adjustment. Our deferred tax valuation allowance requires significant judgment and uncertainties, including assumptions about future taxable income that are based on historical and projected information.

We assess our income tax positions and record tax benefits based upon management's evaluation of the facts, circumstances, and information available at the reporting date. For those tax positions where it is more-likely-than-not that a tax benefit will be sustained, we record the largest amount of tax benefit with a greater than 50 percent likelihood of being realized upon ultimate settlement with a taxing authority having full knowledge of all relevant information. For those income tax positions where it is not more-likely-than-not that a tax benefit will be sustained, no tax benefit is recognized in the financial statements.

As a global company, we use significant judgment to calculate and provide for income taxes in each of the tax jurisdictions in which we operate. In the ordinary course of our business, there are transactions and calculations undertaken whose ultimate tax outcome cannot be certain. Some of these uncertainties arise as a consequence of transfer pricing for transactions with our subsidiaries and nexus and tax credit estimates. In addition, the calculation of acquired tax attributes and the associated limitations are complex. We estimate our exposure to unfavorable outcomes related to these uncertainties and estimate the probability of such outcomes.

Although we believe our estimates are reasonable, no assurance can be given that the final tax outcome will not be different from what is reflected in our historical income tax provisions, returns, and accruals. Such differences, or changes in estimates relating to potential differences, could have a material impact on our income tax provision and operating results in the period in which such a determination is made.

See "16. Income Taxes" in Item 8 of this Annual Report for additional information.

NEW ACCOUNTING PRONOUNCEMENTS

See "2. Significant Accounting Policies" in Item 8 of this Annual Report for additional information.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Market risk represents the risk of loss that may affect us due to adverse changes in financial market prices and rates.

Foreign currency exposure

Translation risk

Our international sales are usually denominated in foreign currencies. However, the operating expenses of our foreign operations are also primarily denominated in foreign currencies, which partially offsets our foreign currency exposure.

A hypothetical 10% strengthening in the U.S. dollar against other currencies would result in the following impact:

	2019	2018	2017
(Decrease) increase in revenue	(4)%	(4)%	(4)%
(Decrease) increase in net income	(7)%	(1)%	(3)%

Remeasurement risk

We experience fluctuations in transaction gains or losses from remeasurement of monetary assets and liabilities that are denominated in currencies other than the functional currency of the entities in which they are recorded.

We are primarily exposed to changes in foreign currency exchange rates associated with the Australian dollar, Euro, and U.S. dollar-denominated cash and cash equivalents, accounts receivable, unbilled receivables, and intercompany receivables and payables held by our U.K. subsidiary, a British pound functional entity.

A hypothetical 10% strengthening in the British pound exchange rate in comparison to the Australian dollar, Euro, and U.S. dollar would result in in the following impact:

(in millions)	December 31, 2019	December 31, 2018	December 31, 2017
Foreign currency gain (loss)	$ 4	$ (6)	$ (6)

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Pegasystems Inc.
Cambridge, Massachusetts

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Pegasystems Inc. and subsidiaries (the "Company") as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive (loss) income, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2019, and the related notes (collectively referred to as the "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) i*ssued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the 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 COSO.

Basis for Opinions

The Company's management is responsible for these 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 the accompanying Management's Report on and Changes in Internal Control over Financial Reporting. Our responsibility is to express an opinion on these financial statements and an opinion 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 US 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 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 financial statements included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures to respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the 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 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 accounting principles generally accepted in the United States of America ("generally accepted accounting principles"). A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) 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 (3) 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 Matter

The critical audit matter communicated below is a matter arising from the current-period audit of the financial statements that was communicated or required to be communicated to the audit committee and that (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the 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 – Software License Arrangements - Refer to Note 2 to the financial statements

The Company generates revenue from multiple sources, including software license revenue primarily derived from license sales of the Company's Pega Platform and other software applications, maintenance revenue from client support, and services revenue primarily derived from cloud sales of the Company's hosted Pega Platform and other software applications and consulting services.

The Company's license and cloud arrangements often contain multiple performance obligations. These performance obligations may be included in the same contract or negotiated separately. Additionally, the Company enters into amendments to previously executed contracts which constitute contract modifications. Certain new complex arrangements require a detailed analysis of the contractual terms and application of more complex accounting guidance, specifically for contracts with higher contract values. Factors with potentially significant judgements include:

- Identification of the complete customer arrangement
- Accounting treatment of contract modifications
- Valuation and allocation of identified material rights
- Allocation of arrangement consideration to bundled fixed price work orders

Given the accounting complexity and the management judgment necessary to properly identify, classify, and account for performance obligations, auditing such estimates involved especially complex and subjective auditor judgment in relation to license and cloud arrangements.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to license and cloud revenue arrangements included the following, among others:

- We tested the effectiveness of controls over revenue recognition, including those over the identification of performance obligations included in the transaction, accounting treatment of contract modifications, identification of material rights, and allocation of arrangement consideration.
- We selected a sample of customer contracts and performed the following:
    - Evaluated whether the Company properly identified the terms of the arrangements and considered all arrangement terms that may have an impact on revenue recognition.
    - Evaluated whether the Company appropriately identified all performance obligations in the arrangement and whether the methodology to allocate the transaction price to the individual performance obligations was appropriately applied.
    - Tested the accuracy of management's calculation of revenue for each performance obligation by developing an expectation for the revenue to be recorded in the current period and comparing it to the Company's recorded balances.
    - Evaluated management's assessment of any ongoing negotiations with customers and bundling with statements of work.
    - Analyzed the proper accounting treatment for any contract modifications based on 1) whether the additional products and services are distinct from the products and services in the original arrangement, and 2) whether the amount of consideration expected for the added products and services reflects the stand-alone selling price of those products and services.
    - Evaluated management's determination of whether certain renewal clauses, additional product offers, or additional usage offers represented material rights included in the contract and whether they were properly valued based on the incremental discount provided and the probability of the right being exercised.
    - For contracts with a performance obligation of bundled fixed price services, evaluated whether management reasonably estimated the number of hours that each project will require and independently recalculated the stand-alone selling price for each bundled fixed price service.
    - Obtained evidence of delivery of the elements of the arrangement to the customer.

/s/ DELOITTE & TOUCHE LLP

Boston, Massachusetts
February 12, 2020

We have served as the Company's auditor since 2000.

PEGASYSTEMS INC.
CONSOLIDATED BALANCE SHEETS
(in thousands, except per share amounts)

	December 31, 2019	December 31, 2018
Assets		
Current assets:		
Cash and cash equivalents	$ 68,363	$ 114,422
Marketable securities	—	93,001
Total cash, cash equivalents, and marketable securities	68,363	207,423
Accounts receivable	199,720	180,872
Unbilled receivables	180,219	172,656
Other current assets	57,308	49,684
Total current assets	505,610	610,635
Unbilled receivables	121,736	151,237
Goodwill	79,039	72,858
Other long-term assets	278,427	147,823
Total assets	$ 984,812	$ 982,553
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 17,475	$ 16,487
Accrued expenses	48,001	43,143
Accrued compensation and related expenses	104,126	84,671
Deferred revenue	190,080	185,145
Other current liabilities	18,273	2,363
Total current liabilities	377,955	331,809
Operating lease liabilities	52,610	—
Other long-term liabilities	15,237	29,213
Total liabilities	445,802	361,022
Commitments and Contingencies (Note 19)		
Stockholders' equity:		
Preferred stock, $0.01 par value, 1,000 shares authorized; none issued	—	—
Common stock, $0.01 par value, 200,000 shares authorized; 79,599 and 78,526 shares issued and outstanding at December 31, 2019 and 2018, respectively	796	785
Additional paid-in capital	140,523	123,205
Retained earnings	410,919	510,863
Accumulated other comprehensive (loss)		
Net unrealized gain on available-for-sale marketable securities, net of tax	—	(249)
Foreign currency translation adjustments	(13,228)	(13,073)
Total stockholders' equity	539,010	621,531
Total liabilities and stockholders' equity	$ 984,812	$ 982,553

See notes to consolidated financial statements.

PEGASYSTEMS INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share amounts)

	2019	2018	2017
Revenue			
Software license	$ 279,448	$ 288,119	$ 339,294
Maintenance	280,580	263,875	242,320
Services	351,355	339,587	306,853
Total revenue	911,383	891,581	888,467
Cost of revenue			
Software license	3,656	5,169	5,085
Maintenance	25,656	24,565	27,905
Services	280,710	272,031	246,683
Total cost of revenue	310,022	301,765	279,673
Gross profit	601,361	589,816	608,794
Operating expenses			
Selling and marketing	474,459	373,495	300,578
Research and development	205,210	181,710	162,886
General and administrative	56,570	51,643	52,153
Total operating expenses	736,239	606,848	515,617
(Loss) income from operations	(134,878)	(17,032)	93,177
Foreign currency transaction (loss) gain	(2,335)	2,421	(6,413)
Interest income, net	1,808	2,705	862
Other income (loss), net	559	363	(1,391)
(Loss) income before (benefit from) income taxes	(134,846)	(11,543)	86,235
(Benefit from) income taxes	(44,413)	(22,160)	(12,313)
Net (loss) income	$ (90,433)	$ 10,617	$ 98,548
(Loss) earnings per share			
Basic	$ (1.14)	$ 0.14	$ 1.27
Diluted	$ (1.14)	$ 0.13	$ 1.19
Weighted-average number of common shares outstanding			
Basic	79,055	78,564	77,431
Diluted	79,055	83,064	82,832

See notes to consolidated financial statements.

PEGASYSTEMS INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE (LOSS) INCOME
(in thousands)

	2019	2018	2017
Net (loss) income	$ (90,433)	$ 10,617	$ 98,548
Other comprehensive income (loss), net of tax			
Unrealized gain (loss) on available-for-sale marketable securities	249	(17)	(63)
Foreign currency translation adjustments	(155)	(6,600)	9,559
Total other comprehensive income (loss), net of tax	94	(6,617)	9,496
Comprehensive (loss) income	$ (90,339)	$ 4,000	$ 108,044

See notes to consolidated financial statements.

PEGASYSTEMS INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands, except per share amounts)

	Common Stock					
	Number of Shares	Amount	Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive (Loss) Income	Total Stockholders' Equity
Balance at January 1, 2017	**76,591**	**$ 766**	**$ 143,903**	**$ 420,472**	**$ (16,201)**	**$ 548,940**
Repurchase of common stock	(99)	—	(4,493)	—	—	(4,493)
Issuance of common stock for share-based compensation plans	1,568	15	(41,642)	—	—	(41,627)
Issuance of common stock under Employee Stock Purchase Plan	21	—	1,009	—	—	1,009
Stock-based compensation	—	—	53,320	—	—	53,320
Cash dividends declared ($0.12 per share)	—	—	—	(9,323)	—	(9,323)
Other comprehensive income	—	—	—	—	9,496	9,496
Net income	—	$ —	$ —	$ 98,548	$ —	$ 98,548
December 31, 2017	**78,081**	**$ 781**	**$ 152,097**	**$ 509,697**	**$ (6,705)**	**$ 655,870**
Repurchase of common stock	(1,001)	(10)	(55,265)	—	—	(55,275)
Issuance of common stock for share-based compensation plans	1,413	14	(39,375)	—	—	(39,361)
Issuance of common stock under the Employee Stock Purchase Plan	33	—	1,767	—	—	1,767
Stock-based compensation	—	—	63,981	—	—	63,981
Cash dividends declared ($0.12 per share)	—	—	—	(9,451)	—	(9,451)
Other comprehensive (loss)	—	—	—	—	(6,617)	(6,617)
Net income	—	—	—	10,617	—	10,617
December 31, 2018	**78,526**	**$ 785**	**$ 123,205**	**$ 510,863**	**$ (13,322)**	**$ 621,531**
Repurchase of common stock	(333)	(3)	(21,133)	—	—	(21,136)
Issuance of common stock for share-based compensation plans	1,375	14	(44,853)	—	—	(44,839)
Issuance of common stock under the Employee Stock Purchase Plan	31	—	2,202	—	—	2,202
Stock-based compensation	—	—	81,102	—	—	81,102
Cash dividends declared ($0.12 per share)	—	—	—	(9,511)	—	(9,511)
Other comprehensive income	—	—	—	—	94	94
Net (loss)	—	—	—	(90,433)	—	(90,433)
December 31, 2019	**79,599**	**$ 796**	**$ 140,523**	**$ 410,919**	**$ (13,228)**	**$ 539,010**

See notes to consolidated financial statements.

PEGASYSTEMS INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	2019	2018	2017
Operating activities			
Net (loss) income	$ (90,433)	$ 10,617	$ 98,548
Adjustments to reconcile net (loss) income to cash (used in) provided by operating activities			
Stock-based compensation expense	80,909	63,862	53,313
Deferred income taxes	(49,317)	(30,898)	(2,780)
Amortization of deferred contract costs	29,152	17,271	12,106
Lease expense	14,497	—	—
Amortization of intangible assets and depreciation	21,396	25,295	24,713
Amortization of investments	800	1,596	1,381
Foreign currency transaction loss (gain)	2,335	(2,421)	6,413
Other non-cash	(521)	(1,678)	(1,383)
Change in operating assets and liabilities:			
Accounts receivable, unbilled revenue, and contract assets	1,088	25,779	(30,379)
Income taxes receivable and other current assets	(6,344)	(6,068)	(13,393)
Accounts payable, accrued compensation, and accrued expenses	25,670	20,798	14,473
Deferred revenue	1,937	28,951	14,636
Deferred contract costs	(49,746)	(44,036)	(18,738)
Other long-term assets and liabilities	(23,588)	(4,712)	(675)
Cash (used in) provided by operating activities	(42,165)	104,356	158,235
Investing activities			
Purchases of investments	(11,424)	(69,494)	(27,718)
Proceeds from maturities and called investments	13,634	33,991	26,997
Sales of investments	89,406	—	—
Payments for acquisitions, net of cash acquired	(10,934)	(800)	(297)
Investment in property and equipment	(10,608)	(11,893)	(13,741)
Cash provided by (used in) investing activities	70,074	(48,196)	(14,759)
Financing activities			
Dividend payments to shareholders	(9,486)	(9,432)	(9,277)
Proceeds from revolving credit facility	45,000	—	—
Payments on revolving credit facility	(45,000)	—	—
Common stock repurchases for tax withholdings for net settlement of equity awards	(42,637)	(37,594)	(40,617)
Common stock repurchases under stock repurchase program	(22,135)	(54,434)	(4,335)
Cash (used in) financing activities	(74,258)	(101,460)	(54,229)
Effect of exchange rate changes on cash and cash equivalents	290	(2,557)	2,438
Net (decrease) increase in cash and cash equivalents	(46,059)	(47,857)	91,685
Cash and cash equivalents, beginning of period	114,422	162,279	70,594
Cash and cash equivalents, end of period	$ 68,363	$ 114,422	$ 162,279
Supplemental disclosures			
Income taxes paid (refunded)	$ 4,745	$ 6,630	$ (2,322)
Non-cash investing and financing activity:			
Dividends payable	$ 2,388	$ 2,363	$ 2,344

See notes to consolidated financial statements.

1. BASIS OF PRESENTATION

Business

The Company develops, markets, licenses, and supports customer engagement and digital process automation software applications in addition to the Pega Platform™ for clients that wish to build and extend their own applications. The Company provides consulting, training, support, and hosting services to facilitate the use of its software.

Management estimates and reporting

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America ("U.S.") requires management to make estimates and judgments that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the periods presented. Actual results could differ from those estimates. Accounts with reported amounts based on significant estimates and judgments include, but are not limited to, revenue, unbilled receivables, deferred revenue, deferred income taxes, deferred contract costs, income taxes payable, intangible assets, and goodwill.

Principles of consolidation

The Company's consolidated financial statements reflect Pegasystems Inc. and subsidiaries in which the Company holds a controlling financial interest. All intercompany accounts and transactions have been eliminated in consolidation.

2. SIGNIFICANT ACCOUNTING POLICIES

Revenue

The Company's revenue is primarily derived from:

- software license revenue from sales of the Company's Pega Platform and software applications. Software licenses represent functional intellectual property and are delivered separately from maintenance and services.
- maintenance revenue from client support including software upgrades (on a when and-if available basis), telephone support, and bug fixes or patches.
- services revenue from cloud revenue, which is sales of the Company's hosted Pega Platform and software applications, and consulting revenue, which is primarily related to new software license implementations, training, and reimbursable costs.

Performance Obligations

The Company's software license and cloud arrangements often contain multiple performance obligations. For contracts with multiple performance obligations, the Company accounts for each performance obligation separately if it is distinct. Transaction price is allocated to the separate performance obligations on a relative stand-alone selling price basis. If the transaction price contains discounts or the Company expects to provide a future price concession, these elements are considered when determining the transaction price prior to allocation. The Company's policy is to exclude from the determination of transaction price sales and similar taxes collected from clients.

The Company's typical performance obligations are:

Performance Obligation	How Standalone Selling Price is Typically Determined	When Performance Obligation is Typically Satisfied	When Payment is Typically Due
Perpetual license	Residual approach	Upon transfer of control to the client, defined when the client can use and benefit from the license (point in time)	Effective date of the license
Term license	Residual approach	Upon transfer of control to the client, defined when the client can use and benefit from the license (point in time)	Annually, or more frequently, over the term of the license
Maintenance	Consistent pricing relationship as a percentage of the related license and observable in stand-alone renewal transactions [1]	Ratably over the term of the maintenance (over time)	Annually, or more frequently, over the term of the maintenance
Consulting - time and materials	Observable hourly rate for time and materials-based services in similar geographies for similar contract sizes	Based on hours incurred to date	Monthly
Consulting - fixed price	Observable hourly rate for time and materials-based services in similar geographies for similar contract sizes multiplied by estimated hours for the project	Based on hours incurred as a percentage of total estimated hours	As contract milestones are achieved
Cloud	Residual approach	Ratably over the term of the service (over time)	Annually, or more frequently, over the term of the service

(1) Technical support and software updates are considered distinct services but accounted for as a single performance obligation, as they have the same pattern of transfer to the client.

The Company utilizes the residual approach for performance obligations since the selling price is highly variable and stand-alone selling price is not discernible from past transactions or other observable evidence. Periodically, the Company reevaluates whether the residual approach remains appropriate. As required, the Company evaluates its residual approach estimate compared to all available observable data in order to conclude the estimate is representative of its standalone selling price.

If the contract grants the client the option to acquire additional products or services, the Company assesses whether the option represents a material right to the client that the client would not receive without entering into that contract. Discounts on options to purchase additional products and services that are in excess of discounts available to similar clients are accounted for as an additional performance obligation.

Variable consideration

The Company's arrangements can include variable fees, such as the option to purchase additional usage of a previously delivered software license. In addition, the Company may provide pricing concessions to clients, a business practice that also gives rise to variable fees in contracts. For variable fees arising from the client's acquisition of additional usage of a previously delivered software license, the Company applies the sales and usage-based royalties guidance related to a license of intellectual property and recognizes the revenue in the period the underlying sale or usage occurs. For pricing concessions, and other forms of variable consideration that may arise, the Company includes in the determination of total transaction price an estimate of variable fees if it is probable that a significant reversal of cumulative revenue recognized will not occur. The Company uses the expected value or most likely value amount, whichever is more appropriate for specific circumstances, to estimate variable consideration, and the estimates are based on the level of historical price concessions offered to clients. The variable consideration related to pricing concessions and other forms of variable consideration including usage-based fees have not been material to the Company's consolidated financial statements.

Significant financing components

The Company generally does not intend to provide financing to its clients, as financing arrangements are not contemplated as part of the negotiated terms of contracts between the Company and its clients. Although there may be instances with an intervening period between the delivery of the license and the payment, typically in term license arrangements, the purpose of that timing difference is to align the client's payment with the timing of the use of the software license or service.

In certain circumstances, however, there are instances where the timing of revenue recognition differs from the timing of payment due to extended payment terms or fees that are non-proportional to the associated usage of software licenses. In these instances, the Company evaluates whether a significant financing component exists. This evaluation includes determining the difference between the consideration the client would have paid at the time the performance obligation was satisfied and the amount of consideration actually paid. Contracts that include a significant financing component are adjusted for the time value of money at the rate inherent in the contract, the client's borrowing rate, or the Company's incremental borrowing rate depending upon the recipient of the financing.

During 2019, 2018, and 2017, significant financing components were not material.

Contract modifications

The Company assesses contract modifications to determine:

- if the additional products and services are distinct from the products and services in the original arrangement; and
- if the amount of consideration expected for the added products and services reflects the stand-alone selling price of those products and services.

A contract modification meeting both criteria is accounted for as a separate contract. A contract modification not meeting both criteria is considered a change to the original contract and is accounted for on either:

- a prospective basis as a termination of the existing contract and the creation of a new contract; or
- a cumulative catch-up basis.

Deferred contract costs

The Company recognizes an asset for the incremental costs of obtaining a client contract, primarily related to sales commissions. The Company expects to benefit from those costs for more than one year, as the Company primarily pays sales commissions on the initial contract. As a result, there are no commensurate commissions paid on contract renewals. Deferred contract costs are allocated to each performance obligation within the contract and amortized in accordance with the transfer of underlying goods and services within those contracts and expected renewals. The expected benefit period is determined based on the length of the client contracts, client attrition rates, the underlying technology life-cycle, and the influence of the competitive marketplace in which the products and services are sold. Deferred costs allocated to maintenance and deferred costs for cloud arrangements are amortized over an average expected benefit period of five years. Deferred costs allocated to software licenses, and any expected renewals of term software licenses within the five years expected benefit period, are amortized at the point in time control of the software license is transferred. Deferred costs allocated to consulting are amortized over a period that is consistent with the pattern of transfer of control for the related services.

Financial instruments

The principal financial instruments held by the Company consist of cash equivalents, marketable securities, receivables, and accounts payable. The Company considers debt securities that are readily convertible to known amounts of cash with maturities of three months or less from the purchase date to be cash equivalents. Interest is recorded when earned. All of the Company’s investments are classified as available-for-sale and are carried at fair value. Unrealized gains and losses considered to be temporary in nature are recorded as a component of accumulated other comprehensive loss, net of related income taxes. The Company reviews all investments for reductions in fair value that are other-than-temporary. When such reductions occur, the cost of the investment is adjusted to fair value by recording a loss on investments in the consolidated statements of operations. Gains and losses on investments are calculated based upon the specific investment.

See "Note 4. Receivables, Contract Assets, And Deferred Revenue" and "Note 12. Fair Value Measurements" for additional information.

Property and equipment

Property and equipment are recorded at cost. Depreciation and amortization are computed using the straight-line method over the estimated useful lives of the assets, which are three years for computer equipment and five years for furniture and fixtures. Leasehold improvements are amortized over the lesser of the term of the lease or the useful life of the asset. Repairs and maintenance costs are expensed as incurred.

Leases

All the Company’s leases are operating leases, primarily composed of office space leases. The Company accounts for a contract as a lease when it has the right to control the asset for a period of time while obtaining substantially all of the asset’s economic benefits. The Company determines the initial classification and measurement of its operating right of use assets and lease liabilities at the lease commencement date and thereafter if modified. Fixed lease costs are recognized on a straight-line basis over the term of the lease. Variable lease costs are recognized in the period in which the obligation for those payments is incurred. The Company combines lease and non-lease components in the determination of lease costs for its office space leases. The lease liability includes lease payments related to options to extend or renew the lease term if the Company is reasonably certain it will exercise those options. The Company’s leases do not contain any material residual value guarantees or restrictive covenants.

Internal-use software

The Company capitalizes and amortizes certain direct costs associated with computer software developed or purchased for internal use incurred during the application development stage. Costs related to preliminary project activities and post implementation activities are expensed as incurred. The Company amortizes capitalized software costs generally over three to five years, commencing on the date the software is placed into service.

Goodwill

Goodwill represents the residual purchase price paid in a business combination after the fair value of all identified assets and liabilities have been recorded. Goodwill is not amortized. The Company has a single reporting unit. The Company performed a qualitative assessment as of November 30, 2019, 2018, and 2017, and concluded that there was no impairment since it was not more likely than not that the fair value of its reporting unit was less than its carrying value.

Intangible and long-lived assets

All of the Company’s intangible assets are amortized using the straight-line method over their estimated useful life. The Company evaluates its long-lived tangible and intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. Impairment is assessed by comparing the undiscounted cash flows expected to be generated by the long-lived tangible or intangible assets to their carrying value. If impairment exists, the Company calculates the impairment by comparing the carrying value to its fair value as determined by discounted expected cash flows.

Business combinations

The Company uses its best estimates and assumptions to accurately assign fair value to the tangible and intangible assets acquired and liabilities assumed at the acquisition date. The Company's estimates are inherently uncertain and subject to refinement. During the measurement period, which may be up to one year from the acquisition date, the Company may record adjustments to the fair value of these tangible and intangible assets acquired and liabilities assumed, with the corresponding offset to goodwill. In addition, uncertain tax positions and tax-related valuation allowances are initially established in connection with a business combination as of the acquisition date. The Company continues to collect information and reevaluates these estimates and assumptions quarterly and records any adjustments to the Company's preliminary estimates to goodwill provided that the Company is within the measurement period. Upon the conclusion of the measurement period or final determination of the fair value of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recorded to the Company's consolidated statements of operations.

Research and development and software development costs

Research and development costs are expensed as incurred. Capitalization of computer software developed for resale begins upon the establishment of technological feasibility, generally demonstrated by a working model or an operative version of the computer software product. Such costs have not been material to date, as technological feasibility is established within a short time frame from the software's general availability and, as a result, no costs were capitalized in 2019, 2018, or 2017.

Stock-based compensation

The Company recognizes stock-based compensation expense associated with equity awards based on the fair value of these awards at the grant date. Stock-based compensation is recognized over the requisite service period, which is generally the vesting period of the equity award and is adjusted each period for anticipated forfeitures. See "Note 14. Stock-Based Compensation" for discussion of the Company's key assumptions included in determining the fair value of its equity awards at the grant date.

Foreign currency translation and remeasurement

The translation of assets and liabilities for the Company's subsidiaries with functional currencies other than the U.S. dollar are made at period-end exchange rates. Revenue and expense accounts are translated at the average exchange rates during the period transactions occurred. The resulting translation adjustments are reflected in accumulated other comprehensive income. Realized and unrealized exchange gains or losses from transactions and remeasurement adjustments are reflected in foreign currency transaction gain (loss) in the accompanying consolidated statements of operations.

Accounting for income taxes

The Company uses the asset and liability method of accounting for income taxes. Under this method, deferred tax assets and liabilities are determined based on temporary differences between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The Company regularly assesses the need for a valuation allowance against its deferred tax assets. Future realization of the Company's deferred tax assets ultimately depends on the existence of sufficient taxable income within the available carryback or carryforward periods. Sources of taxable income include taxable income in prior carryback years, future reversals of existing taxable temporary differences, tax planning strategies, and future taxable income. The Company records a valuation allowance to reduce its deferred tax assets to an amount it believes is more-likely-than-not to be realized. Changes in the valuation allowance impacts income tax expense in the period of adjustment. The Company's deferred tax valuation allowance requires significant judgment and uncertainties, including assumptions about future taxable income that are based on historical and projected information. The Company recognizes excess tax benefits when they are realized, as a reduction of the provision for income taxes.

The Company assesses its income tax positions and records tax benefits based upon management's evaluation of the facts, circumstances, and information available at the reporting date. For those tax positions where it is more-likely-than-not that a tax benefit will be sustained, the Company records the largest amount of tax benefit with a greater than 50 percent likelihood of being realized upon ultimate settlement with a taxing authority having full knowledge of all relevant information. For those income tax positions where it is not more-likely-than-not that a tax benefit will be sustained, no tax benefit is recognized in the financial statements. The Company classifies liabilities for uncertain tax positions as non-current liabilities unless the uncertainty is expected to be resolved within one year. The Company classifies interest and penalties on uncertain tax positions as income tax expense.

As a global company, the Company uses significant judgment to calculate and provide for income taxes in each of the tax jurisdictions in which it operates. In the ordinary course of the Company's business, there are transactions and calculations undertaken whose ultimate tax outcome cannot be certain. Some of these uncertainties arise as a consequence of transfer pricing for transactions with the Company's subsidiaries and nexus and tax credit estimates. In addition, the calculation of acquired tax attributes and the associated limitations are complex. See "Note 16. Income Taxes" for additional information.

Advertising expense

Advertising costs are expensed as incurred. Advertising costs were $6.7 million, $6.9 million, and $6.1 million during 2019, 2018, and 2017, respectively.

New Accounting Standards

Leases

On January 1, 2019, the Company adopted Accounting Standards Codification 842 “Leases” (“ASC 842”) using the modified retrospective method, reflecting any cumulative effect as an adjustment to equity. Results for reporting periods beginning on or after January 1, 2019 are presented under ASC 842, while prior period amounts were not adjusted and continue to be reported in accordance with the Company’s historical accounting under ASC 840 “Leases.”

The Company elected the permitted practical expedients not to reassess the following related to leases that commenced before the effective date of ASC 842: (i) whether any expired or existing contracts contain leases; (ii) the lease classification for any expired or existing leases; and (iii) initial direct costs for any existing leases. Upon adoption, the Company recorded right of use assets of $41.8 million and lease liabilities of $54.2 million. The difference between the value of the right of use assets and lease liabilities is due to the reclassification of existing deferred rent, prepaid rent, and unamortized lease incentives as of January 1, 2019.

See "Note 9. Leases" for additional information.

Financial instruments

In June 2016, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update No. 2016-13, “Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments,” which requires measurement and recognition of expected credit losses for financial assets measured at amortized cost, including accounts receivable, upon initial recognition of that financial asset using a forward-looking expected loss model, rather than an incurred loss model. Credit losses relating to available-for-sale debt securities should be recorded through an allowance for credit losses when the fair value is below the amortized cost of the asset, removing the concept of “other-than-temporary” impairments. The Company adopted this standard effective January 1, 2020. The adoption of this standard did not have a material effect on the Company’s financial position or results of operations.

3. MARKETABLE SECURITIES

As of December 31, 2019, the Company did not hold any marketable securities.

	December 31, 2018			
(in thousands)	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Municipal bonds	$ 44,802	$ 13	$ (110)	$ 44,705
Corporate bonds	48,499	23	(226)	48,296
	$ 93,301	$ 36	$ (336)	$ 93,001

4. RECEIVABLES, CONTRACT ASSETS, AND DEFERRED REVENUE

Receivables

(in thousands)	December 31, 2019	December 31, 2018
Accounts receivable	$ 199,720	$ 180,872
Unbilled receivables	180,219	172,656
Long-term unbilled receivables	121,736	151,237
	$ 501,675	$ 504,765

Unbilled receivables are client committed amounts for which revenue recognition precedes billing, and billing is solely subject to the passage of time.

Unbilled receivables are expected to be billed in the future as follows:

(Dollars in thousands)	December 31, 2019	
1 year or less	$ 180,219	60%
1-2 years	91,132	30%
2-5 years	30,604	10%
	$ 301,955	100%

Contract assets and deferred revenue

(in thousands)	December 31, 2019	December 31, 2018
Contract assets [(1)]	$ 5,558	$ 3,711
Long-term contract assets [(2)]	5,420	2,543
	$ 10,978	$ 6,254
Deferred revenue	$ 190,080	$ 185,145
Long-term deferred revenue [(3)]	5,407	5,344
	$ 195,487	$ 190,489

(1) Included in other current assets. (2) Included in other long-term assets. (3) Included in other long-term liabilities.

Contract assets are client committed amounts for which revenue recognized exceeds the amount billed to the client and the right to payment is subject to conditions other than the passage of time, such as the completion of a related performance obligation. Deferred revenue consists of billings and payments received in advance of revenue recognition. Contract assets and deferred revenue are netted at the contract level for each reporting period.

The change in deferred revenue in the year ended December 31, 2019 was primarily due to new billings in advance of revenue recognition, partially offset by revenue recognized during the period that was included in deferred revenue at December 31, 2018.

Major clients

No client represented 10% or more of the Company's total accounts receivable and unbilled receivables as of December 31, 2019 or December 31, 2018.

5. DEFERRED CONTRACT COSTS

	December 31,	
(in thousands)	2019	2018
Deferred contract costs [(1)]	$ 85,314	$ 64,367

(1) Included in other long-term assets.

Amortization of deferred contract costs was as follows:

(in thousands)	2019	2018	2017
Amortization of deferred contract costs [(1)]	$ 29,152	$ 17,271	$ 12,106

(1) Included in selling and marketing expenses.

6. PROPERTY AND EQUIPMENT

	December 31,	
(in thousands)	2019	2018
Leasehold improvements	$ 42,162	$ 39,216
Computer equipment	25,147	25,285
Furniture and fixtures	8,524	8,517
Computer software purchased	7,775	7,578
Computer software developed for internal use	17,606	16,463
Fixed assets in progress	4,044	1,173
	105,258	98,232
Less: accumulated depreciation	(70,975)	(61,597)
	$ 34,283	$ 36,635

Depreciation expense was:

(in thousands)	2019	2018	2017
Depreciation expense	$ 14,771	$ 13,875	$ 12,375

7. GOODWILL AND OTHER INTANGIBLE ASSETS

Goodwill

The following table presents the changes in the carrying amount of goodwill:

(in thousands)	2019	2018
January 1,	$ 72,858	$ 72,952
Acquisition [1]	6,179	—
Currency translation adjustments	2	(94)
December 31,	$ 79,039	$ 72,858

[1] In May 2019, the Company acquired In the Chat Communications Inc., a privately-held software provider of digital customer service software, for $10.9 million, net of cash acquired. The Company also expects to issue up to approximately 15 thousand shares in retention-based bonus payments to a key employee upon the achievement of specified retention milestones. The principal assets and liabilities acquired as part of the business combination were additional goodwill and technology intangible assets of $6.2 million and $5.1 million.

As discussed in "Note 8. Segment Information" the Company operates in one operating segment and has one reporting unit.

Intangibles

Intangible assets are recorded at cost and amortized using the straight-line method over their estimated useful lives as follows:

		December 31, 2019		
(in thousands)	Useful Lives	Cost	Accumulated Amortization	Net Book Value [1]
Client-related	4-10 years	$ 63,140	$ (54,368)	$ 8,772
Technology	2-10 years	64,843	(53,898)	10,945
Other	1-5 years	5,361	(5,361)	—
		$ 133,344	$ (113,627)	$ 19,717

[1] Included in other long-term assets.

		December 31, 2018		
(in thousands)	Useful Lives	Cost	Accumulated Amortization	Net Book Value [1]
Client-related	4-10 years	$ 63,115	$ (51,224)	$ 11,891
Technology	2-10 years	59,742	(50,398)	9,344
Other	1 - 5 years	5,361	(5,361)	—
		$ 128,218	$ (106,983)	$ 21,235

[1] Included in other long-term assets.

Amortization of intangible assets was:

(in thousands)	2019	2018	2017
Cost of revenue	$ 3,500	$ 5,027	$ 5,103
Selling and marketing	3,125	6,416	7,235
	$ 6,625	$ 11,443	$ 12,338

Future estimated amortization expense related to intangible assets:

(in thousands)	December 31, 2019
2020	$ 3,975
2021	3,651
2022	3,557
2023	3,289
2024 and thereafter	5,245
	$ 19,717

8. SEGMENT INFORMATION

Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision maker ("CODM") in deciding how to allocate resources and in assessing performance.

The Company derives substantially all of its revenue from the sale and support of one group of similar products and services – software

that provides case management, business process management, and real-time decisioning solutions to improve customer engagement and operational excellence in the enterprise applications market. To assess performance, the Company's CODM, who is the Chief Executive Officer, reviews financial information on a consolidated basis. Therefore, the Company determined it has one operating segment and one reporting unit.

Long-lived assets related to the Company's U.S. and international operations were:

	December 31,					
(Dollars in thousands)	2019			2018		
U.S.	$	26,644	78%	$	26,392	72%
India		2,017	6%		3,843	10%
International, other		5,622	16%		6,400	18%
	$	34,283	100%	$	36,635	100%

9. LEASES

Expense

(in thousands)	2019	
Fixed lease costs	$	18,250
Short-term lease costs		1,291
Variable lease costs		5,554
	$	25,095

Total rent expense under operating leases was approximately $14.9 million and $14.7 million for 2018 and 2017, respectively.

Right of use assets and lease liabilities

(in thousands)	December 31, 2019	
Right of use assets (1)	$	58,273
Lease liabilities (2)	$	15,885
Long-term lease liabilities	$	52,610

(1) Represents the Company's right to use the leased asset during the lease term. Included in other long-term assets. (2) Included in other current liabilities.

The weighted-average remaining lease term and discount rate for the Company's leases were:

	December 31, 2019
Weighted-average remaining lease term	4 years
Weighted-average discount rate (1)	5.8%

(1) The rates implicit in most of the Company's leases are not readily determinable, therefore the Company uses its incremental borrowing rate as the discount rate when measuring operating lease liabilities. The incremental borrowing rate represents an estimate of the interest rate the Company would incur to borrow an amount equal to the lease payments on a collateralized basis over the term of the lease in a similar economic environment.

Maturities of lease liabilities are:

(in thousands)	December 31, 2019	
2020	$	19,373
2021		18,702
2022		17,671
2023		16,615
2024 and thereafter		4,734
Total lease payments		77,095
Less: imputed interest (1)		(8,600)
Total short and long-term lease liabilities	$	68,495

(1) Lease liabilities are measured at the present value of the remaining lease payments using a discount rate determined at lease commencement unless the discount rate is updated as a result of a lease reassessment event.

As of December 31, 2018, the Company's future minimum rental payments required under operating leases with noncancellable terms in excess of one year as determined before the adoption of ASC 842 were:

(in thousands)		**Operating Leases** [1]
2019	$	15,993
2020		14,807
2021		13,262
2022		12,279
2023		11,084
	$	67,425

[1] Operating leases include future minimum rent payments, net of estimated sublease income for facilities that the Company has vacated pursuant to its restructuring activities.

Cash flow information

(in thousands)	**2019**
Cash paid for leases	19,727
Right of use assets recognized for new leases and amendments (non-cash)	31,155

10. CREDIT FACILITY

On November 6, 2019, the Company entered into a five year $100 million senior secured revolving credit agreement (the "Credit Facility") with PNC Bank, National Association. The Company may use borrowings to finance working capital needs and for general corporate purposes. Under certain circumstances, the Credit Facility allows the Company to increase the aggregate commitment up to $200 million.

The Credit Facility contains customary covenants, including, but not limited to, those relating to additional indebtedness, liens, asset divestitures, and affiliate transactions. The Company is also required to comply with financial covenants that consist of a maximum net consolidated leverage ratio of 3.5 (with a step-up in the event of certain acquisitions) and a minimum consolidated interest coverage ratio of 3.5. The commitments expire on November 4, 2024, and any outstanding loans will be payable on such date.

As of December 31, 2019, the Company had no borrowings under the credit facility.

11. STOCKHOLDERS' EQUITY

Preferred stock

The Company has one million authorized shares of preferred stock, $0.01 par value per share, of which none were issued and outstanding at December 31, 2019. The Board of Directors has the authority to issue the shares of preferred stock in one or more series, to establish the number of shares to be included in each series, and to determine the designation, powers, preferences, and rights of the shares of each series and the qualifications, limitations, or restrictions thereof, without any further vote or action by the stockholders. The issuance of preferred stock could decrease the amount of earnings and assets available for distribution to holders of common stock, and may have the effect of delaying, deferring, or defeating a change in control of the Company. The Company had not issued any shares of preferred stock through December 31, 2019.

Common stock

The Company has 200 million authorized shares of common stock, $0.01 par value per share, of which 79.6 million shares were issued and outstanding at December 31, 2019.

Dividends declared

		2019		**2018**		**2017**
Dividends declared (per share)	$	0.12	$	0.12	$	0.12
Dividend payments to shareholders (in thousands)	$	9,486	$	9,432	$	9,277

The Company's paid a quarterly cash dividend of $0.03 per share in 2019, 2018, and 2017, however, the Board of Directors may terminate or modify this dividend program at any time without prior notice.

Stock repurchases

	2019		2018		2017	
(in thousands)	**Shares**	**Amount**	**Shares**	**Amount**	**Shares**	**Amount**
January 1,		$ 6,620		$ 34,892		$ 39,385
Authorizations [1]		$ 60,000		$ 27,003		$ —
Repurchases	(333)	$ (21,136)	(1,001)	$ (55,275)	(99)	$ (4,493)
December 31,		$ 45,484		$ 6,620		$ 34,892

[1] On March 15, 2019, the Company announced that the Board of Directors extended the expiration date of the current stock repurchase program to June 30, 2020 and increased the amount of common stock the Company is authorized to repurchase by $60 million.

12. FAIR VALUE MEASUREMENTS

Assets and liabilities measured at fair value on a recurring basis

The Company records its cash equivalents, marketable securities, and investments in privately-held companies at fair value on a recurring basis. Fair value is an exit price, representing the amount that would be received from the sale of an asset or paid to transfer a liability in an orderly transaction between market participants based on assumptions that market participants would use in pricing an asset or liability.

As a basis for classifying the fair value measurements, a three-tier fair value hierarchy, which classifies the fair value measurements based on the inputs used in measuring fair value, was established as follows:

- Level 1 - observable inputs such as quoted prices in active markets for identical assets or liabilities;
- Level 2 - significant other inputs that are observable either directly or indirectly; and
- Level 3 - significant unobservable inputs on which there is little or no market data, which require the Company to develop its own assumptions. This hierarchy requires the Company to use observable market data, when available, and to minimize the use of unobservable inputs when determining fair value.

The Company's cash equivalents are composed of money market funds and time deposits, which are classified within Level 1 and Level 2, respectively, in the fair value hierarchy. The Company's marketable securities, which are classified within Level 2 of the fair value hierarchy, are valued based on a market approach using quoted prices, when available, or matrix pricing compiled by third party pricing vendors, using observable market inputs such as interest rates, yield curves, and credit risk. The Company's investments in privately-held companies are classified within Level 3 of the fair value hierarchy and are valued using model-based techniques, including option pricing models and discounted cash flow models.

If applicable, the Company will recognize transfers into and out of levels within the fair value hierarchy at the end of the reporting period in which the actual event or change in circumstance occurs. There were no transfers between levels during 2019, 2018, or 2017.

The Company's assets and liabilities measured at fair value on a recurring basis were:

	December 31, 2019			
(in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total**
Investments in privately-held companies [1]	$ —	$ —	$ 4,871	$ 4,871

[1] Included in other long-term assets.

	December 31, 2018			
(in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total**
Cash equivalents	$ 10,155	$ 10,000	$ —	$ 20,155
Marketable securities:				
Municipal bonds	$ —	$ 44,705	$ —	$ 44,705
Corporate bonds	—	48,296	—	48,296
Total marketable securities	$ —	$ 93,001	$ —	$ 93,001
Investments in privately-held companies [1]	$ —	$ —	$ 3,390	$ 3,390

[1] Included in other long-term assets.

For certain other financial instruments, including accounts receivable, unbilled receivables, and accounts payable, the carrying value approximates fair value due to the relatively short maturity of these items.

Assets measured at fair value on a nonrecurring basis

Assets recorded at fair value on a nonrecurring basis, including property and equipment and intangible assets, are recognized at fair value when they are impaired. The Company did not recognize any impairments on its assets measured at fair value on a nonrecurring basis during

2019, 2018, or 2017.

Credit risk

In addition to receivables, the Company is potentially subject to concentrations of credit risk from the Company's cash, cash equivalents, and marketable securities. The Company's cash and cash equivalents are generally held with large, diverse financial institutions worldwide to reduce the credit risk exposure. Investment policies have been implemented that limit purchases of marketable debt securities to investment-grade securities.

13. REVENUE

Geographic revenue

(Dollars in thousands)	2019		2018		2017	
U.S.	$ 525,191	57%	$ 469,987	52%	$ 505,415	56%
Other Americas	60,536	7%	53,239	6%	41,467	5%
United Kingdom ("U.K.")	87,382	10%	95,628	11%	97,000	11%
Europe (excluding U.K.), Middle East, and Africa	137,946	15%	147,248	17%	138,752	16%
Asia-Pacific	100,328	11%	125,479	14%	105,833	12%
	$ 911,383	100%	$ 891,581	100%	$ 888,467	100%

Revenue streams

(in thousands)	2019	2018	2017
Perpetual license	$ 80,015	$ 109,863	$ 132,883
Term license	199,433	178,256	206,411
Revenue recognized at a point in time	279,448	288,119	339,294
Maintenance	280,580	263,875	242,320
Cloud	133,746	82,627	51,097
Consulting	217,609	256,960	255,756
Revenue recognized over time	631,935	603,462	549,173
	$ 911,383	$ 891,581	$ 888,467

(in thousands)	2019	2018	2017
Term license	$ 199,433	$ 178,256	$ 206,411
Cloud	133,746	82,627	51,097
Maintenance	280,580	263,875	242,320
Subscription [(1)]	613,759	524,758	499,828
Perpetual license	80,015	109,863	132,883
Consulting	217,609	256,960	255,756
Total revenue	$ 911,383	$ 891,581	$ 888,467

[(1)] Reflects client arrangements (term license, cloud, and maintenance) that are subject to renewal.

Remaining performance obligations ("Backlog")

Expected future revenue on existing contracts:

(Dollars in thousands)	December 31, 2019						
	Perpetual license	Term license	Maintenance	Cloud	Consulting	Total	
1 year or less	$ 2,305	$ 97,826	$ 206,882	$ 165,571	$ 20,798	$ 493,382	58%
1-2 years	2,179	12,014	30,291	128,109	1,439	174,032	21%
2-3 years	—	3,132	17,844	84,788	132	105,896	13%
Greater than 3 years	—	3,861	13,277	43,702	1,993	62,833	8%
	$ 4,484	$ 116,833	$ 268,294	$ 422,170	$ 24,362	$ 836,143	100%

(Dollars in thousands)	December 31, 2018						
	Perpetual license	Term license	Maintenance	Cloud	Consulting	Total	
1 year or less	$ 14,665	$ 72,378	$ 192,274	$ 103,354	$ 17,235	$ 399,906	63%
1-2 years	2,343	10,355	10,436	80,214	2,810	106,158	17%
2-3 years	1,661	1,414	3,644	61,906	940	69,565	11%
Greater than 3 years	—	233	1,560	53,343	208	55,344	9%
	$ 18,669	$ 84,380	$ 207,914	$ 298,817	$ 21,193	$ 630,973	100%

Major clients

Clients accounting for 10% or more of the Company’s total revenue were:

(Dollars in thousands)	2019	2018	2017
Total revenue	$ 911,383	$ 891,581	$ 888,467
Client A	*	*	10%

*Client accounted for less than 10% of total revenue.

14. STOCK-BASED COMPENSATION

The following table presents the stock-based compensation expense included in the Company’s consolidated statements of operations:

(in thousands)	2019	2018	2017
Cost of revenues	$ 18,822	$ 16,862	$ 14,573
Selling and marketing	32,665	23,237	15,720
Research and development	18,938	15,274	13,618
General and administrative	10,484	8,489	9,402
	$ 80,909	$ 63,862	$ 53,313
Income tax benefit	$ (16,392)	$ (13,383)	$ (12,113)

The Company periodically grants stock options and restricted stock units (“RSUs”) for a fixed number of shares upon vesting to employees and non-employee Directors. Beginning in 2019, the Company granted Directors awards in the form of common stock and stock options.

Most of the Company’s stock-based compensation arrangements vest over five years with 20% vesting after one year and the remaining 80% vesting in equal quarterly installments over the remaining four years. The Company’s stock options have a term of ten years. The Company recognizes stock-based compensation using the accelerated attribution method, treating each vesting tranche as if it were an individual grant. The amount of stock-based compensation recognized during a period is based on the value of the awards that are ultimately expected to vest. Forfeitures are estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. Ultimately, the Company recognizes the actual expense over the vesting period only for the shares that vest.

Employees may elect to receive 50% of their target incentive compensation under the Company’s Corporate Incentive Compensation Plan (the “CICP”) in the form of RSUs instead of cash. If elected by an employee, the equity amount is equal in value on the date of grant to 50% of his or her target incentive opportunity, based on the employee’s base salary. The number of RSUs granted is determined by dividing 50% of the employee’s target incentive opportunity by 85% of the closing price of its common stock on the grant date, less the present value of expected dividends during the vesting period. If elected, the award vests 100% on the CICP payout date of the following year for all participants. Vesting is conditioned upon the performance conditions of the CICP and on continued employment; if threshold funding does not occur, the RSUs will not vest. The Company considers vesting to be probable on the grant date and recognizes the associated stock-based compensation expense over the requisite service period beginning on the grant date and ending on the vesting date.

The Company grants awards that allow for the settlement of vested stock options and RSUs on a net share basis (“net settled awards”). With net settled awards, the employee does not surrender any cash or shares upon exercise. Rather, the Company withholds the number of shares to cover the exercise price (in the case of stock options) and the minimum statutory tax withholding obligations (in the case of stock options and RSUs) from the shares that would otherwise be issued upon exercise or settlement. The exercise of stock options and settlement of RSUs on a net share basis results in fewer shares issued by the Company.

Share-based compensation plans

2004 Long-Term Incentive Plan (as amended and restated)

In 2004, the Company adopted the 2004 Long-Term Incentive Plan (as amended and restated, the “2004 Plan”) to provide employees, non-employee Directors, and consultants with opportunities to purchase stock through incentive stock options and non-qualified stock options. Subsequent amendments to the plan increased the number of shares authorized for issuance under the plan to 30 million, extended the term of the plan to 2026, and limited annual compensation to any non-employee Director to $0.5 million.

As of December 31, 2019, approximately 10 million shares were subject to outstanding options and stock-based awards under the 2004 Plan.

2006 Employee Stock Purchase Plan

In 2006, the Company adopted the 2006 Employee Stock Purchase Plan (the “2006 ESPP”) pursuant to which the Company’s employees are entitled to purchase up to an aggregate of one million shares of common stock, at a price equal to at least 85% of the fair market value of the Company’s common stock on either the commencement date or completion date for offerings under the plan, whichever is less, or such higher price as the Company’s Board of Directors may establish from time to time. Until the Company’s Board of Directors determines otherwise, the Board has set the purchase price at 95% of the fair market value on the completion date of the offering period. As a result, the 2006 ESPP is non-compensatory and is tax qualified. Therefore, as of December 31, 2019, no compensation expense related to shares issued under the plan had been recognized. In October 2012, the Company’s Board of Directors amended the term of the 2006 ESPP such that it will continue until there are no shares remaining to be issued under the plan or until the plan is terminated by the Board of Directors, whichever occurs first.

As of December 31, 2019, approximately 0.4 million shares had been issued thereunder.

Shares available for issuance

As of December 31, 2019, there were approximately 6.5 million shares available for issuance for future equity grants under the Company’s stock plans, consisting of approximately 5.9 million shares under the 2004 Plan and approximately 0.6 million shares under the 2006 ESPP.

Grant activity

During 2019, the Company issued approximately 1.4 million shares to its employees and directors under the Company’s share-based compensation plans.

Stock options

The Company estimates the fair value of stock options using a Black-Scholes option valuation model. Key inputs used to estimate the fair value of stock options include the exercise price of the award, expected term of the option, expected volatility of the Company’s common stock over the option’s expected term, risk-free interest rate over the option’s expected term, and the Company’s expected annual dividend yield. The exercise price for stock options is greater than or equal to the fair market value of the shares at the grant date.

The following table summarizes the Company's fair value assumptions for stock options:

	2019	2018	2017
Weighted-average grant-date fair value	$ 19.10	$ 18.03	$ 13.79
Assumptions used in the Black-Scholes option valuation model			
Expected annual volatility [1]	32%	34%	35%
Expected term in years [2]	4.5	4.5	4.5
Risk-free interest rate [3]	2.4%	2.6%	1.9%
Expected annual dividend yield [4]	0.3%	0.4%	0.5%

(1) The expected annual volatility for each grant is determined based on the average of historical daily price changes of the Company's common stock over a period which approximates the expected option term.

(2) The expected option term for each grant is determined based on the historical exercise behavior of employees and post-vesting employment termination behavior.

(3) The risk-free interest rate is based on the yield of U.S. Treasury securities with a maturity that is commensurate with the expected option term at the time of grant.

(4) The expected annual dividend yield is based on the weighted-average of the dividend yield assumptions used for options granted during the applicable period.

The following table summarizes the combined stock option activity under the Company's stock option plans for 2019:

	Shares (in thousands)	Weighted-average Exercise Price	Weighted-average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Options outstanding as of January 1, 2019	6,971	$ 34.47		
Granted	2,272	65.91		
Exercised	(1,498)	27.86		
Forfeited	(309)	50.25		
Options outstanding as of December 31, 2019	7,436	$ 44.76		
Vested and expected to vest as December 31, 2019	6,292	$ 43.17	7.0	$ 229,541
Exercisable as of December 31, 2019	3,012	$ 28.71	5.6	$ 153,399

The aggregate intrinsic value of stock options exercised (i.e., the difference between the market price at exercise and the price paid by the employee at exercise) in 2019, 2018, and 2017 was $63.3 million, $56.8 million, and $62.6 million, respectively. The aggregate intrinsic value of stock options outstanding and exercisable as of December 31, 2019 is based on the difference between the closing price of the Company's stock of $79.65 and the exercise price of the applicable stock options.

As of December 31, 2019, the Company had unrecognized stock-based compensation expense related to the unvested portion of stock options of approximately $29.6 million that is expected to be recognized as expense over a weighted-average period of approximately 2.3 years.

RSUs

RSUs deliver to the recipient a right to receive a specified number of shares of the Company's common stock upon vesting. The Company values its RSUs at the fair value of its common stock on the grant date, which is the closing price of its common stock on the grant date, less the present value of expected dividends during the vesting period, as the recipient is not entitled to dividends during the requisite service period.

The weighted-average grant-date fair value for RSUs granted in 2019, 2018, and 2017 was $66.21, $58.52, and $46.07, respectively.

The following table summarizes the combined RSU activity for all grants, including the CICP, under the 2004 Plan for 2019:

	Shares (in thousands)	Weighted- Average Grant-Date Fair Value	Aggregate Intrinsic Value (in thousands)
Nonvested as of January 1, 2019	2,651	$ 43.69	
Granted	1,273	66.21	
Vested	(1,116)	40.79	
Forfeited	(243)	49.23	
Nonvested as of December 31, 2019	2,565	$ 55.61	$ 204,289
Expected to vest as of December 31, 2019	1,917	$ 56.46	$ 151,773

The fair value of RSUs vested in 2019, 2018, and 2017 was $77 million, $66.5 million, and $59 million, respectively. The aggregate intrinsic value of RSUs outstanding and expected to vest as of December 31, 2019 is based on the closing price of the Company's stock of $79.65 on December 31, 2019.

As of December 31, 2019, the Company had approximately $54.1 million of unrecognized stock-based compensation expense related to all unvested RSUs that is expected to be recognized as expense over a weighted-average period of approximately 2.1 years.

Common stock

In 2019, the Company granted 0.01 million shares of common stock to Directors with a weighted average grant-date fair value of $69.59 per share.

15. EMPLOYEE BENEFIT PLANS

The Company sponsors defined contribution plans for qualifying employees, including a 401(k) plan in the United States to which the Company makes discretionary matching contributions.

The following expenses related to defined contribution plans were recorded in the Company's consolidated statements of operations:

(in thousands)	2019	2018	2017
U.S. 401(k) Plan	$ 6,676	$ 5,506	$ 5,003
International Plans	13,021	11,101	9,096
	$ 19,697	$ 16,607	$ 14,099

16. INCOME TAXES

The components of (loss) income before (benefit from) income taxes are:

(in thousands)	2019	2018	2017
Domestic	$ (51,396)	$ (27,494)	$ 57,493
Foreign	(83,450)	15,951	28,742
(Loss) income before (benefit from) income taxes	$ (134,846)	$ (11,543)	$ 86,235

The components of the (benefit from) income taxes are:

(in thousands)	2019	2018	2017
Current:			
Federal	$ 1,050	$ (1,862)	$ (18,109)
State	405	287	97
Foreign	3,449	10,313	8,479
Total current provision for (benefit from)	4,904	8,738	(9,533)
Deferred:			
Federal	(25,356)	(18,939)	(2,049)
State	(5,143)	(3,702)	(214)
Foreign	(18,818)	(8,257)	(517)
Total deferred (benefit)	(49,317)	(30,898)	(2,780)
(Benefit from) income taxes	$ (44,413)	$ (22,160)	$ (12,313)

A reconciliation of the provision for income taxes, with the amount computed by applying the statutory Federal income tax rate to (loss) income before (benefit from) income taxes is as follows:

(in thousands)	2019	2018	2017
U.S. federal income taxes at statutory rates	$ (28,318)	$ (2,424)	$ 30,182
Valuation allowance	727	510	459
State income taxes, net of federal benefit and tax credits	(4,450)	(3,329)	(395)
Permanent differences	2,606	1,302	778
GILTI, FDII, and BEAT	—	399	—
Federal research and experimentation credits	(4,295)	(6,991)	(3,374)
Tax effects of foreign activities	3,056	(399)	(781)
Tax-exempt income	(91)	(137)	(94)
Provision to return adjustments	(5,460)	253	(1,832)
Non-deductible compensation	1,716	1,025	1,840
Expiration of statutes and changes in estimates	2,420	(516)	257
Excess tax benefits related to share-based compensation	(14,291)	(13,541)	(24,488)
Impact of change in tax law	1,908	1,636	(15,450)
Other	59	52	585
(Benefit from) income taxes	$ (44,413)	$ (22,160)	$ (12,313)

Tax Reform Act

On December 22, 2017, the President of the United States signed into law the Tax Cuts and Jobs Act (the "Tax Reform Act"). The Tax Reform Act makes significant changes in the U.S. tax code including the following:

- reduction of the corporate federal income tax rate from 35% to 21%;
- repeal of the domestic manufacturing deduction;
- repeal of the corporate alternative minimum tax;
- a one-time transition tax on accumulated foreign earnings (if any);
- a move to a territorial tax system; and
- acceleration of business asset expensing.

The Tax Reform Act provided for a one-time deemed mandatory repatriation of post-1986 undistributed foreign subsidiary earnings and profits through December 31, 2017. The Company has concluded that it is not subject to the one-time transition tax due to our foreign subsidiaries being in a net accumulated deficit position.

Companies must make an accounting policy election to either recognize deferred taxes for temporary basis differences expected to reverse as the global intangible low taxed income ("GILTI") in future years or to provide for the tax expense related to GILTI in the year the tax is incurred as a period expense only. The Company has elected to account for GILTI in the year the tax is incurred as a period cost.

In 2018, the Company recognized an immaterial U.S. tax benefit resulting from the foreign derived intangible income ("FDII") deduction. Beginning in 2019, there is no impact on the Company's effective tax rate deriving from either the FDII,GILTI, or the base erosion and anti-abuse tax ("BEAT") provisions.

Deferred income taxes

Significant components of net deferred tax assets and liabilities are:

(in thousands)	December 31, 2019	December 31, 2018
Deferred tax assets:		
Net operating loss carryforwards	$ 70,960	$ 40,736
Accruals and reserves	24,902	17,576
Depreciation	2,493	2,874
Tax credit carryforwards	15,307	14,896
Other	199	176
Total deferred tax assets	113,861	76,258
Valuation allowances	(28,007)	(27,954)
Total net deferred tax assets	85,854	48,304
Deferred tax liabilities:		
Software revenue	(23,859)	(36,510)
Intangibles	(6,103)	(5,748)
Total deferred tax liabilities	(29,962)	(42,258)
Deferred income taxes	$ 55,892	$ 6,046

The Company regularly assesses the need for a valuation allowance against its deferred tax assets. In making that assessment, the Company considers both positive and negative evidence related to the likelihood of realization of the deferred tax assets to determine, based on the weight of available evidence, whether it is more-likely-than-not that some or all of the deferred tax assets will not be realized. This determination requires significant judgment, including assumptions about future taxable income that are based on historical and projected information. There were no material changes in the valuation allowance in 2019 or 2018.

At December 31, 2019, the Company's net operating losses and credit carryforwards are:

(in thousands)	Federal	State
Net operating losses [1]	$ 120,722	$ 3,337
Net operating losses due to acquisitions [1]	$ 76,827	$ 778
Credit carryforwards [2]	$ 8,202	$ 1,958
Credit carryforwards due to acquisitions	$ 640	$ 227

[1] Excludes federal and state net operating losses of $60.2 million and $0.8 million, respectively, from prior acquisitions that the Company expects will expire unutilized.

[2] Excludes federal and state tax credits of $0.1 million and $8.3 million, respectively, that the Company expects will expire unutilized.

Carryforward losses and credits expire between 2020 and 2038, except for the 2019 federal net operating loss of $43.9 million and $1 million of state credits, which both have unlimited carryforward periods.

The Company's India subsidiary is primarily located in Special Economic Zones ("SEZs") and is entitled to a tax holiday in India. The tax holiday reduces or eliminates income tax in India. The tax holiday in the Hyderabad SEZ is scheduled to expire in 2024. The tax holiday in the Bangalore SEZ is scheduled to expire in 2022. For 2019, 2018 and 2017, the income tax holiday reduced the Company's provision for income taxes by $1.9 million, $1.3 million, and $1 million, respectively.

Uncertain tax benefits

A rollforward of the Company's gross unrecognized tax benefits is:

(in thousands)	2019	2018	2017
Balance as of January 1,	$ 18,157	$ 19,150	$ 22,671
Additions based on tax positions related to the current year	510	978	452
Additions for tax positions of prior years	4,917	174	238
Additions for acquired uncertain tax benefits	—	—	—
Reductions for change in U.S. federal tax rate	—	—	(2,424)
Reductions for tax positions of prior years	(313)	(2,145)	(1,500)
Reductions for a lapse of the applicable statute of limitations	—	—	(287)
Balance as of December 31,	$ 23,271	$ 18,157	$ 19,150

As of December 31, 2019, the Company had approximately $23.3 million of total unrecognized tax benefits, which would decrease the

Company's effective tax rate if recognized. The Company expects that the changes in the unrecognized benefits within the next twelve months will be approximately $0.1 million due to an anticipated settlement with tax authorities.

Income Tax Receivable

As of December 31, 2019 and December 31, 2018, the Company's income tax receivable was $25.9 million and $27.8 million, respectively.

Tax examinations

The Company files federal and state income tax returns in the U.S. as well as in various foreign jurisdictions. In the ordinary course of business, the Company and its subsidiaries are examined by various tax authorities, including the Internal Revenue Service in the U.S. As of December 31, 2019, the Company's U.S. federal tax returns for the years 2014 through 2016 were under examination by the Internal Revenue Service. In addition, certain foreign jurisdictions are auditing the Company's income tax returns for periods ranging from 2010 through 2017. The Company does not expect the results of these audits to have a material effect on the Company's financial condition, results of operations, or cash flows. With few exceptions, the statute of limitations remains open in all jurisdictions for the tax years 2014 to the present.

17. EARNINGS PER SHARE

Basic earnings per share is computed using the weighted-average number of common shares outstanding during the applicable period. Diluted earnings per share is computed using the weighted-average number of common shares outstanding during the applicable period, plus the dilutive effect of outstanding stock options and RSUs, using the treasury stock method. In periods of loss, all stock options and RSUs are excluded from the weighted-average number of common shares, as their inclusion would be anti-dilutive.

(in thousands, except per share amounts)	2019	2018	2017
Basic			
Net (loss) income	$ (90,433)	$ 10,617	$ 98,548
Weighted-average common shares outstanding	79,055	78,564	77,431
(Loss) earnings per share, basic	$ (1.14)	$ 0.14	$ 1.27
Diluted			
Net (loss) income	$ (90,433)	$ 10,617	$ 98,548
Weighted-average effect of dilutive securities:			
Stock options	—	2,891	3,471
RSUs	—	1,609	1,930
Effect of dilutive securities	—	4,500	5,401
Weighted-average common shares outstanding, assuming dilution	79,055	83,064	82,832
(Loss) earnings per share, diluted	$ (1.14)	$ 0.13	$ 1.19
Outstanding anti-dilutive stock options and RSUs (1)	5,911	188	221

(1) Certain outstanding stock options and RSUs were excluded from the computation of diluted earnings per share because they were anti-dilutive in the period presented. These awards may be dilutive in the future.

18. SELECTED QUARTERLY INFORMATION (UNAUDITED) [1]

(in thousands, except per share amounts)	2019 1st Quarter	2019 2nd Quarter	2019 3rd Quarter	2019 4th Quarter
Revenue	$ 212,546	$ 205,592	$ 216,703	$ 276,542
Gross profit	$ 138,109	$ 128,512	$ 135,805	$ 198,935
(Loss) from operations	$ (34,028)	$ (52,338)	$ (46,767)	$ (1,745)
Net (loss) income	$ (28,717)	$ (32,296)	$ (30,338)	$ 918
(Loss) earnings per share				
Basic	$ (0.37)	$ (0.41)	$ (0.38)	$ 0.01
Diluted	$ (0.37)	$ (0.41)	$ (0.38)	$ 0.01

(in thousands, except per share amounts)	2018 1st Quarter	2018 2nd Quarter	2018 3rd Quarter	2018 4th Quarter
Revenue	$ 235,182	$ 196,779	$ 203,263	$ 256,357
Gross profit	$ 159,568	$ 122,962	$ 128,840	$ 178,446
Income (loss) from operations	$ 7,936	$ (23,163)	$ (17,258)	$ 15,453
Net income (loss)	$ 12,200	$ (10,409)	$ (7,587)	$ 16,413
Earnings (loss) per share				
Basic	$ 0.16	$ (0.13)	$ (0.10)	$ 0.21
Diluted	$ 0.15	$ (0.13)	$ (0.10)	$ 0.20

[1] Quarterly amounts shown may not sum to the full year amount due to rounding.

19. COMMITMENTS AND CONTINGENCIES

Commitments

See "Note 9. Leases" for additional information.

Contingencies

The Company is a party in various contractual disputes, litigation and potential claims arising in the ordinary course of business. The Company does not believe that the resolution of these matters will have a material adverse effect on its financial position or results of operations.

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

Our management, with the participation of our Chief Executive Officer ("CEO"), and Chief Financial Officer ("CFO"), evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act) as of December 31, 2019. In designing and evaluating our disclosure controls and procedures, our management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and our management necessarily applied its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Based on this evaluation, our CEO and CFO concluded that our disclosure controls and procedures were effective as of December 31, 2019.

Management's report on and changes in internal control over financial reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act. Under the supervision and with the participation of our management, including our CEO and CFO, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2019 based on the framework in the updated *Internal Control — Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") on May 14, 2013.

Based on this evaluation, management has concluded that (i) our internal control over financial reporting was effective as of December 31, 2019 and (ii) no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act) occurred during the quarter ended December 31, 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Deloitte & Touche LLP, our independent registered public accounting firm which also audited our consolidated financial statements, has issued an attestation report on our internal control over financial reporting, which is included in Item 8 "Financial Statements and Supplementary Data".

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS, AND CORPORATE GOVERNANCE

Except as set forth below, information required by this item is incorporated herein by reference from the information contained in our proxy statement for our 2020 annual stockholders meeting (the "2020 proxy statement") under the headings Executive Compensation, Election of Directors, Corporate Governance, Executive Officers, and Delinquent Section 16(a) Reports, which will be filed with the Securities and Exchange Commission within 120 days after the close of the fiscal year.

We have adopted a written code of conduct that applies to our Board of Directors and all of our employees, including our principal executive officer, principal financial officer, principal accounting officer, and persons performing similar functions. A copy of our code of conduct can be found on our website, www.pega.com. We intend to satisfy the disclosure requirements under Item 5.05 of Form 8-K and under the applicable the NASDAQ Global Select Market rules by posting such information on our website in accordance with such requirements.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item is incorporated herein by reference from the information contained in the 2020 proxy statement under the headings "Director Compensation", "Compensation Discussion and Analysis", and "Executive Compensation" and is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this item is incorporated herein by reference from the information contained in the 2020 proxy statement under the headings "Executive Compensation", "Equity Compensation Plan Information", and "Security Ownership of Certain Beneficial Owners and Management", and is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item is incorporated herein by reference from the information contained in the 2020 proxy statement under the headings "Certain Relationships and Related Transactions" and "Determination of Independence" and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this item is incorporated herein by reference from the information contained in the 2020 proxy statement under the heading "Independent Registered Public Accounting Firm Fees and Services" and is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) The following are filed as part of this Annual Report:

(1) Financial Statements

The following consolidated financial statements are included in Item 8:

(b) Exhibits

Exhibit No.	Description
2.1	Agreement and Plan of Merger, dated as of October 9, 2013, by and among Pegasystems Inc., Aries Merger Sub, Inc., Antenna Software, Inc., and Shareholder Representative Services LLC, solely in its capacity as representative of Stockholders thereunder. (Filed as Exhibit 2.1 to the Registrant's October 11, 2013 Form 8-K and incorporated herein by reference.)
3.1	Restated Articles of Organization of the Registrant and Amendments thereto. (Filed as Exhibit 3.1 to the Registrant's September 30, 2014 Form 10-Q and incorporated herein by reference.)
3.2	Amended and Restated Bylaws of Pegasystems Inc. (Filed as Exhibit 3.2 to the Registrant's September 8, 2017 Form 8-K and incorporated herein by reference.)
4.1	Specimen Certificate Representing the Common Stock. (Filed as Exhibit 4.1 to the Registrant's Registration Statement on Form S-1 (Registration No. 333-03807) or an amendment thereto and incorporated herein by reference.)
+4.2	Description of Common Stock
10.1++	2004 Long-Term Incentive Plan (as amended and restated) (Filed as Exhibit 10.1 to the Registrant's December 31, 2017 Form 10-K and incorporated herein by reference)
10.2++	Restricted Stock Unit Sub-Plan of the Registrant's 2004 Long-Term Incentive Plan for French Participants (Filed as Appendix B within the Registrant's 2016 Proxy Statement, filed April 18, 2016 and incorporated herein by reference.)
10.3++	Form of Employee Stock Option Agreement, as amended. (Filed as Exhibit 10.3 to the Registrant's March 31, 2017 Form 10-Q and incorporated herein by reference.)
10.4++	Form of Restricted Stock Unit Agreement, as amended. (Filed as Exhibit 10.4 to the Registrant's March 31, 2017 Form 10-Q and incorporated herein by reference.)
10.5++	Form of Non-Employee Director Stock Option Agreement. (Filed as Exhibit 10.2 to the Registrant's September 30, 2004 Form 10-Q and incorporated herein by reference.)
10.6++	Offer Letter between the Registrant and Douglas I. Kra dated October 19, 2004. (Filed as Exhibit 10.20 to the Registrant's 2004 Form 10-K and incorporated herein by reference.)
10.7	Form of Director Indemnification Agreement. (Filed as Exhibit 99.1 to the Registrant's April 11, 2005 Form 8-K and incorporated herein by reference.)
10.9	Lease Agreement dated June 29, 2011 between Charles Park One, LLC and Pegasystems Inc. for premises at One Charles Park (Filed as Exhibit 99.1 to the Registrant's Form 8-K/A filed on July 6, 2011 and incorporated herein by reference.)
10.10++	2006 Employee Stock Purchase Plan, as amended on October 25, 2012. (Filed as Exhibit 10.24 to the Registrant's 2012 Form 10-K and incorporated herein by reference.)
10.11++	2016 Section 16 Officer/FLT Member Corporate Incentive Compensation Plan. (Filed as Exhibit 99.1 to the Registrant's February 24, 2016 Form 8-K and incorporated herein by reference.)
10.12++	2016 Section 16 Executive Officers Base Salaries and Target Bonus Payments. (Filed as Exhibit 99.1 to the Registrant's March 15, 2016 Form 8-K and incorporated herein by reference.)
10.13++	Compensation program for non-employee members of the Registrant's Board of Directors. (Filed as Exhibit 10.1 to the Registrant's June 30, 2014 Form 10-Q and incorporated herein by reference.)
10.14++	2017 Section 16 Officer/FLT Member Corporate Incentive Compensation Plan. (Filed as Exhibit 99.1 to the Registrant's March 8, 2017 Form 8-K and incorporated herein by reference.)
10.15++	2015 Section 16 Executive Officers Base Salaries and Target Bonus Payments. (Filed as Exhibit 99.2 to the Registrant's February 3, 2015 Form 8-K and incorporated herein by reference.)
10.16++	Compensation program for non-employee members of the Registrant's Board of Directors, effective August 6, 2015. (Filed as Exhibit 10.1 to the Registrant's September 30, 2015 Form 10-Q and incorporated herein by reference.)
10.17	First Amendment to Lease Agreement dated November 11, 2014 between Charles Park One, LLC and Pegasystems Inc. (Filed as Exhibit 10.2 to the Registrant's September 30, 2015 Form 10-Q and incorporated herein by reference.)
10.18++	Offer Letter between the Registrant and Kenneth Stillwell dated June 1, 2016. (Filed as Exhibit 99.1 to the Registrant's June 14, 2016 Form 8-K and incorporated herein by reference.)
10.19++	Compensation program for non-employee members of the Registrant's Board of Directors, effective May 18, 2016. (Filed as Exhibit 10.1 to the Registrant's June 30, 2016 Form 10-Q and incorporated herein by reference.)

Exhibit No.	Description
10.20++	2018 Section 16 Officer/FLT Member Corporate Incentive Compensation Plan. (Filed as Exhibit 99.1 to the Registrant's December 27, 2017 Form 8-K and incorporated herein by reference.)
10.21++	2018 Section 16 Officer/FLT Member Executive Officers Base Salaries and Target Bonus Payments. (Filed as Exhibit 99.1 to the Registrant's March 9, 2018 Form 8-K and incorporated herein by reference.)
10.22++	2019 Section 16 Officer/FLT Member Corporate Incentive Compensation Plan. (Filed as Exhibit 99.1 to the Registrant's February 8, 2019 Form 8-K and incorporated herein by reference.)
10.23	Credit Agreement dated as of November 5, 2019 with PNC Bank, National Association (Filed as Exhibit 10.1 to the Registrant's September 30, 2019 Form 10-Q and incorporated herein by reference.)
10.24++	2019 Section 16 Officer/FLT Member Executive Officers Base Salaries and Target Bonus Payments. (Filed as Exhibit 99.1 to the Registrant's March 8, 2019 Form 8-K and incorporated herein by reference.)
10.25++	Compensation program for non-employee members of the Registrant's Board of Directors, effective August 5, 2019 (Filed as Item 1.01 of the Registrant's August 9, 2019 Form 8-K and incorporated herein by reference.)
10.26++	2020 Section 16 Officer/FLT Member Corporate Incentive Compensation Plan. (Filed as Exhibit 99.1 to the Registrant's February 7, 2020 Form 8-K and incorporated herein by reference.)
+21.1	Subsidiaries of the Registrant.
+23.1	Consent of Independent Registered Public Accounting Firm—Deloitte & Touche LLP.
+31.1	Certification pursuant to Exchange Act Rules 13a-14 and 15d-14 of the Chief Executive Officer.
+31.2	Certification pursuant to Exchange Act Rules 13a-14 and 15d-14 of the Chief Financial Officer.
+32	Certification pursuant to 18 U.S.C. Section 1350 of the Chief Executive Officer and the Chief Financial Officer.
101.INS	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document.
101.CAL	Inline XBRL Taxonomy Calculation Linkbase Document.
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	Inline XBRL Taxonomy Label Linkbase Document.
101.PRE	Inline XBRL Taxonomy Presentation Linkbase Document.
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

[+] Filed herewith

[++] Management contracts and compensatory plan or arrangements required to be filed pursuant to Item 15(b) of Form 10-K.

(c) Financial Statement Schedules

All financial statement schedules are omitted because the required information is not present or not present in sufficient amounts to require submission of the schedule or because the information is reflected in the consolidated financial statements or notes thereto.

ITEM 16. FORM 10-K SUMMARY

Omitted at Registrant's option.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

Pegasystems Inc.

Date:	February 12, 2020	By:	/s/ KENNETH STILLWELL
			Kenneth Stillwell
			Chief Financial Officer and Chief Administrative Officer
			(Principal Financial Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report on Form 10-K has been signed below on February 12, 2020 by the following persons on behalf of the Registrant and in the capacities indicated.

Signature	Title
/s/ ALAN TREFLER **Alan Trefler**	Chairman and Chief Executive Officer (Principal Executive Officer)
/s/ KENNETH STILLWELL **Kenneth Stillwell**	Chief Financial Officer and Chief Administrative Officer (Principal Financial Officer)
/s/ EFSTATHIOS KOUNINIS **Efstathios Kouninis**	Chief Accounting Officer, Vice President of Finance and Treasurer (Principal Accounting Officer)
/s/ PETER GYENES **Peter Gyenes**	Director
/s/ RONALD HOVSEPIAN **Ronald Hovsepian**	Director
/s/ RICHARD JONES **Richard Jones**	Director
/s/ CHRISTOPHER LAFOND **Christopher Lafond**	Director
/s/ DIANNE LEDINGHAM **Dianne Ledingham**	Director
/s/ JAMES O’HALLORAN **James O’Halloran**	Director
/s/ SHARON ROWLANDS **Sharon Rowlands**	Director
/s/ LARRY WEBER **Larry Weber**	Director

EXHIBIT 4.2

DESCRIPTION OF REGISTRANT'S COMMON STOCK REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

As of December 31, 2019, Pegasystems Inc. (the "Company") has one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"): shares of Common Stock, $0.01 par value per share (the "Common Stock").

Description of Common Stock

The following summary description sets forth some of the general terms and provisions of the Common Stock. Because this is a summary description, it does not contain all of the information that may be important to you. It is subject to and qualified in its entirety by reference to the Company's Restated Articles of Organization and Amendments thereto (the "Restated Articles of Organization") and the Company's Amended and Restated Bylaws (the "Bylaws"), each of which is an exhibit to the Annual Report on Form 10-K of which this description is a part.

Authorized Capital Shares

The authorized capital stock of the Company consists of 200 million shares of Common Stock, and 1 million shares of Preferred Stock, $0.01 per share (the "Preferred Stock"), which may be issued in one or more series. The outstanding shares of our Common Stock are fully paid and nonassessable. The rights, privileges and preferences of holders of Common Stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of Preferred Stock which the Company may designate and issue in the future. There are no shares of Preferred Stock currently outstanding.

Voting Rights

Holders of Common Stock are entitled to one vote per share on all matters voted on by shareholders of the Company, including the election of directors. Holders of Common Stock do not have cumulative voting rights. The Company has a declassified Board of Directors and the Bylaws provide for one-year terms for each director. All nominees will stand for election or re-election at each annual meeting of shareholders of the Company. Accordingly, a majority of the shares of Common Stock entitled to vote in any election of directors may elect all of the directors standing for election. Holders of Common Stock may act by unanimous written consent.

Dividend Rights

Subject to the preferential rights of holders of Preferred Stock outstanding, if any, the holders of Common Stock are entitled to receive dividends, if any, when and as declared from time to time by the Board of Directors of the Company in its discretion, out of assets legally available for the payment of dividends.

Liquidation Rights

Upon the liquidation, dissolution or winding up of the Company, the holders of Common Stock are entitled to receive ratably the net assets of the Company available after the payment of all debts and other liabilities and subject to the prior rights of any outstanding Preferred Stock.

Other Rights and Preferences

The Common Stock is not redeemable or exchangeable, is not subject to sinking fund provisions, does not have any conversion rights and is not subject to call. Holders of Common Stock have no preemptive rights to maintain their percentage of ownership in future offerings or sales of stock of the Company.

Forum Selection Clause

Under the Bylaws, unless the Company consents in writing to the selection of an alternative forum, the sole and exclusive forum for making certain types of claims enumerated in the bylaws is the Business Litigation Section of the Superior Court of Suffolk County, Massachusetts (the "BLS") irrespective of any waivable claims challenging jurisdiction or venue of the BLS (except that, in the event the BLS lacks jurisdiction over any such action or proceeding, then the sole and exclusive forum for such action or proceeding is the federal district court for the District of Massachusetts, Eastern Division). This provision applies to (a) any derivative action or proceeding brought on behalf of the Company, (b) any action asserting a claim of breach of a fiduciary duty owed by any director, officer, or other employee of the Company to the Company or the Company's shareholders, (c) any action asserting a claim arising pursuant to any provision of the Massachusetts Business Corporation Act, as in effect from time to time or the Restated Articles of Organization or the Bylaws, including, without limitation, any action to interpret, apply, enforce or determine the validity of the Restated Articles of Organization or the Bylaws, or (d) any action asserting a claim governed by the internal affairs doctrine.

Listing

The Common Stock is traded on The Nasdaq Stock Market LLC under the trading symbol "PEGA."

Preferred Stock

The Board of Directors of the Company is authorized, subject to certain limitations prescribed by law, without further approval of the holders of Common Stock, to issue from time to time up to an aggregate of 1 million shares of Preferred Stock in one or more series and to fix or alter the designations, preferences, rights and any qualifications, limitations or restrictions of the shares of each such series thereof, including the dividend rights, dividend rates, conversion rights, voting rights, terms of redemption (including sinking fund provisions), redemption price or prices, liquidation preferences and the number of shares constituting any series or designations of such series. The issuance of Preferred Stock may have the effect of delaying, deferring or preventing a change of control of the Company and may adversely affect the market price of the Common Stock and the voting and other rights of the holders of Common Stock.

Massachusetts Law

The Company is subject to the provisions of Chapter 110F of the Massachusetts General Laws, the so-called Business Combination Statute. Under Chapter 110F, a Massachusetts corporation with at least 200 stockholders, such as the Company, may not engage in a "business combination" with an "interested stockholder" for a period of three years after the date of the transaction in which the person becomes an interested stockholder, unless (i) the interested stockholder obtains the approval of the Board of Directors of the Company prior to becoming an interested stockholder, (ii) the interested stockholder acquires 90% of the outstanding voting stock of the Company (excluding shares held by certain affiliates of the Company) at the time it becomes an interested stockholder, or (iii) the business combination is approved by both the Board of Directors of the Company and the holders of at least two-thirds of the outstanding voting stock of the Company (excluding shares held by the interested stockholder), which in the case of the stockholder approval is authorized at an annual or special meeting of stockholders, and not by written consent.

An "interested stockholder" is a person who, together with affiliates and associates, owns (or at any time within the prior three years did own) 5% or more of the outstanding voting stock of the Company. A "business combination" includes a merger, a stock or assets sale, and other transactions resulting in a financial benefit to the stockholder.

EXHIBIT 21.1

SUBSIDIARIES OF PEGASYSTEMS INC*

Name of Subsidiary	State or Jurisdiction of Entity
Antenna Software, LLC	Delaware
Pegasystems BV	Netherlands
Pegasystems France	France
Pegasystems GmbH	Germany
Pegasystems Limited	United Kingdom
Pegasystems PTY Limited	Australia
Pegasystems Software Limited sp. z.o.o.	Poland
Pegasystems Worldwide India Private Limited	India

* Omits subsidiaries, which, considered in the aggregate, would not constitute a significant subsidiary.

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statements Nos. 333-09305, 333-89707, 333-53746, 333-104788, 333-116660, 333-135596, 333-166287, 333-166544, 333-176810, and 333-213953 on Form S-8 of our report dated February 12, 2020, relating to the financial statements of Pegasystems Inc., and the effectiveness of Pegasystems Inc.'s internal control over financial reporting, appearing in this Annual Report on Form 10-K of Pegasystems Inc. for the year ended December 31, 2019.

/s/ DELOITTE & TOUCHE LLP

Boston, Massachusetts

February 12, 2020

EXHIBIT 31.1

CERTIFICATION

I, Alan Trefler, certify that:

1. I have reviewed this Annual Report on Form 10-K of Pegasystems Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: February 12, 2020

/s/ ALAN TREFLER

Alan Trefler
Chairman and Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATION

I, Kenneth Stillwell, certify that:

1. I have reviewed this Annual Report on Form 10-K of Pegasystems Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   c) evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   d) disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and
5. The registrant’s other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of the registrant’s board of directors (or persons performing the equivalent functions):
   a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and
   b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting.

Dated: February 12, 2020

/s/ KENNETH STILLWELL

Kenneth Stillwell
Chief Financial Officer and Chief Administrative Officer
(Principal Financial Officer)

EXHIBIT 32

CERTIFICATION PURSUANT TO SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Pegasystems Inc. (the "Company") on Form 10-K for the year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Alan Trefler, Chairman and Chief Executive Officer of Pegasystems Inc., and Kenneth Stillwell, Chief Financial Officer and Chief Administrative Officer of Pegasystems Inc., each certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: February 12, 2020

/s/ ALAN TREFLER

Alan Trefler
Chairman and Chief Executive Officer
(Principal Executive Officer)

/s/ KENNETH STILLWELL

Kenneth Stillwell
Chief Financial Officer and Chief Administrative Officer
(Principal Financial Officer)