PEGASYSTEMS INC

FORM 10-K
(Annual Report)

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Telephone	6173749600
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Symbol	PEGA
SIC Code	7374 - Computer Processing and Data Preparation and Processing Services
Industry	Software
Sector	Technology
Fiscal Year	12/31

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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, 2016

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

One Rogers Street **Cambridge, MA** **(Address of principal executive offices)**	**02142-1209** **(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	Name of Each Exchange on Which Registered
Common Stock, $0.01 par value per share	**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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

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

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

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐ (Do not check if a smaller reporting company)	Smaller reporting company	☐

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 of the Registrant based on the closing price (as reported by NASDAQ) of such common stock on the last business day of the Registrant's most recently completed second fiscal quarter (June 30, 2016) was approximately $965 million.

There were 76,643,096 shares of the Registrant's common stock, $0.01 par value per share, outstanding on February 10, 2017.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's definitive proxy statement related to its 2017 annual meeting of stockholders to be filed subsequently are incorporated by reference into Part III of this report.

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PART I

Forward-looking statements

This Annual Report on Form 10-K, including without limitation, the sections entitled "Business", "Risk Factors," and "Management's Discussion and Analysis of Financial Condition and Results of Operations," contains or incorporates forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934. These forward-looking statements are based on current expectations, estimates, forecasts, and projections about the industry and markets in which we operate and on management's beliefs and assumptions. 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," "is intended to," "project," "guidance," "likely," "usually," or variations of such words and similar expressions are intended to identify such forward-looking statements. These statements include, among other things, statements regarding:

- the expected benefits to our customers and potential customers 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 away from perpetual licenses towards recurring revenue streams of term and cloud licenses;
- our belief that an increase in the number of license arrangements will likely increase demand for consulting services;
- our international operations providing a significant portion of our total revenues;
- backlog of license, maintenance, cloud, and services agreements, license and cloud backlog, and the timing of future cash receipts from committed license and cloud arrangements;
- our business and growth strategy;
- our belief that our acquisitions should allow us to grow and continue to make investments in research and development;
- our expectation that research and development expenses and sales and marketing expenses will continue to increase in absolute dollar values and may increase as a percentage of revenues;
- our expectations regarding the impact of recent accounting pronouncements on our consolidated financial statements;
- our beliefs 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 foreign subsidiaries are considered permanently reinvested;
- the sufficiency of our sources of funding for working capital, capital expenditures, acquisitions, investments, dividend payments, and share repurchases and our belief that we have sufficient cash to meet our cash needs for at least the next 12 months; and
- exposure to foreign currency exchange rates and continued realization of gains or losses with respect to our foreign currency exposures.

These statements are not guarantees of future performance and involve certain risks, uncertainties, and assumptions that are difficult to predict. We have identified certain risk factors included in Item 1A of this Annual Report on Form 10-K that we believe could cause our actual results to differ materially from those expressed in forward-looking statements we make. Except as required by law, we do not intend to update publicly any forward-looking statements, whether as a result of new information, future events, or otherwise.

ITEM 1. Business

Pegasystems Inc. was incorporated in Massachusetts in 1983. Our stock is traded on the NASDAQ Global Select Market under the symbol PEGA. Our Website address is www.pega.com. We are not including the information contained on our Website as part of, or incorporating it by reference into, this Annual Report on Form 10-K. Unless the context otherwise requires, references in this Annual Report on Form 10-K to “the Company,” “Pega,” “we,” “us,” or “our” refer to Pegasystems Inc. and its subsidiaries.

Our Business: Empowering People. Revolutionizing Engagement

We are dedicated to helping our clients realize exceptional customer engagement and achieve operational excellence. Our adaptive, cloud-architected applications—built on our unified Pega ® Platform—empower businesses with comprehensive visual tools to build, extend, and evolve applications to meet strategic business needs.

Products

We develop, market, license, and support software applications for marketing, sales, service, and operations, in addition to licensing our Pega Platform for clients that wish to build and extend their own applications. Our software is designed to assist clients in building, deploying, and evolving enterprise applications, creating an environment in which business and IT can collaborate to manage back-office operations, front office sales, marketing, and/or customer service needs.

Our applications are built on the Pega Platform, our unified platform. The Pega Platform uses a comprehensive set of visual models to build applications, including process models, predictive analytics, user experience (“UX”) designs, decision logic, and others. This visual, model-based approach is designed to be faster in building, deploying, and evolving applications than traditional programming, and to empower our clients to better engage their customers, simplify processes, and turn the power of change into a competitive advantage.

Our applications and platform intersect with and encompass several traditional software markets, including: Customer Relationship Management (“CRM”), Business Process Management (“BPM”), Business Rules Management Systems (“BRMS”), Dynamic Case Management (“DCM”), Decision Management, including Predictive and Adaptive analytics, and the Vertical Specific Software (“VSS”) market of industry solutions and packaged applications.

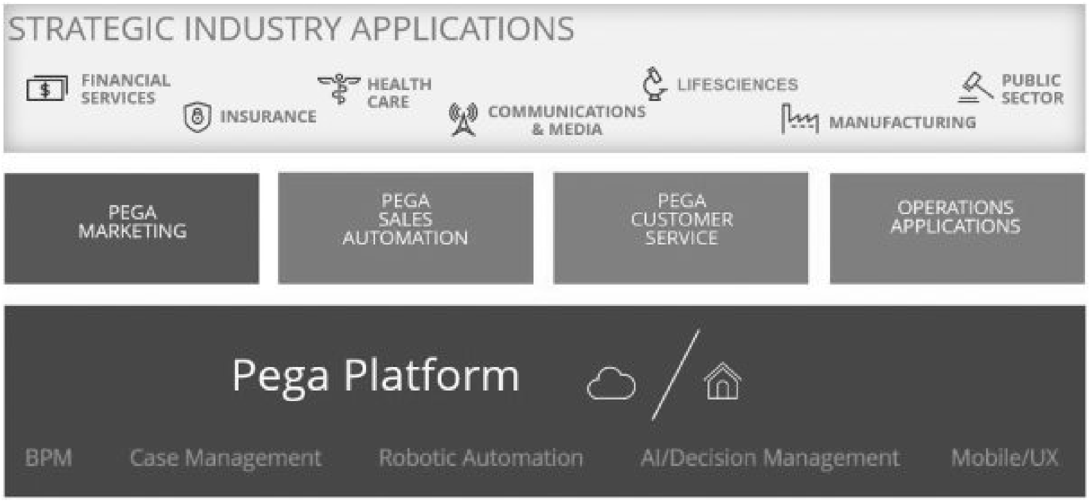
Services

Our Pega ® Cloud Services provide Pega Platform environments that are provisioned, monitored, and maintained for individual clients to create and deploy Pega-based applications using an Internet-based infrastructure. We also provide consulting services and implementation support, training, and technical support services to help clients maximize our software’s business value.

Our clients include Global 3000 companies and government agencies that seek to manage complex enterprise systems and customer service issues with greater agility and cost-effectiveness. Our strategy is to sell a client a series of licenses, each focused on a specific purpose or area of operations, in support of longer term enterprise-wide digital transformation initiatives.

Our Products

The Pega Platform and applications help streamline business operations, connect enterprises to their customers in real-time across channels, and adapt to meet changing requirements. Our applications can be deployed on Pega-managed, partner-managed, or customer-managed cloud architectures, providing our clients with the flexibility to operate the software according to their own preferences.



Pega Platform

The Pega Platform is a unified platform that enables clients to build enterprise applications in a fraction of the time it would take using traditional programming technologies. The Pega Platform is engineered to support complex, global enterprises, allowing for application development and deployment on a patented, layered architecture that supports reuse across lines of business, geographies, and customer segments. Our platform features a model-driven, code-free approach to application development that enables business and IT to collaborate, using a visual "language" that models the requirements and design of the application through readily understandable metaphors. This agile approach facilitates continuous improvement methodologies, such as Lean Six Sigma, to effectively manage individual projects or help drive a complete enterprise transformation. All aspects of the application are captured in the model, including business strategy mapping, business processes, data models, case definitions, rules, artificial intelligence ("AI") constructs such as predictive and machine-learning analytics, decisions, reporting, interfaces, intelligent work management capabilities, business activity monitoring, and the UX across both web and mobile devices. Once defined this way, the finished application and documentation are generated and ready for use.

Our approach bypasses the error-prone and time-consuming process of manually translating requirements into code. The software application is created automatically and directly from the model, helping to close the costly gap between vision and execution. Changes to the code are made by changing 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 front and back-office. The Pega Platform was previously marketed as Pega 7 or the Pega 7 platform, PegaRULES Process Commander, and the Build for Change ® Platform.

Pega Platform—Key Technical Capabilities

The Pega Platform includes key technical capabilities that are available to Pega's CRM and operations applications. Our case management, business process, and robotic automation technology facilitates the fulfillment of customer requests.

Real-time decision management is incorporated into these applications to guide actions and optimize process outcomes based on business objectives. Our Pega ® Next-Best-Action analytics leverage AI technologies that predict and adapt to customer behavior to improve both business outcomes and the customer experience. Capabilities for cross-sell/up-sell, retention, service recommendations, and collections can be changed with model-driven tools or intelligence, helping businesses deploy automated decision-making quickly. The predictive and adaptive analytics incorporated into these applications support the creation and refinement of decision models to improve outcomes.

Pega ® Robotic Desktop Automation and *Pega ® Workforce Intelligence* technologies are designed to allow our clients to optimize productivity by enabling their employees to work faster and more efficiently. These technologies are designed to simplify and automate business processes and transactions and provide insightful information into employee productivity for effective decision-making.

Social listening, text analytics, and natural language processing capabilities are also available in our Pega customer relationship management applications. These allow our clients to collect social content in tweets, blogs, and posts on Facebook or in other social communities, and enrich it by detecting language, topic, taxonomy, and sentiment. Using this capability, our clients are able to monitor, triage, and respond to social content across multiple channels, and turn it into actionable social intelligence.

Pega ® Co-Browse collaboration technology enables users to provide fast service by simultaneously “co-browsing” web pages with their customers. The technology is designed to allow our clients to engage customers in real time, and can also be used to enable employees to collaborate across physical locations.

Pega ® Mobility capabilities in our Pega Platform are designed to help clients efficiently build, manage, and deploy mobile applications as part of a unified omni-channel experience. By using Pega Mobility, enterprises can deploy Pega applications as packaged, branded mobile applications and manage the complex elements of the mobile application life cycle including security, integration, testing, and management of mobile applications and devices. Our mobile application development solutions are designed to help businesses to reduce the development time, deployment cost, and complexity associated with run-the-business mobile applications.

The Pega Platform also supports the creation of and interface with chatbots, virtual assistants, and other “conversational user experiences”, allowing our CRM applications to work across new interaction channels such as chatbots, Facebook Messenger, or Amazon Alexa.

Pega Applications

Pegasystems also offers purpose or industry-specific software applications built on the Pega Platform. These applications for marketing, sales automation, customer service, and operations provide business best practices tailored for specific industries. As they are built on the Pega Platform, these applications deliver flexibility beyond traditional, “commercial,” “off the shelf” products. We believe our applications allow our clients to offer differentiated service and value to their customers. The Pega Platform enables organizations to implement new processes quickly, refine customer experiences, bring new offerings to market, and provide customized or specialized processing to help meet the needs of different customers, departments, geographies, or regulatory requirements.

Pega Customer Relationship Management Applications

Pega customer relationship management applications are designed to evolve to meet changing business needs. Our applications offer process-driven, customer-centric CRM software that maximizes the lifetime value of customers and helps reduce the costs of serving customers. We provide marketing, sales automation, and customer service applications to optimize marketing engagement, sales processes and customer service interactions. Our CRM applications work seamlessly together to ensure a consistent and unified customer experience.

Pega ® Marketing applications enable enterprises to improve customer experiences across inbound and outbound channels. They incorporate AI in the form of predictive and machine-learning analytics, as well as business rules, and execute these decisions in real time to evaluate the context of each customer interaction, and dynamically recommend the most relevant action, offer, content, and channel.

Pega ® Sales Automation applications automate and manage the entire sales process from prospecting to product fulfillment. Our software allows enterprises to capture best practices, and guides sales teams through the sales and customer onboarding processes.

Pega ® Customer Service applications provide a contact center desktop, case management for customer service, mobile field service, digital, self-service, and industry specific processes and data models. They allow enterprises to deliver consistent interactions across channels, proactively address service needs, and improve employee productivity.

Pega Operations Applications

Pega provides *Operations Applications* to support a variety of business needs including risk, fraud, and compliance management; exceptions and investigations; order fulfillment; claims processing; insurance underwriting; and product development.

Pega Cloud Services

Our Pega Cloud Services allow clients to develop, test, and deploy, on an accelerated basis, our applications and Pega Platform using a secure, flexible Internet-based infrastructure. Pega Cloud provides production, development, and testing (“Dev/Test”) services to accelerate the development and deployment of Pega applications and the Pega Platform. This allows our clients to minimize infrastructure cost while focusing on their core revenue generating competencies.

Additionally, the Pega Platform and Pega applications can be deployed on other cloud architectures, including customer- or partner-managed clouds. We believe this cloud-choice gives our customers the ability to select 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 Customer Success group, our Global Customer Support group, and our Pega ® Academy training services group. We also utilize third party contractors to assist us in providing these services.

Global Customer Success

Our Global Customer Success group combines our sales and Pega consulting groups and provides guidance and implementation services to our clients and partners on how to best apply our technology and develop strong implementation expertise.

Global Customer Support

Our Global Customer Support group is responsible for technical support of our products, including Pega Cloud. Support services include managing the online support community, proactive problem prevention through information and knowledge sharing, and problem tracking, prioritization, escalation, diagnosis, and resolution.

PegaAcademy—Training Services

The success of our sales strategy for multiple follow-on sales to target clients depends on our ability to train a large number of partners and clients to implement our technology. We offer instructor-led and online training for our staff, clients, and partners. Instructor-led training is offered at our regional training facilities in North America, the United Kingdom (the "U.K."), Asia Pacific, and at third-party facilities in numerous other locations, including client sites. Online training is a convenient and cost-effective way to learn our software anytime, anywhere. We expect online training to continue to help expand the number of trained and certified experts globally. We have also partnered with universities to offer Pega courseware as part of the student curriculum, taught by Pega instructors and university professors to expand our ecosystem. Our courses are designed to meet the specific requirements of various project implementation roles to include both business and system architects, system administrators, and project leaders.

Our Partners

We collaborate with global systems integrators and technology consulting firms that provide consulting services to our clients. Strategic partnerships with technology consulting firms and systems integrators 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, Atos SE, Capgemini SA, Cognizant Technology Solutions Corporation, EY, Infosys Limited, PricewaterhouseCoopers LLP, Tata Consultancy Services Limited, Tech Mahindra Limited, Virtusa Corporation, and Wipro Limited.

Our Markets

Our target clients are industry-leading Global 3000 organizations that require applications to differentiate themselves in the markets they serve 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. We also enable enterprise transformation initiatives by providing an application development platform that digitizes end-to-end processes and allows for multi-channel customer interactions, all enhanced by Pega Next-Best-Action analytics.

Our clients are in the financial services, healthcare, insurance, communications and media, public sector, manufacturing, and life sciences markets, as well as other industries.

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 and 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 cost, automating processes, and increasing operational efficiency. Our applications allow healthcare clients to address sales, service, operations, financial, administrative, and coverage requirements of healthcare consumerism and reform.

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.

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 market and sell to customers, streamline onboarding and fulfillment operations, and bring new services and products to market.

Public Sector

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, omni-channel approach.

Manufacturing

Manufacturers worldwide are transforming their businesses to better engage customers and suppliers, as well as to directly manage product performance throughout the product life-cycle. Our manufacturing applications address field service; help reduce supplier risk; manage warranties, recalls, repairs, and returns; and extend existing enterprise resource planning system capabilities.

Life Sciences

Life sciences organizations are looking for solutions to improve customer engagement as well as increase efficiencies and transparency across the product development life-cycle. Our customer engagement, clinical, and pharmacovigilance applications are designed to deliver customer engagement, safety and risk management, and regulatory transparency.

Other Industries

We offer software to a broad range of other types of companies and industries. For example, we sell our applications and platform to clients in travel, transportation, energy, retail, utilities, and other services.

Competition

We compete in the CRM (which includes marketing, sales, and customer service), 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 competition from:

- BPM vendors, including service-oriented architecture middleware vendors;
- Case management vendors;
- CRM application vendors;

- Decision management, data science and artificial intelligence 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 the 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;
- 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 and in the scope and breadth of the products and services they offer and include some of the largest and most competitive companies in the world, such as International Business Machines Corporation (IBM), Salesforce.com, Oracle Corporation, Microsoft Corporation, and SAP SE.

We have been most successful competing for clients whose businesses are characterized by a high degree of change, complexity, or regulation. We believe that 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 as our unified Pega Platform is designed to allow both 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 the types of disjointed architectures and tools offered by 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. 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 the basis of some of these factors with respect to 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 disadvantage with respect to our ability to provide expertise outside our target industries. See "Risk Factors—The market for our offerings is intensely and increasingly competitive, rapidly changing, and highly fragmented." in Item 1A of this Annual Report on Form 10-K.

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 and control access to and ownership of software, services, documentation, and other proprietary information as means to protect our proprietary rights.

Sales and Marketing

We market 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 professional services 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, and other direct and indirect marketing efforts. Our consulting staff, business partners, and other third parties also conduct joint and separate marketing campaigns that generate sales leads.

Sales by Geography

Sales to clients based outside of the United States of America (“U.S.”) represented an average of 44% of our total revenue for the last three fiscal years. We have derived substantially all of our revenue from the sale and support of one group of similar products and services during each of the last three fiscal years. The majority of our long-lived assets were located within the U.S. at the end of each of the last three fiscal years. See Note 17, “Geographic Information and Major Clients,” included in the Notes to Consolidated Financial Statements in Item 8 of this Annual Report on Form 10-K. See “Risk Factors—We face risks from operations and clients based outside of the U.S.” in Item 1A of this Annual Report on Form 10-K.

Research and Development

Our 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. We intend to maintain and extend the support of our existing applications, and we may choose to invest in additional strategic applications which 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 information technology infrastructures. Our goal with all of our products is to enhance product capabilities, ease of implementation, long-term flexibility, and the ability to provide improved client service.

During 2016, 2015, and 2014, research and development expenses were approximately $145.5 million, $126.4 million, and $108.6 million, respectively. See Item 7 “Management’s Discussion and Analysis of Financial Condition and Results of Operations” of this Annual Report on Form 10-K for further discussion. We expect that we will continue to commit significant resources to our product research and development in the future to maintain our leadership position.

Employees

As of January 31, 2017, we had 3,908 employees worldwide, of which 1,675 were based in North America, 762 were based in Europe, and 1,471 were based in Asia Pacific.

Backlog of License, Maintenance, and Services

As of December 31, 2016, we had software license, maintenance, cloud, and services agreements with clients expected to result in future revenue ("backlog") of approximately $707.8 million, of which we expect approximately $376.9 million to be recognized in 2017. As of December 31, 2015, we had approximately $580.9 million in backlog. Under some of these agreements, we must fulfill certain conditions prior to recognizing revenue, and there can be no assurance when, if ever, we will be able to satisfy all such conditions in each instance. Backlog may vary in any given period depending on the amount and timing of when arrangements are executed, as well as the mix between perpetual license, term license, and cloud arrangements. See Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations" of this Annual Report on Form 10-K for a discussion on license and cloud backlog, which excludes future revenue from maintenance and service arrangements, that management considers as one of the key performance factors.

Available Information

We make available our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K, and amendments to these reports, free of charge through our Website (www.pega.com/about/investors) as soon as reasonably practicable after we electronically file such material with, or furnish such material to, the Securities and Exchange Commission ("SEC"). 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. We 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, and any amendments to our Code of Conduct, are also available on our Website at www.pega.com/about/leadership on the "Governance" tab.

ITEM 1A. RISK FACTORS

The following important factors could cause our actual business and financial results to differ materially from those contained in forward-looking statements made in this Annual Report on Form 10-K or elsewhere by management from time to time. The risks and uncertainties described below are not the only ones facing us. Other events that we do not currently anticipate or that we currently deem immaterial may also affect our results of operations, cash flows, and financial condition.

Factors relating to our financial results

The timing of our license and cloud revenue is difficult to predict accurately, which may cause our quarterly operating results to vary considerably. A change in the number or size of high value license arrangements, or a change in the mix between perpetual licenses, term licenses, and Pega Cloud subscriptions can cause our revenues to fluctuate materially from quarter to quarter. In the event that our clients choose term licenses or Pega Cloud subscriptions, we typically recognize the revenue over the license term or Pega Cloud subscription term, which may adversely affect our profitability in any period due to sales commissions being paid at the time of signing and the corresponding revenue being recognized over time. Other factors which may influence the predictability of our license revenue include: changes in customer budgets and decision-making processes that could affect both the timing and size of transactions; the 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/or our ability to execute on our marketing and sales strategies.

We budget for our selling and marketing, product development, and other expenses based on anticipated future revenue. If the timing or amount of revenue fails to meet our expectations in any given quarter, our financial performance is likely to be adversely affected because only small portions of expenses vary with revenue. Other factors which may cause our quarterly 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 our license arrangements has been increasing, and we may not be able to sustain this growth unless we and our partners can provide sufficient high quality consulting services, training, and maintenance resources to enable our clients to realize significant business value from our software. Our clients typically request consulting services and training to assist them in implementing our products. Our clients also purchase maintenance on our products in almost all cases. As a result, an increase in the number of license arrangements is likely to increase demand for consulting services, training, and maintenance relating to our products. Given that the number of our license arrangements has been increasing, we will need to provide our clients with more consulting services, training, and maintenance to enable our clients to realize significant business value from our software. We have been increasingly enabling our partners and clients through training to create an expanded ecosystem of people that are skilled in the implementation of our products. However, if we and our partners are unable to provide sufficient high quality consulting services, training, or maintenance resources to our clients, our clients may not realize sufficient business value from our products to justify follow-on sales, which could impact our future financial performance. In addition, the growth required to meet the increased demand for our consulting services could strain our ability to deliver our services engagements at desired levels of profitability, thereby impacting our overall profitability and financial results.

We frequently enter into a series of licenses that are 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 adversely affected. We frequently enter into a series of licenses with our new clients that are focused on a specific purpose or area of operations. 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 to some clients, for reasons relating to the performance of our products, the quality of the services and support we provide for our products, or external reasons. Also, some of our smaller clients may have limited additional sales opportunities available. For any of these clients, we may not obtain follow-on sales or the follow-on sales may be delayed, and our license revenue could be limited. This could lower the total value of all transactions and adversely affect our financial performance.

Our consulting services revenue is dependent to a significant extent on closing new license transactions with clients. We derive a substantial portion of our consulting services revenue from implementations of new software licenses led by our consulting services staff and where we provide consulting services for our partner-led and client-led implementation efforts. Accordingly, if we do not continue to close more license transactions with our clients, we may not be able to maintain or grow our consulting services revenue, which could have an adverse effect on our results of operations.

If we are unable to maintain vendor-specific objective evidence ("VSOE") of fair value of our time and materials ("T&M") consulting services arrangements, we may be required to delay the recognition of a portion of our revenue to future periods. We have established VSOE of fair value of our T&M consulting services in the Americas, in most of Europe, and certain regions of Asia, based on the price charged when these services are sold separately. Significant competition within our industry has created pricing pressure on consulting services provided by technology companies. If we elect to discount our pricing of T&M consulting services or otherwise introduce variability in our T&M consulting services arrangements to attract or retain clients, this could lead to an insufficient number of consistently priced T&M consulting services arrangements for us to maintain VSOE. If we do not have VSOE of fair value of our T&M consulting services, we may be required to recognize all revenue for these consulting services arrangements, including any bundled license, maintenance, and other services revenue, ratably over the longer of the software maintenance period or the service period. This delay in revenue recognition could have an adverse effect on our results of operations.

Our financial results may be adversely affected if we are required to change certain estimates, judgments, and/or positions relative to our income and other taxes. In the ordinary course of conducting our global business enterprise, we cannot be certain of the ultimate tax outcome related to many transactions and calculations. Some of these uncertainties arise as a consequence of positions we have taken regarding valuation of deferred tax assets, transfer pricing for transactions with our subsidiaries, and potential challenges to nexus and tax credit estimates. We estimate our exposure to unfavorable outcomes related to these uncertainties and estimate the probability of such outcomes. 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. If our taxable income is not consistent with our expectations or the timing of income is not within the applicable carryforward period, we may be required to establish a valuation allowance on all or a portion of these deferred tax assets. Changes in our valuation allowance impact our income tax expense in the period of adjustment. Although we believe our estimates are reasonable, no assurance can be given that the final tax outcome of these matters or our current estimates regarding these matters 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, unfavorable or favorable, on our income tax provisions and effective tax rate, require us to change the recorded value of deferred tax assets, and adversely affect our financial results. Our effective tax rate may also be adversely affected by changes in the mix of taxable income derived by jurisdictions with varied statutory tax rates, changes in tax laws, regulations and interpretations, changes to the financial accounting rules for income taxes and assessments, and any interest or penalties, by taxing authorities.

We are also subject to non-income taxes such as payroll, sales, use, value-added, net worth, property, and goods and services taxes in the U.S. and in various foreign jurisdictions. We are regularly under audit by tax authorities with respect to these non-income taxes and may have exposure to additional non-income tax liabilities which could have an adverse effect on our results of operations and financial condition.

If it became necessary to repatriate any of our foreign cash balances to the United States, we may be subject to increased income taxes, other restrictions, and limitations. As of December 31, 2016, approximately $51.8 million of our cash and cash equivalents was held in our foreign subsidiaries. If we are unable to reinvest this cash outside of the U.S., we may have to repatriate some of our foreign cash to the U.S. which would increase our income tax liability. If it became necessary to repatriate these funds, we may be required to pay U.S. tax, net of any applicable foreign tax credits, upon repatriation. We consider the earnings of our foreign subsidiaries to be permanently reinvested and, as a result, U.S. taxes on such earnings have not been provided. It is impractical to estimate the amount of U.S. tax we could have to pay upon repatriation due to the complexity of the foreign tax credit calculations and other factors.

We are investing heavily in sales and marketing, research and development, and support in anticipation of a continued increase in license arrangements, and we may experience decreased profitability or losses if we do not continue to increase the value of our license arrangements to balance our growth in expenses. We have been expanding our sales and marketing capacity to meet 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 as a result of this increase in demand, and also 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 products does not continue, we could experience decreased profitability or losses as a result 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 or develop new products, we may not be able to achieve our sales and profitability targets.

Factors relating to our products and markets

We will need to acquire or develop new products, evolve existing ones, address any defects or errors, and adapt to technology change. Technical developments, client requirements, programming languages, and industry standards change frequently in our markets. As a result, success in current markets and new markets 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 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 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 customer needs before we do, give rise to unanticipated expenses related to further development or modification of acquired technologies as a result of integration issues, and adversely affect future financial performance.

The market for our offerings is intensely and increasingly competitive, rapidly changing, and highly fragmented. We compete in the CRM sector, which includes marketing, sales, and service, 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. KYC for Financial Services, Underwriting for Insurance). The markets for our software and related implementation, consulting, and training services are intensely competitive, rapidly changing, and highly fragmented. We currently encounter significant competition from internal information systems departments of potential or existing clients that develop custom software and professional service organizations that develop custom software in conjunction with rendering consulting services. Competition for market share and pressure to reduce prices and make sales concessions are likely to increase. Many of our competitors, such as IBM, Oracle, and Salesforce, are large and have far greater resources and may be able to respond more quickly and efficiently to new or emerging technologies, programming languages, or standards or to 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 “Business—Competition” in Item 1 of this Annual Report on Form 10-K.

The continued uncertainties in international economies may negatively impact our sales to, and the collection of receivables from, our clients. Our sales to, and our collection of receivables from, our clients may be impacted by adverse changes in global economic conditions. The United States and other key international economies have experienced cyclical downturns from time to time during which economic activity was 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 number of 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 under their noncancellable term licenses. These clients may also become subject to increasingly restrictive regulatory requirements, which could limit or delay their ability to proceed with new 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.

We have historically sold to the financial services, healthcare, insurance, and communications markets, and rapid changes or consolidation in these markets could affect the level of demand for our products. We have historically derived a significant portion of our revenue from clients in the financial services, healthcare, insurance, and communications markets, and sales to these markets are important for our future growth. Competitive pressures, industry consolidation, decreasing operating margins, regulatory changes, and privacy concerns affect the financial condition of our clients and their willingness to buy. In addition, clients' purchasing patterns in these industries for large technology projects are somewhat discretionary. The financial services and insurance markets continue to undergo intense domestic and international consolidation, and consolidation has increased in the healthcare and communications markets. Consolidation may interrupt normal buying behaviors and increase the volatility of our operating results. In recent years, several of our clients have been merged or consolidated, and we expect this to continue in the near future. Future mergers or consolidations may cause a decline in revenues and adversely affect our future financial performance. All of these factors affect the level of demand for our products from clients in these industries, and could adversely affect 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 and support activities, and to product development efforts, including Pega Cloud hosting facilities. We rely on software and hardware vendors, large system integrators, and technology consulting firms to provide marketing and sales opportunities for our direct sales force and to strengthen our products through the use of industry-standard tools and utilities. We also have relationships with third parties that distribute our products. There can be no assurance that these companies, most of which have significantly greater financial and marketing resources, will not develop or market products 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 data security as it is provided by such third parties, which despite our due diligence may be or become less than adequate, and on the functionality and availability of their services.

We face risks from operations and clients based outside of the U.S. Sales to clients based outside of the U.S. represented an average of 44% of our total revenue for the last three fiscal years. We market products and render consulting and training services to clients based outside of the U.S. including clients based in Canada, Europe, Latin America, Asia, and Australia. We have established offices in the Americas, Europe (including Russia and Turkey), Asia (including India), and Australia. We believe that growth will necessitate expanded international operations, requiring a diversion of managerial attention and increased costs. We anticipate hiring additional personnel to accommodate international growth, 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 manner, our growth, if any, in our foreign operations may be restricted, and our business, operating results, and financial condition could be materially and adversely affected.

In addition, we may not be able to maintain or increase international market demand for our products. 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 products for local markets, including translation into foreign languages and associated expenses;
- longer payment cycles and credit and collectability risk on our foreign trade receivables;
- difficulties in enforcing contractual and intellectual property rights;
- heightened fraud and anti-bribery awareness 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”);
- managing our international operations, including increased accounting and internal control 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 foreign operations, and, consequently, on our business, operating results, and financial condition.

On June 23, 2016, the U.K. held a referendum in which U.K. voters approved an exit from the European Union (“the E.U.”), commonly referred to as “Brexit”. As a result of the referendum, it is expected that the British government will begin negotiating the future terms of the U.K. relationship with the E.U., including the terms of trade between the U.K. and the E.U. The announcement of Brexit caused significant volatility in global stock markets and currency exchange rate fluctuations that resulted in the strengthening of the U.S. dollar against foreign currencies in which we conduct business. The future effects of Brexit will depend on any agreements the U.K makes to retain access to E.U. markets either during a transitional period or more permanently. The measures could potentially disrupt the markets we serve and may cause our customers to closely monitor their costs and reduce their spending budget on our products and services. In addition, Brexit could lead to legal uncertainty and potentially divergent national laws and regulations as the U.K. determines which E.U. laws to replace or replicate. Given the lack of comparable precedent, it is unclear what financial, trade and legal implications the withdrawal of the U.K. from the E.U. would have and how such withdrawal would affect us. Adverse consequences such as deterioration in economic conditions, volatility in currency exchange rates, and prohibitive laws and regulations could have a negative impact on our business, operating results, and financial condition.

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 the U.S., we face exposure to adverse 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, and the Euro relative to the U.S. dollar. These exposures may change over time as business practices evolve, and they could have a material adverse impact on our financial results and cash flows. We use foreign currency forward contracts (“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 Pegasystems Limited, its U.K. subsidiary. These forward contracts have terms not greater than six months and are intended to partially mitigate exposure to the foreign currency transaction gains and losses. We do not enter into any hedging contracts for trading or speculative purposes. Our realized gain or loss with respect to 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.

The announcement of Brexit adversely impacted global markets, including currencies, and resulted in a sharp decline in the value of the British pound, as compared to the U.S. dollar and other currencies. Volatility in exchange rates is expected to continue in the short term as the U.K. negotiates its exit from the E.U. A weaker British pound compared to the U.S. dollar during a reporting period causes our international revenue to be translated into fewer U.S. dollars which may adversely affect our results of operations.

Factors relating to our internal operations and potential liabilities

We depend on certain key personnel, and must be able to attract and retain qualified personnel in the future. The business is dependent on a number of 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 adversely affect financial performance. We do not have any significant key-man 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 hire and retain qualified personnel, and rapidly replace and ramp up new management. The number of potential employees who have the extensive knowledge of computer hardware and operating systems needed to develop, sell, and maintain our products is limited, and competition for their services is intense, and 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 acquisition of other businesses and technologies may present new risks. In the past, we have undertaken acquisitions and we continue to evaluate and consider other potential strategic transactions, including domestic and international acquisitions of businesses, technologies, services, products, and other assets. These acquisitions, if undertaken, may involve significant new risks and uncertainties, including distraction of management attention away from our current business operations, insufficient new revenue to offset expenses, inadequate return on capital, integration challenges, new regulatory and/or legal requirements, new third-party intellectual property infringement claims related to the acquired technology and/or services, dilution of shareholder value, cross border legal issues, and issues not discovered in our due diligence process. No assurance can be given that such acquisitions will be successful and will not adversely affect our profitability or operations.

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 continuing to grow our market share by developing and delivering robust applications for marketing, sales automation, customer service, and operations 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 both 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 on these actions, our business may not grow as we anticipated, and our operating results could be adversely affected.

We may experience significant errors or security flaws in our product and services, and could face privacy, product liability, and/or warranty claims as a result. Despite quality testing prior to their release, software products frequently contain errors or security flaws, especially when first introduced or when new versions are released. Errors in our software products could affect the ability of our products to work with other hardware or software products, or could delay the development or release of new products or new versions of products. 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 product 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 or not meritorious, could result in substantial costs and a diversion of management's attention and our resources.

We face risks related to intellectual property claims or appropriation of our intellectual property rights. We rely primarily on a combination of 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 products 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, customers, 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 to as great an extent as do the laws of 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 also 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 products, 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, which could have a material adverse effect upon our business, operating results, and financial condition.

We are subject to increasingly complex and burdensome U.S. and foreign laws and regulations, 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 for the purpose of obtaining or retaining 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 rapid transformation towards increased restrictions. For example, in October 2015, the European Court of Justice invalidated the U.S.-EU Safe Harbor framework that had been in place since 2000, which allowed companies to meet certain European legal requirements for the transfer of personal data from the European Economic Area to the United States. In April 2016, the European Parliament adopted the General Data Protection Regulation ("GDPR"). The GDPR has a two-year phase-in period and extends the scope of European privacy laws to any entity which processes personal data about E.U. residents in connection with the offer of goods or services or the monitoring of behavior. Complying with the GDPR and other emerging and changing requirements may cause us to incur substantial costs or require us to change our business practices.

We have developed and implemented a compliance program based on what we believe are current best practices, including the background checking of all of our current partners and of prospective clients and partners, but we cannot guarantee that we, our employees, our consultants, or our contractors are or will be in compliance 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 investigations into these issues typically require the expenditure of significant resources and generate negative publicity, which could also have an adverse effect on our business, financial condition, and results of operations. 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 face risks related to outages, data losses, and disruptions of our online services if we fail to maintain an adequate operations infrastructure. Our increasing user traffic for Pega Cloud services 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 provider 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 of 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 Pega Cloud services provide Pega Platform 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 potential proprietary information. Security breaches could expose us and our clients 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 ("IT") 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 to our IT structure.

Our security measures, and those of our clients, may be breached as a result 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 of 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 potential legal liability, though this may prove insufficient in the event of a breach.

Our Pega Cloud services involve the hosting of clients' applications on the servers of a third-party technology provider. 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 development 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 Pega Cloud services or lead to requirements to provide our products or services in configurations that may increase the cost of serving such markets.

In order 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 which 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 margins.

Our implementation of significant modifications to our enterprise resource planning (" ERP ") system may adversely affect our business and results of operations or the effectiveness of internal control over financial reporting. During 2016, we implemented the billing and revenue recognition modules in our existing ERP system. The new revenue recognition module was implemented to facilitate the preparation of our financial statements under both the current revenue recognition guidance under Accounting Standards Codification 985-605, Software—Revenue Recognition and the new guidance under Accounting Standard Update No. 2014-09, "Revenue from Contracts with Customers (Topic 606)". See Note 2, "Significant Accounting Policies—New accounting pronouncements," included in the Notes to Consolidated Financial Statements in Item 8 of this Annual Report on Form 10-K for further discussion of new guidance. Implementations of a project of this size and complexity involves risks inherent in the conversion to a new computer system, including loss of information and potential disruption of normal operations. The implementation was completed in the fourth quarter of 2016; however, post-implementation support activities are still ongoing. Our business and results of operations may be adversely affected if we experience operating problems with the new system that result in increased costs to correct post-implementation issues identified. Additionally, if the new system and the associated process changes do not give rise to the benefits that we expect, or if the new system does not operate as intended, it could adversely affect our financial reporting systems and processes, our ability to produce timely and accurate financial reports, and/or the effectiveness of internal control over financial reporting. We have assessed, and continue to monitor, our processes and procedures as a result of the implementation, as well as the impact on our internal controls over financial reporting. Where appropriate, we have made changes to these controls over financial reporting to address these system changes and to help ensure that we maintain effective internal controls over financial reporting as of December 31, 2016.

ITEM 1B. Unresolved Staff Comments

None.

ITEM 2. Properties

Our principal administrative, sales, marketing, support, and research and development operations are located in Cambridge, Massachusetts in an approximately 185,000 square foot leased facility. Our lease expires in 2023, subject to our option to extend for two additional five-year periods. We also lease space for our other offices in the Americas, Europe, and the Asia Pacific under leases that expire at various dates through 2021. We periodically evaluate the adequacy of existing facilities and additional facilities in new cities, and we believe that additional or alternative space will be available as needed in the future on commercially reasonable terms.

See Note 12 "Commitments and Contingencies," in the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for more information about our lease commitments.

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

Stock Split

On March 6, 2014, our Board of Directors approved a two-for-one stock split of our common stock, effected in the form of a common stock dividend (the "Stock Split"). On April 1, 2014, each stockholder of record at the close of business on March 20, 2014 (the "Record Date") received as a dividend, one additional share of common stock, par value $0.01, for each share of common stock held on the Record Date. The per share amounts for all prior periods presented in this Annual Report on Form 10-K have been retroactively restated to reflect the Stock Split, except as otherwise noted.

Market Information

Our common stock is quoted on the NASDAQ Global Select Market ("NASDAQ") under the symbol "PEGA." The following table sets forth the range of high and low sales prices of our common stock on NASDAQ for each quarter in the years ended December 31:

	Common Stock Price			
	2016		2015	
	High	Low	High	Low
First Quarter	$27.19	$20.62	$23.44	$19.20
Second Quarter	$29.00	$24.32	$24.09	$20.65
Third Quarter	$29.61	$25.02	$27.91	$22.26
Fourth Quarter	$36.65	$28.76	$30.23	$24.04

Holders

As of February 10, 2017, we had approximately 23 stockholders of record and approximately 12,000 beneficial owners of our common stock.

Dividends

In July 2006, we began paying a quarterly cash dividend of $0.03 per share of common stock. This represents $0.015 per share of common stock giving effect to the Stock Split. On May 27, 2014, we announced an increase in our quarterly common stock cash dividend from $0.015 to $0.03 per share. Quarterly cash dividends are expected to continue at $0.03 per share, subject to change or elimination at any time by our Board of Directors.

Issuer Purchases of Equity Securities

The following table sets forth information regarding our repurchases of our common stock during the fourth quarter of 2016.

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Share Repurchase Program (1)	Approximate Dollar Value of Shares That May Yet Be Purchased at Period End Under Publicly Announced Share Repurchased Programs (1) (in thousands)
10/1/2016 – 10/31/2016	40,200	$ 29.92	40,200	$ 39,503
11/1/2016 – 11/30/2016	3,950	$ 29.92	3,950	$ 39,385
12/1/2016 – 12/31/2016	—	$ —	—	$ 39,385
Total	44,150	$ 29.92		

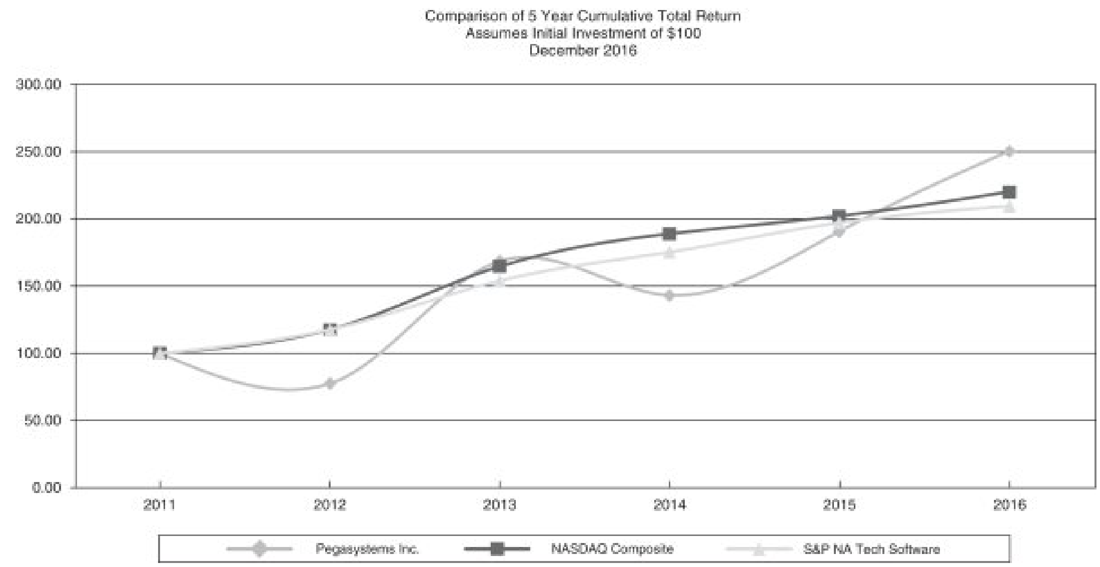
(1) Since 2004, our Board of Directors has approved stock repurchase programs that have authorized the repurchase, in the aggregate, of up to $195 million of our common stock.

On May 20, 2016, we announced that our Board of Directors extended the expiration date of the current stock repurchase program to June 30, 2017 and increased the amount of stock the Company is authorized to repurchase to $50 million between May 18, 2016 and June 30, 2017 (the “Current Program”). Under the Current Program, purchases may be made from time to time on the open market or in privately negotiated transactions. Shares may be repurchased in such amounts as market conditions warrant, subject to regulatory and other considerations. We have established a pre-arranged stock repurchase plan, intended to comply with the requirements of Rule 10b5-1 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and Rule 10b-18 under the Exchange Act (the “10b5-1 Plan”). All share repurchases under the Current Program during closed trading window periods will be made pursuant to the 10b5-1 Plan.

We net settle the majority of our employee stock option exercises and restricted stock unit (“RSU”) vestings, which results in the withholding of shares to cover the option exercise price and the minimum statutory withholding tax obligations that we are required to pay in cash to the applicable taxing authorities on behalf of our employees. We do not consider these transactions to be common stock repurchases.

Stock Performance Graph and Cumulative Total Stockholder Return

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, 2011 in our common stock, the Total Return Index for the NASDAQ Composite ("NASDAQ Composite"), a broad market index, and the Standard & Poors ("S&P") North American Technology Sector -Software Index™ ("S&P NA Tech Software"), a published industry index. We paid dividends of $0.12 per share during 2016 and 2015, $0.09 per share during 2014, $0.045 per share during 2013, and $0.075 per share during 2012, respectively. The graph lines merely connect measurement dates and do not reflect fluctuations between those dates.



	12/31/2011	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016
Pegasystems Inc.	$ 100.00	$ 77.47	$ 168.53	$ 143.09	$ 190.40	$ 250.29
NASDAQ Composite	$ 100.00	$ 117.45	$ 164.57	$ 188.84	$ 201.98	$ 219.89
S&P NA Tech Software	$ 100.00	$ 117.43	$ 153.95	$ 175.32	$ 197.22	$ 209.46

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 "Management's Discussion and Analysis of Financial Condition and Results of Operations", the consolidated financial statements, and accompanying notes.

(in thousands, except per share amounts)	Year Ended December 31, 2016 (1)	2015	2014	2013	2012
Consolidated Statements of Operations Data:					
Revenue:					
Term license	$ 132,466	$ 109,283	$ 96,182	$ 69,232	$ 61,468
Perpetual license	$ 147,529	$ 166,305	$ 136,154	$ 122,644	$ 102,438
Maintenance	$ 220,336	$ 202,802	$ 186,239	$ 157,309	$ 133,527
Cloud	$ 41,438	$ 30,626	$ 16,614	$ 8,720	$ 4,360
Services and training	$ 208,497	$ 173,679	$ 154,815	$ 151,049	$ 159,917
Total revenue	$ 750,266	$ 682,695	$ 590,004	$ 508,954	$ 461,710
Income from operations	37,759	64,661	51,539	58,097	31,426
Income before provision for income taxes	35,202	60,505	47,994	56,393	30,945
Net income	26,986	36,322	33,255	38,043	21,868
Earnings per share:					
Basic (2)	$ 0.35	$ 0.47	$ 0.44	$ 0.50	$ 0.29
Diluted (2)	$ 0.34	$ 0.46	$ 0.42	$ 0.49	$ 0.28
Cash dividends declared per common share	$ 0.12	$ 0.12	$ 0.105	$ 0.06	$ 0.06

(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 the fourth quarter of 2016, which requires us, among other things, to 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. We are required to reflect any adoption adjustments as of January 1, 2016, the beginning of the annual period that includes the period of adoption. As such, certain information above for the year ended December 31, 2016 included the impact of the ASU 2016-09 adoption. See Note 2 "Significant Accounting Policies—New accounting pronouncements" included in the Notes to Consolidated Financial Statements in Item 8 of this Annual Report on Form 10-K for additional information related to this adoption.

(2) The per share amounts have been retroactively restated for all prior periods presented to reflect the two-for-one common stock split effected in the form of a common stock dividend distributed on April 1, 2014. See Item 5 "Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities—Stock Split" of this Annual Report on Form 10-K for further discussion of the Stock Split.

(in thousands)	As of December 31, 2016	2015	2014	2013	2012
Consolidated Balance Sheet Data:					
Total cash, cash equivalents, and marketable securities	$ 133,761	$ 219,078	$ 211,216	$ 156,692	$ 122,985
Working capital (1)	137,660	179,297	150,474	145,487	113,683
Property and equipment, net	38,281	31,319	30,156	28,957	30,827
Intangible assets, net	44,191	33,418	45,664	56,574	58,232
Goodwill	73,164	46,776	46,860	43,469	20,451
Total assets	654,656	627,758	587,801	536,480	439,492
Total stockholders' equity	335,889	322,859	294,705	271,788	236,479

(1) We retrospectively adopted ASU 2015-17 “Income Taxes (Topic 740): Balance Sheet Classification of Deferred Taxes” in the fourth quarter of 2016. As a result, all net deferred income taxes assets are classified as long-term deferred income tax assets in the consolidated balance sheets for all periods presented. The amounts reclassified as of December 31, 2015, 2014, 2013, and 2012 were $12.4 million, $13 million, $12.3 million, and $10.2 million, respectively. See Note 2 “Significant Accounting Policies—New accounting pronouncements” included in the Notes to Consolidated Financial Statements in Item 8 of this Annual Report on Form 10-K for additional information related to this adoption.

ITEM 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

BUSINESS OVERVIEW

We develop, market, license, and support software applications for marketing, sales, service, and operations. In addition, we license our Pega Platform for clients that wish to build and extend their own applications. The Pega Platform assists our clients in building, deploying, and evolving enterprise applications, creating an environment in which business and IT can collaborate to manage back office operations, front office sales, marketing, and/or customer service needs. We also provide consulting services, maintenance, and training for our software. Our software applications and Pega Platform can be deployed on Pega-managed, partner-managed, or customer-managed cloud architectures.

Our clients include Global 3000 companies and government agencies that seek to manage complex enterprise systems and customer service issues with greater agility and cost-effectiveness. Our strategy is to sell a client a series of licenses, each focused on a specific purpose or area of operations, in support of longer term enterprise-wide digital transformation initiatives.

Our license revenue is primarily derived from sales of our applications and our Pega Platform. Our cloud revenue is derived from the licensing of our hosted Pega Platform and software application environments. Our consulting services revenue is primarily related to new license implementations. We offer training for our clients and partners at our regional training facilities and at third-party facilities, including client sites. Our online training through PegaAcademy provides an alternative way to learn our software in a virtual environment. We believe that this online training will continue to expand the number of trained experts at a faster pace.

Sales to clients based outside of the United States of America ("U.S.") represented an average of 44% of our total revenue for the last three fiscal years. See Note 17, "Geographic Information and Major Clients," included in the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for further detail on our geographic revenues.

At the end of June 2016, the United Kingdom (the "U.K.") held a referendum in which U.K. voters approved an exit from the European Union (the "E.U."), commonly referred to as "Brexit". While Brexit has not had a meaningful impact on our business momentum, it has resulted in a sharp decline in the value of the British pound, slightly reducing revenue during 2016, but with no material impact on our results of operations. Prolonged weakening of the British pound relative to the U.S. dollar may adversely affect our revenue and results of operations in future periods.

We continue to expand our sales and marketing capacity to achieve broader market coverage, with sales and marketing costs representing 37%, 35%, and 35% of revenue during 2016, 2015, and 2014, respectively. We are investing heavily in research and development to expand and improve our software offerings, with research and development costs representing 19%, 19%, and 18% of revenue during 2016, 2015, and 2014.

In evaluating the financial condition and operating performance of our business, management focuses on the following key performance factors:

(Dollars in thousands, except per share amounts)	Year Ended December 31, 2016 [1]	2015	2014	Increase (Decrease) 2016 vs. 2015	2015 vs. 2014	% Change 2016 vs. 2015	2015 vs. 2014
Total revenue	$750,266	$682,695	$590,004	$ 67,571	$ 92,691	10%	16%
Recurring revenue [2]	$394,240	$342,711	$299,035	$ 51,529	$ 43,676	15%	15%
Diluted earnings per share	$ 0.34	$ 0.46	$ 0.42	$ (0.12)	$ 0.04	(26)%	10%
Cash flow provided by operating activities	$ 39,874	$ 67,803	$103,276	$ (27,929)	$ (35,473)	(41)%	(34)%

(1) Reflects the impacts of the early adoption of ASU 2016-09. See Note 2 "Significant Accounting Policies—New accounting pronouncements" included in the Notes to Consolidated Financial Statements in Item 8 of this Annual Report on Form 10-K for additional information related to this adoption.

(2) See the table below for the composition of recurring revenue.

Recurring revenue increased to 53% of total revenue in 2016 compared to 50% in 2015. Our business may continue to shift towards the recurring revenue streams of term and cloud licenses. As a result of this shift, gross profit, operating income, net income, and earnings per share may grow slower than historical trends due to more license revenue being recognized over longer periods.

	Year Ended December 31,			Increase		% Change	
(Dollars in thousands)	2016	2015	2014	2016 vs. 2015	2015 vs. 2014	2016 vs. 2015	2015 vs. 2014
Recurring revenue:							
Term license	$132,466	$109,283	$ 96,182	$ 23,183	$ 13,101	21%	14%
Cloud	41,438	30,626	16,614	10,812	14,012	35%	84%
Maintenance	220,336	202,802	186,239	17,534	16,563	9%	9%
Total recurring revenue	$394,240	$342,711	$299,035	$ 51,529	$ 43,676	15%	15%
Recurring revenue as a percent of total revenue	53%	50%	51%				

Another key performance factor as we shift towards recurring revenue is license and cloud backlog. It is computed by adding deferred license and cloud revenue recorded on the balance sheet (See Note 11 "Deferred Revenue" in the Notes to Consolidated Financial Statements) and client license and cloud contractual commitments, which are not on our balance sheet because we have not yet invoiced our clients, nor have we recognized the associated revenues (See the table of future cash receipts in Liquidity and Capital Resources—Cash Provided by Operating Activities). License and cloud backlog may vary in any given period depending on the amount and timing of when the arrangements are executed, as well as the mix between perpetual, term, and cloud license arrangements, which may depend on our clients' deployment preferences.

	As of December 31,				% Change
(Dollars in thousands)	2016		2015		2016 vs. 2015
Deferred license and cloud revenue on the balance sheet:					
Term license and cloud	$ 30,725	50%	$ 29,929	47%	3%
Perpetual license	31,098	50%	33,483	53%	(7)%
Total deferred license and cloud revenue	61,823	100%	63,412	100%	(3)%
License and cloud contractual commitments **not** on the balance sheet:					
Term license and cloud	434,323	93%	322,844	91%	35%
Perpetual license	31,652	7%	33,544	9%	(6)%
Total license and cloud commitments	465,975	100%	356,388	100%	31%
Total license (term and perpetual) and cloud backlog (1)	$527,798		$419,800		26%
Total term license and cloud backlog	$465,048	88%	$352,773	84%	32%

(1) Excludes future revenue from committed maintenance and service arrangements.

To grow our business, we intend to:

- Lead the platform market for business applications for customer engagement and operational excellence;

- Continue to grow market share by developing and delivering robust applications for marketing, sales, service, and operations that can work together seamlessly with maximum differentiation and minimal customization;
- Execute new-market growth initiatives, further expanding coverage within the Global 3000; and
- Build out our digital platform and continue to invest in awareness marketing to support the way today's clients want to buy.

Whether or not 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;
- Develop new products or product enhancements; and
- Successfully incorporate acquired technologies into our applications and unified Pega Platform.

We also regularly evaluate acquisitions or investment opportunities in complementary businesses, services and technologies, and intellectual property rights in an effort to expand and enhance our product offerings. On April 11, 2016, we acquired OpenSpan, Inc. ("OpenSpan"), a privately held software provider of robotic process automation and workforce analytics software for $48.8 million in cash, net of $1.8 million in cash acquired. Subsequent to the acquisition we unified the Pega Robotic Automation with our Pega Platform for Case and Business Process Management and our portfolio of CRM applications. We believe this will enable clients to intelligently optimize how work gets done across the enterprise and more effectively automate tasks, streamline processes, increase employee productivity, and ultimately deliver better customer experiences.

RESULTS OF OPERATIONS

(Dollars in thousands)	Year Ended December 31,			% Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
Total revenue	$750,266	$682,695	$590,004	10%	16%
Gross profit	511,010	469,249	404,910	9%	16%
Total operating expenses	473,251	404,588	353,371	17%	14%
Income from operations	37,759	64,661	51,539	(42)%	25%
Income before provision for income taxes	35,202	60,505	47,994	(42)%	26%

Revenue

Software license revenue

(Dollars in thousands)	Year Ended December 31,						% Change	
	2016		2015		2014		2016 vs. 2015	2015 vs. 2014
Perpetual licenses	$147,529	53%	$166,305	60%	$136,154	59%	(11)%	22%
Term licenses	132,466	47%	109,283	40%	96,182	41%	21%	14%
Total software license revenue	$279,995	100%	$275,588	100%	$232,336	100%	2%	19%

The mix between perpetual and term license arrangements executed in a particular period varies based on client needs. A change in the mix may cause our revenues to vary materially from period to period. A higher proportion of term license arrangements executed would result in more license revenue being recognized over longer periods. Additionally, some of our perpetual license arrangements include extended payment terms or additional rights of use, which also result in the recognition of revenue over longer periods. The aggregate value of new license agreements executed also fluctuates quarter to quarter.

Term license revenue as a percentage of total license revenue increased during 2016 compared to 2015. If this trend continues, it will result in slower license revenue growth as we continue to build license backlog.

2016 Compared to 2015

The decrease in perpetual license revenue was primarily due to the lower average value of perpetual license arrangements executed during 2016 compared to 2015 and the acceleration of the recognition of $4.6 million in revenue in the fourth quarter of 2015 from an existing license arrangement which was being recognized ratably. The aggregate value of revenue expected to be recognized and payments due in future periods under noncancellable perpetual licenses periods was $31.7 million as of December 31, 2016 compared to $33.5 million as of December 31, 2015. See the table of future cash receipts in Liquidity and Capital Resources—Cash Provided by Operating Activities.

The increase in term license revenue was primarily due to a term license arrangement greater than $10 million for which the license fee for the three year license term was paid and recognized in full in the first quarter of 2016 as well as the increase in term license arrangements executed during 2016 and 2015, reflecting the shift towards recurring revenue streams. The aggregate value of revenue expected to be recognized and payments due in future periods under noncancellable term licenses and our Pega Cloud arrangements grew to $434.3 million as of December 31, 2016 compared to $322.8 million as of December 31, 2015. See the table of future cash receipts in Liquidity and Capital Resources—Cash Provided by Operating Activities.

2015 Compared to 2014

The increase in perpetual license revenue was primarily due to revenue recognized from the higher volume and higher average value of arrangements executed in 2015 and the acceleration of the recognition of $4.6 million in revenue from an existing license arrangement which was being recognized ratably. The aggregate value of revenue expected to be recognized and payments due in future periods under noncancellable perpetual licenses was $33.5 million as of December 31, 2015 compared to $31.3 million as of December 31, 2014.

The increase in term license revenue was primarily due to prepayments of two arrangements executed in 2015. The aggregate value of revenue expected to be recognized and payments due in future periods under noncancellable term licenses and our Pega Cloud arrangements grew to $322.8 million as of December 31, 2015 compared to $270.1 million as of December 31, 2014. See the table of future cash receipts in Liquidity and Capital Resources—Cash Provided by Operating Activities.

Maintenance revenue

(Dollars in thousands)	Year Ended December 31,			% Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
Maintenance	$220,336	$202,802	$186,239	9%	9%

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

Services revenue

(Dollars in thousands)	Year Ended December 31,						% Change	
	2016		2015		2014		2016 vs. 2015	2015 vs. 2014
Consulting services	$201,945	81%	$167,704	82%	$149,628	87%	20%	12%
Cloud	41,438	16%	30,626	15%	16,614	10%	35%	84%
Training	6,552	3%	5,975	3%	5,187	3%	10%	15%
Total services	$249,935	100%	$204,305	100%	$171,429	100%	22%	19%

2016 Compared to 2015

Consulting services revenue represents revenue primarily from new license implementations. Our consulting services revenue may fluctuate in future periods depending on the mix of new implementation projects we perform as compared to those performed by our enabled clients or led by our partners. The increase in consulting services revenue was due to higher realization rates and increased billable hours primarily related to two large projects in 2016, when compared to unusually low demand in Europe in the first half of 2015.

Cloud revenue represents revenue from our Pega Cloud offerings. The increase in cloud revenue was primarily due to growth of our cloud client base.

2015 Compared to 2014

The increase in consulting services revenue was due to the higher number of projects and billable hours in 2015 compared to 2014.

The increase in cloud revenue was primarily due to growth of our cloud client base.

Gross Profit

(Dollars in thousands)	Year Ended December 31,			% Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
Software license	$275,052	$271,463	$227,377	1%	19%
Maintenance	194,831	180,899	166,225	8%	9%
Services	41,127	16,887	11,308	144%	49%
Total gross profit	$511,010	$469,249	$404,910	9%	16%
Total gross profit %	68%	69%	69%		
Software license gross profit %	98%	99%	98%		
Maintenance gross profit %	88%	89%	89%		
Services gross profit %	16%	8%	7%		

2016 Compared to 2015

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

The increase in services gross profit percent was primarily due to higher realization rates in 2016 compared to 2015 and the recognition of revenue in 2016 related to several large projects which had been delayed from prior periods, for which the majority of the associated costs had already been recognized in 2015.

2015 Compared to 2014

The increase in total gross profit was primarily due to increases in software license and maintenance revenue.

The increase in services gross profit percent was primarily due to increased global professional services utilization rates in 2015 compared to 2014, partially offset by increased software license costs.

Operating expenses

Amortization of intangibles

(Dollars in thousands)	Year Ended December 31,			% Change	
	2016	**2015**	**2014**	**2016 vs. 2015**	**2015 vs. 2014**
Cost of revenue	$ 5,986	$ 5,392	$ 6,017	11%	(10)%
Selling and marketing	7,145	6,127	6,022	17%	2%
General and administrative	277	683	1,770	(59)%	(61)%
	$13,408	$12,202	$13,809	10%	(12)%

2016 Compared to 2015

The increases were primarily due to the amortization associated with the $24.3 million of intangible assets acquired from OpenSpan in April 2016.

2015 Compared to 2014

The decreases were due to the full amortization in 2014 of acquired technology and other intangibles from our 2010 acquisition of Chordiant and our 2013 acquisition of Antenna.

Selling and marketing

(Dollars in thousands)	Year Ended December 31,			% Change	
	2016	**2015**	**2014**	**2016 vs. 2015**	**2015 vs. 2014**
Selling and marketing	$278,849	$241,387	$206,658	16%	17%
As a percent of total revenue	37%	35%	35%		
Selling and marketing headcount	898	750	661	20%	13%

Selling and marketing expenses include compensation, benefits, and other headcount-related expenses associated with our selling and marketing personnel as well as advertising, promotions, trade shows, seminars, and other programs. Selling and marketing expenses also include the amortization of customer related intangibles.

The increases in headcount reflect our efforts to increase our sales capacity to target new accounts in existing industries as well as to expand coverage in new industries and geographies, and to increase the number of our sales opportunities.

2016 Compared to 2015

The increase was primarily due to a $29.4 million increase in compensation and benefit expenses associated with higher headcount and sales commissions, a $2 million increase in sales and marketing programs expenses primarily related to our digital advertising and brand awareness campaigns and our PegaWorld annual user conference, and a $1 million increase in amortization expense due to the customer-related intangible assets acquired from OpenSpan.

2015 Compared to 2014

The increase was primarily due to a $14 million increase in compensation and benefit expenses associated with higher headcount, an $11.4 million increase in sales and marketing programs expenses primarily related to our digital advertising and brand awareness campaigns, and a $10 million increase in sales commissions associated with the higher value of new license arrangements executed in 2015 compared to 2014.

Research and development

(Dollars in thousands)	Year Ended December 31,			% Change	
	2016	**2015**	**2014**	**2016 vs. 2015**	**2015 vs. 2014**
Research and development	$145,548	$126,374	$108,591	15%	16%
As a percent of total revenue	19%	19%	18%		
Research and development headcount	1,431	1,222	1,085	17%	13%

Research and development expenses include compensation, benefits, contracted services, and other headcount-related expenses associated with the creation and development of our products as well as enhancements and engineering changes to existing products and integration of acquired technologies.

The increases in headcount primarily reflect the growth in our India research facility which usually lowers our average compensation expense per employee.

2016 Compared to 2015

The increase was primarily due to a $16.1 million increase in compensation and benefit expenses associated with higher headcount and a $1.5 million increase in expendable equipment and software license expenses.

2015 Compared to 2014

The increase was primarily due to an $11.9 million increase in compensation and benefit expenses associated with higher headcount, a $1.4 million increase in outsourced hosting expenses, a $1.4 million increase in expendable equipment and software license expenses, and an $0.8 million increase in contracted professional services.

General and administrative

(Dollars in thousands)	Year Ended December 31,			% Change	
	2016	**2015**	**2014**	**2016 vs. 2015**	**2015 vs. 2014**
General and administrative	$45,951	$36,738	$37,442	25%	(2)%
As a percent of total revenue	6%	5%	6%		
General and administrative headcount	378	353	310	7%	14%

General and administrative expenses include compensation, benefits, and other headcount-related expenses associated with finance, legal, corporate governance, and other administrative headcount. They also include accounting, legal, and other professional consulting and administrative fees.

The general and administrative headcount includes employees in human resources, information technology, and corporate services departments whose costs are allocated to our other functional departments.

2016 Compared to 2015

The increase was primarily due to a $4.9 million increase in compensation and benefits expenses associated with higher headcount of which $2.2 million was due to higher stock-based compensation expense primarily from the increased value of our annual periodic equity awards. The increase was also due to the fact that 2016 did not include a $1.8 million benefit from the settlement of our indemnification claims against the former Antenna, Inc. shareholders and a $1.6 million benefit from the settlement of certain indirect tax liabilities, which reduced our general and administrative expense in 2015.

2015 Compared to 2014

The decrease was primarily due to the recognition in the first quarter of 2015 of the $1.8 million benefit from the settlement of our indemnification claims against the former Antenna, Inc. shareholders and the

$1.6 million benefit from the settlement of certain indirect tax liabilities discussed above, partially offset by a $2.2 million increase in compensation and benefit expenses associated with higher 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)	Year Ended December 31,			% Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
Stock-based compensation:					
Cost of revenues	$ 11,459	$ 8,772	$ 5,335	31%	64%
Operating expenses	29,362	21,282	13,870	38%	53%
Total stock-based compensation before tax	40,821	30,054	19,205	36%	56%
Income tax benefit	(12,198)	(8,098)	(5,563)		

The increases were primarily due to the increased value of our annual periodic equity awards granted in March 2015 and 2016. These awards generally have a five-year vesting schedule.

See Note 14 “Stock-Based Compensation” in the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for further information on our stock-based awards.

Non-operating income and expenses, net

(Dollars in thousands)	Year Ended December 31,			% Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
Foreign currency transaction gain (loss)	$ 2,247	$(4,168)	$(3,769)	(154)%	11%
Interest income, net	776	1,056	683	(27)%	55%
Other expense, net	(5,580)	(1,044)	(459)	434%	127%
	$(2,557)	$(4,156)	$(3,545)	(38)%	17%

We use foreign currency forward contracts (“forward contracts”) to hedge our exposure to fluctuations 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 in currencies other than the U.S. dollar and by our U.K. subsidiary in currencies other than the British pound.

These forward contracts are not designated as hedging instruments. As a result, we record the fair value of the outstanding contracts at the end of the reporting period in our consolidated balance sheet, with any fluctuations in the value of these contracts recognized in other expense, net.

The total change in the fair value of our foreign currency forward contracts recorded in other expense, net, during 2016, 2015, and 2014 was a loss of $5.6 million, $1 million, and $0.5 million respectively.

See Note 4 “Derivative Instruments” in the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for discussion on our use of forward contracts.

Provision for income taxes

(Dollars in thousands)	Year Ended December 31,			% Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
Provision for income taxes	$8,216	$24,183	$14,739	(66)%	64%
Effective income tax rate	23.3%	40.0%	30.7%		

The provision for income taxes represents current and future amounts owed for federal, state, and foreign taxes.

2016 Compared to 2015

The decrease in the effective income tax rate for 2016 compared to 2015 was primarily due to the impact of the adoption of ASU 2016-09, which decreased income tax expense by $6.7 million. The adoption of ASU 2016-09 significantly impacts both the timing and method of how the tax effects of share-based awards are recognized. ASU 2016-09 requires the income tax effects to be recognized in the provision for income taxes when the awards vest or are settled whereas previously such income tax benefits were recognized as part of additional paid-in capital and could not be recognized until they were realized through a reduction in income taxes payable. See Note 2 “Significant Accounting Policies” —New accounting pronouncements” included in the Notes to Consolidated Financial Statements in Item 8 of this Annual Report on Form 10-K for additional information related to this adoption.

As of December 31, 2016, we had approximately $22.7 million of total unrecognized tax benefits, which will 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, which relate to the expiration of the applicable statute of limitations and will reduce our effective tax rate if recognized.

2015 Compared to 2014

The increase in effective income tax rate for 2015 compared to 2014 was primarily due to a $2.3 million decrease in the benefit related to income generated in foreign jurisdictions that are subject to tax at a lower rate than the U.S. statutory rate.

As of December 31, 2015, we had approximately $24 million of total unrecognized tax benefits, which would decrease our effective tax rate if recognized.

LIQUIDITY AND CAPITAL RESOURCES

(in thousands)	Year Ended December 31,		
	2016	2015	2014
Cash provided by (used in):			
Operating activities (1)	$ 39,874	$ 67,803	$103,276
Investing activities	(7,172)	(44,452)	(37,657)
Financing activities (1)	(51,716)	(40,659)	(27,419)
Effect of exchange rate on cash	(3,418)	(4,251)	(3,846)
Net (decrease) increase in cash and cash equivalents	$(22,432)	$(21,559)	$ 34,354

	As of December 31,		
	2016	2015	2014
Total cash, cash equivalents, and marketable securities	$133,761	$219,078	$211,216

(1) The adoption of ASU 2016-09 eliminates the requirement to reclassify excess tax benefits from operating activities to financing activities in the consolidated statements of cash flows. We elected to adopt this requirement retrospectively. As a result, we reclassified $5.3 million, and $3.4 million from financing activities to operating activities for the years ended December 31, 2015 and 2014, respectively. See Note 2 “Significant Accounting Policies—New accounting pronouncements” included in the Notes to Consolidated Financial Statements in Item 8 of this Annual Report on Form 10-K for additional information related to this adoption.

The decreases in cash and cash equivalents during the years ended December 31, 2016 and 2015 were driven by the increases in trade accounts receivable, largely due to the timing of collections and the large amounts of new and annual license and maintenance billings, and the increases in cash used in financing activities, primarily for share repurchases. The increase in cash and cash equivalents during the year ended December 31, 2014 was driven by the increase in cash provided by operating activities. Cash provided by operating activities is our primary source of liquidity. We use this source to fund our capital expenditures and acquisitions, investments, dividend payments, and share repurchase program. We believe that our current cash, cash equivalents, and cash flow from operations will be sufficient to fund our operations and our share repurchase program for at least the next 12 months. There can be no assurance that changes in our plans or other events affecting our operations will not result in materially accelerated or unexpected cash requirements.

We evaluate acquisition opportunities from time to time, which if pursued, could require use of our funds. In October, 2013, we acquired Antenna, and $0.8 million was paid in the first quarter of 2014 representing the remaining merger consideration related to the final working capital adjustment. During 2014, we completed three acquisitions for $6.3 million in cash, inclusive of $2.1 million in cash acquired, and $1.1 million in additional cash consideration which was paid in 2015 to the selling shareholders of one of the three companies acquired in 2014. During 2015 and 2016, we also paid $0.5 million and $0.3 million, respectively, in additional cash consideration to the selling shareholders of another one of the three companies acquired in 2014, based on the achievement of certain performance milestones. The final cash payment of $0.3 million was made in January 2017 to the same selling shareholders based on the achievement of additional performance milestones through the end of 2016. In April 2016, we acquired OpenSpan for $48.8 million in cash, net of cash acquired. As of December 31, 2016, $7.4 million of the cash consideration remains in escrow for up to an 18-month period after the acquisition as security for the indemnification obligations of the selling shareholders.

As of December 31, 2016, approximately $51.8 million of our cash and cash equivalents was held in our foreign subsidiaries. If it becomes necessary to repatriate these funds, we may be required to pay U.S. tax, net of any applicable foreign tax credits, upon repatriation. We consider the earnings of our foreign subsidiaries to be permanently reinvested and, as a result, U.S. taxes on such earnings are not provided. It is impractical to estimate the amount of U.S. tax we could have to pay upon repatriation due to the complexity of the foreign tax credit calculations. There can be no assurance that changes in our plans or other events affecting our operations will not result in materially accelerated or unexpected expenditures. See "Risk Factors—If it became necessary to repatriate any of our foreign cash balances to the United States, we may be subject to increased income taxes, other restrictions, and limitations" in Item 1A of this Annual Report on Form 10-K.

Cash provided by operating activities

The primary driver during 2016 was net income of $27 million.

The primary drivers during 2015 were net income of $36.3 million and a $17.7 million increase in deferred revenue primarily resulting from the difference in timing of billings and revenue recognition.

The primary drivers during 2014 were net income of $33.3 million, a $13.4 million increase in accounts payable and accrued expenses primarily due to the timing of income tax payments, and an $11.2 million increase in deferred revenue primarily resulting from the difference in timing of billings and revenue recognition for annual maintenance.

Future Cash Receipts from Committed License and Cloud Arrangements

As of December 31, 2016, none of the amounts shown in the table below had been billed and no revenue had been recognized. The timing of future cash receipts may not coincide with the timing of future revenue recognition.

As of December 31, *(dollars in thousands)*	**Term and cloud contracts**	**Perpetual contracts (1)**	**Total**
	Committed but not yet billed		
2017	$129,641	$ 17,751	$147,392
2018	121,944	10,233	132,177
2019	93,826	2,931	96,757
2020	63,278	737	64,015
2021	21,841	—	21,841
2022 and thereafter	3,793	—	3,793
Total	$434,323	$ 31,652	$465,975
As a percentage of total license and cloud contractual commitments	93%	7%	

(1) These amounts are for perpetual licenses with extended payment terms and/or additional rights of use.

Total contractual future cash receipts due from our existing license agreements was approximately $356.4 million as of December 31, 2015 and $301.4 million as of December 31, 2014.

Cash used in investing activities

During 2016, we acquired OpenSpan for $48.8 million, net of cash acquired, and invested $19.1 million primarily in internally developed software and leasehold improvements at our corporate headquarters and our office in Hyderabad, India, partially offset by proceeds received from the sales of marketable debt securities of $62.2 million.

During 2015, we purchased marketable debt securities for $75.7 million, partially offset by the proceeds received from sales, maturities and called marketable debt securities of $43.9 million. In 2015, we paid additional cash consideration of $1.1 million to the selling shareholders of one of the three companies acquired in 2014 and $0.5 million to the selling shareholders of another one of the three companies acquired in 2014 based on the achievement of certain performance milestones. We also invested $11 million primarily in leasehold improvements for the build-out of our office in Hyderabad, India and purchases of computer equipment for our U.S. and India offices.

During 2014, cash used in investing activities was primarily for purchases of marketable debt securities for $55.5 million, partially offset by the proceeds received from the maturities and called marketable debt securities of $33.2 million. We paid $3.9 million for acquisitions for 2014, net of cash acquired. We also invested $11.5 million primarily in leasehold improvements for the build-out of our new India offices and purchases of computer equipment for our U.S. and India offices.

Cash used in financing activities

Net cash used in financing activities during 2016, 2015, and 2014 was primarily for repurchases of our common stock and the payment of our quarterly dividend. Since 2004, our Board of Directors has approved annual stock repurchase programs that have authorized the repurchase of up to $195 million of our common stock. On May 20, 2016, we announced that our Board of Directors extended the expiration date of the current stock repurchase program to June 30, 2017 and authorized the Company to repurchase up to an additional

$50 million of our stock between May 18, 2016 and June 30, 2017 (the "Current Program"). As of December 31, 2016, approximately $149.1 million had been repurchased, $39.4 million remained available for repurchase, and $6.4 million had expired. Purchases under these programs have been made on the open market.

Common stock repurchases

The following table is a summary of our repurchase activity under all of our stock repurchase programs:

(Dollars in thousands)	Year ended December 31, 2016		2015		2014	
	Shares	**Amount**	**Shares**	**Amount**	**Shares**	**Amount**
Prior year authorizations at January 1,		$ 40,534		$ 13,284		$ 14,433
Authorizations		25,879		50,000		14,410
Repurchases paid	1,078,251	(27,028)	944,398	(22,530)	756,143	(15,264)
Repurchases unsettled	—	—	7,836	(220)	13,983	(295)
Authorized dollars remaining as of December 31,		$ 39,385		$ 40,534		$ 13,284

In addition to the share repurchases made under our repurchase programs, we net settled the majority of our employee stock option exercises and RSU vestings, which resulted in the withholding of shares to cover the option exercise price and the minimum statutory tax withholding obligations.

During 2016, 2015, and 2014, option and RSU holders net settled a total of 2,277,000 shares; 1,821,000 shares; and 1,193,000 shares, respectively, of which only 1,092,000 shares; 932,000 shares; and 641,000 shares, respectively, were issued to the option and RSU holders. The balance of the shares were surrendered to us to pay for the exercise price with respect to stock options and the applicable taxes for both options and RSUs. During 2016, 2015, and 2014, instead of receiving cash from the equity holders, we withheld shares with a value of $16.2 million, $9.8 million, and $6.1 million, respectively, for withholding taxes, and $18.1 million, $11.9 million, and $6.4 million, respectively, for the exercise price.

Dividends

On May 27, 2014, we announced an increase in our quarterly cash dividend from $0.015 to $0.03 per share. We declared quarterly dividends totaling $0.12 per share, $0.12 per share, and $0.105 per share for the years ended December 31, 2016, 2015, and 2014, respectively. For the years ended December 31, 2016, 2015, and 2014, we paid cash dividends of $9.2 million, $9.2 million, and $6.9 million, respectively. 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 notice.

Contractual obligations

As of December 31, 2016, we had purchase obligations for customer support and marketing programs and payments under operating leases. Our lease arrangement for our office headquarters expires in 2023, subject to our option to extend for two additional five-year periods. We also lease space for our other offices under noncancellable operating leases that expire at various dates through 2021.

		Payments due by period				
(in thousands)	**Total**	**2017**	**2018 & 2019**	**2020 & 2021**	**2022 & Thereafter**	**Other**
Purchase obligations (1)	$ 4,494	$ 4,494	$ —	$ —	$ —	$ —
Liability for uncertain tax positions (2)	4,263	—	—	—	—	4,263
Operating lease obligations (3)	77,609	13,604	25,671	20,599	17,735	—
Total	$ 86,366	$ 18,098	$ 25,671	$ 20,599	$ 17,735	$ 4,263

(1) Represents the fixed or minimum amounts due under purchase obligations for customer support and sales and marketing programs.
(2) As of December 31, 2016, our recorded liability for uncertain tax positions was approximately $4.3 million. 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.
(3) Includes deferred rent of approximately $1.8 million included in accrued expenses and approximately $9.1 million in other long-term liabilities in the accompanying audited consolidated balance sheet as of December 31, 2016.

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 Note 2, "Significant Accounting Policies," in the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K, 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 revenue is derived primarily from software licenses, maintenance fees related to our software licenses, and consulting services. Our license arrangements, whether involving a perpetual license or a term license, generally also contain multiple other elements, including consulting services, training, and software maintenance services. See Note 2, "Significant Accounting Policies—(a) Revenue recognition," in the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for our full revenue recognition accounting policy.

Software revenue recognition requires judgment, including whether a software arrangement includes multiple elements, and if so, whether VSOE of fair value exists for those elements. The amount of consideration allocated to undelivered elements is based on the VSOE of fair value for those elements and is recognized as those elements are delivered. Any remaining portion of the total arrangement fee is allocated to the software license—the first element delivered. Revenue is recognized for each element when all of the revenue recognition criteria have been met. Changes in the mix of the elements in a software arrangement, the ability to identify VSOE for those elements, the fair value of the respective elements, and changes to a product's estimated life cycle could materially impact the amount of earned and unearned revenue.

Goodwill and Intangible Assets Impairment

Our goodwill and intangible assets result from our 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 as of November 30th of each fiscal year. To assess if goodwill is impaired, we first perform a qualitative assessment to determine whether further impairment testing is necessary. If, as a result of 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 re-evaluate 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 manner in which 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 considered to be 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, 2016, we had $73.2 million of goodwill and $44.2 million of acquired intangible assets. If our estimates or the related assumptions change in the future, we may be required to record impairment charges to reduce the carrying value of these 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 Note 15 “Income Taxes” in the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for further information.

NEW ACCOUNTING PRONOUNCEMENTS

New Accounting Pronouncements are detailed in Note 2, “Significant Accounting Policies,” in the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K.

ITEM 7A. Quantitative and Qualitative Disclosure about Market Risk

Market risk represents the risk of loss that may affect us due to adverse changes in financial market prices and rates. Our market risk exposure is primarily related to fluctuations in foreign exchange rates and interest rates.

Foreign currency exposure

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 offset our foreign currency exposure. Changes in exchange rates have recently and may continue to have a negative effect on our total revenues. A hypothetical 10% strengthening in the U.S. dollar against other currencies would result in an approximately 3% decrease in revenues for each of the years ended December 31, 2016 and 2015, respectively, but with no material impact on our results of operations. See “Risk Factors—We are exposed to fluctuations in currency exchange rates that could negatively impact our financial results and cash flows” in Item 1A of this Annual Report on Form 10-K.

We have experienced and expect to continue to experience fluctuations in our net income as a result of transaction gains or losses related to remeasuring 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 Australian dollar, Euro, and U.S. dollar denominated cash, accounts receivable, and intercompany receivables and payables held by our U.K. subsidiary, a British pound functional entity. We recognized a net foreign currency transaction gain (loss) of $2.2 million and $(4.2) million for the years ended December 31, 2016 and 2015, respectively. We have historically used forward contracts to manage our exposure to changes in foreign currency exchange rates. These forward contracts are not designated as hedging instruments, and changes in the fair value of these forward contracts are recognized in other expense, net, in the accompanying consolidated statements of operations. If the British pound exchange rate in comparison to the Australian dollar, Euro, and U.S. dollar at December 31, 2016 and 2015 uniformly strengthened by 10%, the impact to the amount of foreign currency transaction gain (loss) and loss from the change in the fair value of forward contracts we report would be immaterial.

Interest rate exposure

As of December 31, 2016, we had $63.2 million of marketable debt securities, which consisted primarily of corporate and municipal bonds, with a weighted-average remaining maturity of 14 months. Due to the overall short-term remaining maturities of our marketable debt securities, our interest rate exposure is not significant. As of December 31, 2016, a 200 basis point increase in market interest rates would have reduced the fair value of our fixed rate marketable debt securities by approximately $1.4 million.

ITEM 8. Financial Statements and Supplementary Data

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

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

We have audited the accompanying consolidated balance sheets of Pegasystems Inc. and subsidiaries (the "Company") as of December 31, 2016 and 2015, and the related consolidated statements of operations, comprehensive income, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2016. We also have audited the Company's internal control over financial reporting as of December 31, 2016, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. 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 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 conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. 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.

A company's internal control over financial reporting is a process designed by, or under the supervision of, the company's principal executive and principal financial officers, or persons performing similar functions, and effected by the company's board of directors, management, and other personnel to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (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 the inherent limitations of internal control over financial reporting, including the possibility of collusion or improper management override of controls, material misstatements due to error or fraud may not be prevented or detected on a timely basis. Also, projections of any evaluation of the effectiveness of the internal control over financial reporting to future periods are subject to the risk that the controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Pegasystems Inc. and subsidiaries as of December 31, 2016 and 2015, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2016, 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, 2016, based on the criteria established in *Internal Control — Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

/S/ DELOITTE & TOUCHE LLP

Boston, Massachusetts
February 24, 2017

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

	As of December 31, 2016	As of December 31, 2015
ASSETS		
Current assets:		
Cash and cash equivalents	$ 70,594	$ 93,026
Marketable securities	63,167	126,052
Total cash, cash equivalents, and marketable securities	133,761	219,078
Trade accounts receivable, net of allowance of $4,126 and $4,631	265,028	211,846
Income taxes receivable	14,155	4,770
Other current assets	12,188	10,791
Total current assets	425,132	446,485
Property and equipment, net	38,281	31,319
Deferred income taxes	69,898	65,730
Long-term other assets	3,990	4,030
Intangible assets, net	44,191	33,418
Goodwill	73,164	46,776
Total assets	$ 654,656	$ 627,758
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 14,414	$ 12,675
Accrued expenses	36,751	42,768
Accrued compensation and related expenses	60,660	55,872
Deferred revenue	175,647	155,873
Total current liabilities	287,472	267,188
Income taxes payable	4,263	5,618
Long-term deferred revenue	10,989	15,805
Other long-term liabilities	16,043	16,288
Total liabilities	318,767	304,899
Commitments and contingencies (Note 12)		
Stockholders' equity:		
Preferred stock, $0.01 par value, 1,000 shares authorized; no shares issued and outstanding	—	—
Common stock, $0.01 par value, 200,000 shares authorized; 76,591 shares and 76,488 shares issued and outstanding	766	765
Additional paid-in capital	143,903	145,418
Retained earnings	198,315	180,183
Accumulated other comprehensive loss:		
Net unrealized loss on available-for-sale marketable securities, net of tax	(169)	(150)
Foreign currency translation adjustments	(6,926)	(3,357)
Total stockholders' equity	335,889	322,859
Total liabilities and stockholders' equity	$ 654,656	$ 627,758

See notes to consolidated financial statements.

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

	Year ended December 31,		
	2016	2015	2014
Revenue:			
Software license	$ 279,995	$ 275,588	$ 232,336
Maintenance	220,336	202,802	186,239
Services	249,935	204,305	171,429
Total revenue	750,266	682,695	590,004
Cost of revenue:			
Software license	4,943	4,125	4,959
Maintenance	25,505	21,903	20,014
Services	208,808	187,418	160,121
Total cost of revenue	239,256	213,446	185,094
Gross profit	511,010	469,249	404,910
Operating expenses:			
Selling and marketing	278,849	241,387	206,658
Research and development	145,548	126,374	108,591
General and administrative	45,951	36,738	37,442
Acquisition-related	2,616	89	488
Restructuring	287	—	192
Total operating expenses	473,251	404,588	353,371
Income from operations	37,759	64,661	51,539
Foreign currency transaction gain (loss)	2,247	(4,168)	(3,769)
Interest income, net	776	1,056	683
Other expense, net	(5,580)	(1,044)	(459)
Income before provision for income taxes	35,202	60,505	47,994
Provision for income taxes	8,216	24,183	14,739
Net income	$ 26,986	$ 36,322	$ 33,255
Earnings per share:			
Basic	$ 0.35	$ 0.47	$ 0.44
Diluted	$ 0.34	$ 0.46	$ 0.42
Weighted-average number of common shares outstanding:			
Basic	76,343	76,507	76,327
Diluted	79,732	79,043	78,531

See notes to consolidated financial statements.

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

	Year ended December 31,		
	2016	2015	2014
Net income	$26,986	$36,322	$ 33,255
Other comprehensive loss, net:			
Unrealized loss on available-for-sale marketable securities, net of tax	(19)	(85)	(142)
Foreign currency translation adjustments	(3,569)	(2,810)	(4,103)
Total other comprehensive loss, net	(3,588)	(2,895)	(4,245)
Comprehensive income	$23,398	$33,427	$ 29,010

See notes to consolidated financial statements.

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

	Common Stock				Accumulated	
	Number of Shares	Amount	Additional Paid-In Capital	Retained Earnings	Other Comprehensive (Loss) Income	Total Stockholders' Equity
Balance at January 1, 2014	76,324	$ 764	$ 139,565	$127,826	$ 3,633	$ 271,788
Repurchase of common stock	(770)	(8)	(15,551)	—	—	(15,559)
Issuance of common stock for share-based compensation plans	742	8	(5,703)	—	—	(5,695)
Issuance of stock under Employee Stock Purchase Plan	32	—	568	—	—	568
Issuance of common stock to board members for board services	29	—	—	—	—	—
Stock-based compensation expense	—	—	19,205	—	—	19,205
Tax benefit from exercise or vesting of equity awards, net of deferred tax asset deficiencies of $77	—	—	3,411	—	—	3,411
Cash dividends declared ($0.105 per share)	—	—	—	(8,023)	—	(8,023)
Other comprehensive loss	—	—	—	—	(4,245)	(4,245)
Net income	—	—	—	33,255	—	33,255
Balance at December 31, 2014	76,357	$ 764	$ 141,495	$153,058	$ (612)	$ 294,705
Repurchase of common stock	(952)	(10)	(22,740)	—	—	(22,750)
Issuance of common stock for share-based compensation plans	1,028	11	(9,201)	—	—	(9,190)
Issuance of stock under Employee Stock Purchase Plan	24	—	550	—	—	550
Issuance of common stock to board members for board services	31	—	—	—	—	—
Stock-based compensation expense	—	—	30,078	—	—	30,078
Tax benefit from exercise or vesting of equity awards, net of deferred tax asset deficiencies of $105	—	—	5,236	—	—	5,236
Cash dividends declared ($0.12 per share)	—	—	—	(9,197)	—	(9,197)
Other comprehensive loss	—	—	—	—	(2,895)	(2,895)
Net income	—	—	—	36,322	—	36,322
Balance at December 31, 2015	76,488	$ 765	$ 145,418	$180,183	$ (3,507)	$ 322,859
Cumulative-effect adjustment from adoption of ASU 2016-09	—	—	—	321	—	321
Repurchase of common stock	(1,078)	(11)	(27,017)	—	—	(27,028)
Issuance of common stock for share-based compensation plans	1,134	12	(15,868)	—	—	(15,856)
Issuance of stock under Employee Stock Purchase Plan	20	—	562	—	—	562
Issuance of common stock to board members for board services	27	—	—	—	—	—
Stock-based compensation expense	—	—	40,808	—	—	40,808
Cash dividends declared ($0.12 per share)	—	—	—	(9,175)	—	(9,175)
Other comprehensive loss	—	—	—	—	(3,588)	(3,588)
Net income	—	—	—	26,986	—	26,986
Balance at December 31, 2016	76,591	$ 766	$ 143,903	$198,315	$ (7,095)	$ 335,889

See notes to consolidated financial statements.

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

	Year ended December 31,		
	2016	2015	2014
Operating activities:			
Net income	$ 26,986	$ 36,322	$ 33,255
Adjustment to reconcile net income to cash provided by operating activities:			
Deferred income taxes	(5,810)	(2,099)	(13,896)
Depreciation and amortization	24,137	23,093	23,352
Amortization of investments	1,862	2,238	1,916
Stock-based compensation expense	40,821	30,054	19,205
Foreign currency transaction (gain) loss	(2,247)	4,168	3,769
Other non-cash	(1,382)	822	(747)
Change in operating assets and liabilities:			
Trade accounts receivable	(56,730)	(62,235)	6,209
Income taxes receivable and other current assets	(10,818)	3,223	2,776
Accounts payable and accrued expenses	1,531	16,572	13,356
Deferred revenue	21,271	17,668	11,173
Other long-term assets and liabilities	253	(2,023)	2,908
Cash provided by operating activities	39,874	67,803	103,276
Investing activities:			
Purchases of marketable securities	(23,969)	(75,702)	(55,520)
Proceeds from maturities and called marketable securities	22,788	42,026	33,244
Sales of marketable securities	62,210	1,915	—
Payments for acquisitions, net of cash acquired	(49,113)	(1,671)	(3,918)
Investment in property and equipment	(19,088)	(11,020)	(11,463)
Cash used in investing activities	(7,172)	(44,452)	(37,657)
Financing activities:			
Issuance of common stock for share-based compensation plans	889	1,136	1,001
Dividend payments to shareholders	(9,174)	(9,194)	(6,874)
Common stock repurchases for tax withholdings for net settlement of equity awards	(16,183)	(9,776)	(6,128)
Common stock repurchases under share repurchase programs	(27,248)	(22,825)	(15,418)
Cash used in financing activities	(51,716)	(40,659)	(27,419)
Effect of exchange rate on cash and cash equivalents	(3,418)	(4,251)	(3,846)
Net (decrease) increase in cash and cash equivalents	(22,432)	(21,559)	34,354
Cash and cash equivalents, beginning of year	93,026	114,585	80,231
Cash and cash equivalents, end of year	$ 70,594	$ 93,026	$114,585
Supplemental disclosures:			
Income taxes paid	$ 28,844	$ 30,215	$ 14,722
Non-cash investing and financing activity:			
Dividends payable	$ 2,298	$ 2,297	$ 2,294

See notes to consolidated financial statements.

PEGASYSTEMS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. BASIS OF PRESENTATION

(a) ***Business***

The Company develops, markets, licenses, and supports software applications for marketing, sales automation, customer service, and operations, in addition to the Pega Platform for clients that wish to build and extend their own applications. The Company provides implementation, consulting, training, technical support, and hosting services to facilitate the use of its software.

(b) ***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 revenue, deferred revenue, deferred income taxes, income taxes payable, intangible assets, and goodwill.

(c) ***Principles of consolidation***

The consolidated financial statements include Pegasystems Inc. and its wholly owned subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation.

2. SIGNIFICANT ACCOUNTING POLICIES

(a) ***Revenue recognition***

The Company's revenue is derived primarily from software licenses, maintenance fees related to the Company's software licenses, and consulting services. The Company's license arrangements, whether involving a perpetual license or a term license, generally also contain multiple elements, including consulting services, training, and software maintenance services.

Software revenue recognition requires judgment, including whether a software arrangement includes multiple elements, and if so, whether vendor-specific objective evidence ("VSOE") of fair value exists for those elements. The amount of arrangement consideration allocated to undelivered elements is based on the VSOE of fair value for those elements and recognized as those elements are delivered. Any remaining portion of the total arrangement fee is allocated to the software license—the first delivered element. Revenue is recognized for each element when all of the revenue recognition criteria have been met. Revenue is recognized net of any taxes collected from customers and subsequently remitted to governmental authorities.

Changes in the mix of the elements in a software arrangement, the ability to identify VSOE for those elements, the fair value of the respective elements, and changes to a product's estimated life cycle could materially impact the amount of earned and unearned revenue.

Before the Company can recognize revenue, the following four basic criteria must be met:

- *Persuasive evidence of an arrangement* —As evidence of the existence of an arrangement, the Company uses a contract or purchase order signed by the client and the Company for software, including cloud, and maintenance, and a statement of work for consulting services. In the event the client is a reseller, the Company ensures a binding agreement exists between the reseller and end user of the software.

- *Delivery of product and services* —The Company delivers its software electronically and/or ships it via disc media. Services are considered delivered as the work is performed or, in the case of maintenance, over the contractual service period.
- *Fee is fixed or determinable* —The Company assesses whether a fee is fixed or determinable at the onset of the arrangement. In addition, the Company assesses whether contract modifications to an existing arrangement constitute a concession or whether extended payment terms exist. The Company's agreements do not include a right of return.
- *Collection of fee is probable* —The Company assesses the probability of collecting from each client at the onset of the arrangement based on a number of factors, including the client's payment history, its current creditworthiness, economic conditions in the client's industry and geographic location, and general economic conditions. If, in the Company's judgment, collection of a fee is not probable, revenue is recognized as cash is collected, provided all other conditions for revenue recognition have been met.

Software license revenues

Perpetual software license fees are recognized as revenue when the software is delivered, any acceptance required by the contract that is not perfunctory is obtained, no significant obligations or contingencies exist related to the software, all other undelivered elements in a multiple element arrangement possess VSOE, and all other revenue recognition criteria are met.

Term software license fees are usually payable on a monthly, quarterly, or annual basis under license agreements that typically have a three to five-year term and may be renewed for additional terms at the client's option. The Company recognizes term license revenue over the term of the agreement as payments become due or earlier if prepaid, provided all other criteria for revenue recognition have been met.

Maintenance revenues

First-year maintenance typically is sold with the related software license and renewed on an annual basis thereafter. Maintenance revenue is deferred and recognized ratably over the term of the support period, which is generally one year and subject to annual renewals. Perpetual software maintenance obligations are based on separately stated renewal rates in the arrangement that are substantive and therefore represent VSOE of fair value. Term license arrangements include separately stated maintenance fees and the Company uses stand-alone sales to determine VSOE of fair value.

Services revenues

The Company's services revenue is comprised of fees for consulting services including software implementation, training, reimbursable expenses, and for sales of its Pega Cloud as-a-platform offering ("Pega Cloud"), which includes the Pega Cloud Dev/Test environment and the Pega Cloud Production environment. Consulting services may be provided on a "stand-alone" basis or bundled with a license and software maintenance services.

Revenue from training services and consulting services under time and materials contracts is recognized as services are performed. The Company has VSOE of fair value for its training services and consulting services under time and materials contracts in the Americas, Europe, and certain regions of Asia.

Consulting services may sometimes be provided on a fixed-price basis. The Company does not have VSOE of fair value for fixed-price services or time and materials services in certain geographical regions. When these services are part of a multiple element arrangement, and the services are not essential to the functionality of the software, and when services, including maintenance, are the only undelivered element, the Company recognizes the revenue from the total arrangement ratably over the longer of the software maintenance period or the service period. Revenue from fixed-price services that are not bundled with a software license is generally recognized ratably over the service period, which is typically less than four months.

Revenue from stand-alone sales of the Pega Cloud Dev/Test environment is recognized as services are performed because the Company has VSOE of fair value.

Revenue from stand-alone sales of the Pega Cloud Production environment is recognized ratably over the term of the service. When implementation services are sold together with the Company's Pega Cloud offering and these services have stand-alone value to the client, the Company accounts for these services separately from this offering. Stand-alone value is established through the client's ability to buy these services from many trained partner system integrators and from transactions sold independently from the sale of Pega Cloud. Since these multiple-element arrangements are not software license sales, the Company applies a selling price hierarchy to determine the fair value of each element in the arrangement. Under the selling price hierarchy, each element's fair value is determined based on its VSOE, if available. If VSOE does not exist, third-party evidence of fair value ("TPE") will be considered, and estimated selling price ("ESP") will be used if neither VSOE nor TPE is available. The Company generally does not have VSOE of its Pega Cloud offering and is not able to determine TPE as its sales strategy is customized to the needs of its clients and the Company's products and services are dissimilar to comparable products or services in the marketplace. In determining ESP, the Company applies significant judgment as it weighs a variety of factors, based on the facts and circumstances of the arrangement. The Company typically arrives at an ESP for a service without VSOE or TPE by considering company-specific factors such as geographies, competitive landscape, and pricing practices used to establish bundled pricing and discounting.

Deferred revenue

Deferred software license revenue typically results from client billings for which all of the criteria to recognize revenue have not been met. Deferred maintenance revenue represents software license updates and product support contracts that are typically billed in advance and are recognized ratably over the support periods. Deferred services revenue represents advanced billings for consulting, hosting, and training services that are recognized as the services are performed.

(b) ***Fair value of financial instruments***

The principal financial instruments held by the Company consist of cash equivalents, marketable securities, derivative instruments, accounts receivable, and accounts payable, which are measured at fair value. See Note 3 "Marketable Securities", Note 4 "Derivative Instruments", and Note 5 "Fair Value Measurements" for further discussion of financial instruments that are carried at fair value on a recurring basis.

(c) ***Derivative instruments***

The Company uses foreign currency forward contracts ("forward contracts") to manage its exposures to changes in foreign currency exchange rates associated with its foreign currency denominated accounts receivable, intercompany receivable and payables, and cash. See Note 4 "Derivative Instruments" for further discussion.

(d) ***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.

(e) ***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. During the fourth quarter of 2016, the Company placed $11.3 million of costs for computer software developed for internal use into service, of which $1.1 million was capitalized in 2015 and $10.2 million was capitalized in 2016. During 2014, the Company did not capitalize any costs for computer software developed for internal use.

(f) ***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 operates as a single reporting unit. The Company performed its qualitative assessment as of November 30, 2016, 2015, and 2014, and concluded it was not more likely than not that the fair value of its reporting unit was less than its carrying value.

(g) ***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 intangible asset to its carrying value. If impairment exists, the Company calculates the impairment by comparing the carrying value of the intangible asset to its fair value as determined by discounted expected cash flows. The Company did not record any impairments in 2016, 2015, or 2014.

(h) ***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.

(i) ***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 2016, 2015, or 2014.

(j) ***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.

(k) ***Acquisition-related expenses***

Acquisition-related costs are expensed as incurred and include direct and incremental costs associated with an impending or completed acquisition. During 2016, 2015, and 2014, $2.6 million, $0.1 million, and $0.5 million, respectively, of acquisition-related costs were primarily professional fees associated with the Company's acquisition of OpenSpan, Inc. ("OpenSpan") and the acquisitions completed in 2014.

(l) ***Foreign currency translation***

The translation of assets and liabilities for the majority of the Company's foreign subsidiaries are made at period-end exchange rates, while 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. The Company's India subsidiary, as well as all foreign subsidiaries acquired from Antenna Software, Inc. ("Antenna"), use the U.S. dollar as their functional currency, therefore, their monetary assets and liabilities are remeasured at current rates and their non-monetary assets are recorded at historical exchange rates. Realized and unrealized exchange gains or losses from transactions and remeasurement adjustments are reflected in foreign currency transaction loss in the accompanying consolidated statements of operations.

(m) ***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, through a reduction in income taxes payable using the with-and-without stock option method.

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 15 "Income Taxes" for further information. The Company estimates its exposure to unfavorable outcomes related to these uncertainties and estimates the probability of such outcomes.

(n) ***Advertising expense***

Advertising costs are expensed as incurred. Advertising costs were $8.9 million, $9.8 million, $1.4 million during the years ended December 31, 2016, 2015, and 2014, respectively.

(o) ***New accounting pronouncements***

Measurement of Credit Losses on Financial Instruments: In June 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 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 trade accounts receivable, upon initial recognition of that financial asset based on historical experience, current conditions, and reasonable and supportable forecasts. 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 effective date for the Company will be January 1, 2020, with early adoption permitted. The Company is currently evaluating the effect this ASU will have on its consolidated financial statements and related disclosures.

Improvements to Employee Share-Based Payment Accounting: In March 2016, the FASB issued ASU No. 2016-09, "Compensation—Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting" ("ASU 2016-09,") which is intended to simplify various aspects of the accounting for employee share-based payments transactions, including accounting for income taxes, forfeitures, and statutory tax withholding requirements, as well as classification in the statement of cash flows.

The Company elected to early adopt ASU 2016-09 in the fourth quarter of 2016, requiring the Company to reflect any adjustments as of January 1, 2016, the beginning of the annual period that includes the interim period of adoption. The most significant impacts of the ASU 2016-09 adoption were: (1) to recognize, on a prospective basis, excess tax benefits and deficiencies as part of the provision for income taxes in the consolidated statement of operations when the awards vest or are settled and (2) the elimination of the requirement to reclassify excess tax benefits from operating activities to financing activities in the consolidated statements of cash flows, which the Company adopted retrospectively. As a result, the Company recognized a reduction to its provision for income taxes of $6.7 million for the year ended December 31, 2016 related to net excess tax benefits from awards that vested or settled in 2016. The Company reclassified $5.3 million, and $3.4 million from financing activities to operating activities for the years ended December 31, 2015, and 2014, respectively, in the consolidated statements of cash flows as a result of the ASU 2016-09 adoption to conform to current year presentation. The Company also recognized upon adoption, on a modified retrospective basis, all historical excess tax benefits previously unrecognized, which resulted in a net cumulative-effect adjustment of a $0.3 million increase to retained earnings as of January 1, 2016, with an offsetting increase to long-term deferred income tax assets.

The Company elected to continue to estimate forfeitures over the service period of the award, rather than as they occur, and will continue to present taxes paid in connection with shares withheld to meet statutory tax withholdings requirements for net settlement of equity awards as a financing activity in the statement of cash flows. These aspects of ASU 2016-09 had no impact on the consolidated financial statements in any period presented upon adoption.

Adoption of the new standard also resulted in adjustments to our unaudited selected quarterly data previously reported for fiscal year 2016 as follows:

(Dollars in thousands)	Three Months Ended March 31, 2016		Three Months Ended June 30, 2016		Three Months Ended September 30, 2016	
	As Reported	As Adjusted	As Reported	As Adjusted	As Reported	As Adjusted
Unaudited condensed consolidated statements of operations data:						
Income before provision for income taxes	$13,493	$13,493	$ 5,498	$ 5,498	$ 5,515	$ 5,515
Provision for income taxes	$ 4,488	$ 3,093	$ 1,851	$ 962	$ 3,097	$ 2,214
Net income	$ 9,005	$10,400	$ 3,647	$ 4,536	$ 2,418	$ 3,301
Effective tax rate	33.3%	22.9%	33.7%	17.5%	56.2%	40.1%
Earnings per share:						
Basic	$ 0.12	$ 0.14	$ 0.05	$ 0.06	$ 0.03	$ 0.04
Diluted	$ 0.11	$ 0.13	$ 0.05	$ 0.06	$ 0.03	$ 0.04
Weighted-average number of common shares outstanding:						
Diluted	78,878	79,235	78,969	79,422	79,082	79,548

(in thousands)	Three Months Ended March 31, 2016		Six Months Ended June 30, 2016		Nine Months Ended September 30, 2016	
	As Reported	As Adjusted	As Reported	As Adjusted	As Reported	As Adjusted
Unaudited condensed consolidated statements of cash flows data:						
Net cash provided by operating activities	$ 8,642	$ 10,040	$ 9,299	$ 11,569	$ 17,396	$ 20,556
Net cash used in financing activities	$ (18,424)	$ (19,822)	$ (29,396)	$ (31,666)	$ (39,871)	$ (43,031)

Leases: In February 2016, the FASB issued ASU No. 2016-02, "Leases (Topic 842)," which requires lessees to record most leases on their balance sheets, recognizing a lease liability for the obligation to make lease payments and a right-of-use asset for the right to use the underlying asset for the lease term. The effective date for the Company will be January 1, 2019, with early adoption permitted. The Company currently expects that most of its operating lease commitments will be subject to this ASU and recognized as operating lease liabilities and right-of-use assets upon adoption with minimal impact to its results of operations and cash flows.

Balance Sheet Classification of Deferred Taxes: In November 2015, the FASB issued ASU No. 2015-17, "Income Taxes (Topic 740): Balance Sheet Classification of Deferred Taxes." The guidance requires that deferred income tax liabilities and assets be classified as noncurrent in a classified balance sheet. The effective date for the Company was January 1, 2017, with early adoption permitted. The Company retrospectively adopted this ASU in the fourth quarter of 2016. Upon adoption, current deferred income tax assets of $12.4 million were reclassified as long-term deferred income tax assets in the December 31, 2015 consolidated balance sheet. The adoption of this ASU had no impact on the Company's consolidated statements of operations, equity, or cash flows in any period presented.

Revenue from Contracts with Customers: In May 2014, the FASB issued ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)". This ASU amends the guidance for revenue recognition, creating the new Accounting Standards Codification Topic 606 ("ASC 606"). ASC 606 requires entities to apportion consideration from contracts to performance obligations on a relative standalone selling price basis, based on a five-step model. Under ASC 606, revenue is recognized when a customer obtains control of a promised good or service and is recognized in an amount that reflects the consideration which the entity expects to receive in exchange for the good or service. In addition, ASC 606 requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. This ASU originally had an effective date for the Company of January 1, 2017. In August 2015, the FASB issued ASU No. 2015-14, "Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date," which defers the effective date by one year while providing the option to adopt the standard on the original effective date. In addition, the FASB issued ASU No. 2016-08, ASU No. 2016-10, and ASU No. 2016-12 in March 2016, April 2016, and May 2016, respectively, to help provide interpretive clarifications on the new guidance in ASC 606.

The Company has elected the full retrospective adoption model, effective January 1, 2018. Quarterly results in the 2018 fiscal year and comparative prior periods will be compliant with ASC 606, with the first Annual Report on Form 10-K issued in compliance with ASC 606 being the December 31, 2018 report.

The Company is still in the process of quantifying the implications of the adoption of ASC 606, however the Company expects the following impacts:

- Currently, the Company recognizes revenue from term licenses and perpetual licenses with extended payment terms over the term of the agreement as payments become due or earlier if prepaid, provided all other criteria for revenue recognition have been met, and any corresponding maintenance over the term of the agreement. The adoption of ASC 606 will result in revenue for performance obligations recognized as they are satisfied therefore, revenue from the term license performance obligation is expected to be recognized upon delivery and revenue from the maintenance performance obligation is expected to be recognized on a straight-line basis over the contractual term. Due to the revenue from term licenses and perpetual licenses with extended payment terms being recognized prior to amounts being billed to the customer, we expect to recognize a net contract asset on the balance sheet.
- Currently, the Company allocates revenue to licenses under the residual method when it has VSOE for the remaining undelivered elements which allocates any future credits or significant discounts entirely to the license. The adoption of ASC 606 will result in the future credits, significant discounts, and material rights under ASC 606, being allocated to all performance obligations based upon their relative selling price. Under ASC 606, additional license revenue from the reallocation of such arrangement considerations will be recognized when control is transferred to the customer.
- Currently, the Company does not have VSOE for fixed price services, time and materials services in certain geographical areas, and unspecified future products, which results in revenue being deferred in such instances until such time as VSOE exists for all undelivered elements or recognized ratably over the longest performance period. The adoption of ASC 606 eliminates the requirement for VSOE and replaces it with the concept of a stand-alone selling price. Once the transaction price is allocated to each of the performance obligations the Company can recognize revenue as the performance obligations are delivered, either at a point in time or over time. Under ASC 606, license revenue will be recognized when control is transferred to the customer.
- Sales commissions and other third party acquisition costs resulting directly from securing contracts with customers are currently expensed when incurred. ASC 606 will require these costs of acquiring contracts to be recognized as an asset when incurred and to be expensed over the associated contract term. As a practical expedient, if the term of the contract is one year or less, the Company will expense the costs resulting directly from securing the contracts with customers. We expect this to impact our multi-year cloud offerings and perpetual licenses with additional rights of use that extend beyond one year.
- ASC 606 provides additional accounting guidance for contract modifications whereby changes must be accounted for either as a retrospective change (creating either a catch up or deferral of past revenues), prospectively with a reallocation of revenues amongst identified performance obligations, or prospectively as separate contracts which will not require any reallocation. This may result in a difference in the timing of the recognition of revenue as compared to how current contract modifications are recognized.
- There will be a corresponding effect on tax liabilities in relation to all of the above impacts.

The Company is continuing its analysis of the expected impacts of the adoption of ASC 606.

3. MARKETABLE SECURITIES

(in thousands)	December 31, 2016			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Marketable securities:				
Municipal bonds	$ 36,746	$ —	$ (139)	$ 36,607
Corporate bonds	26,610	1	(51)	26,560
Marketable securities	$ 63,356	$ 1	$ (190)	$ 63,167

(in thousands)	December 31, 2015			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Marketable securities:				
Municipal bonds	$ 57,394	$ 7	$ (66)	$ 57,335
Corporate bonds	66,960	2	(147)	66,815
Certificates of deposit	1,903	—	(1)	1,902
Marketable securities	$ 126,257	$ 9	$ (214)	$ 126,052

The Company considers debt securities 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 through recording a loss on investments in the consolidated statements of operations. Gains and losses on investments are calculated on the basis of specific identification. As of December 31, 2016, the Company did not hold any investments with unrealized losses considered to be other than temporary.

As of December 31, 2016, remaining maturities of marketable debt securities ranged from March 2017 to August 2019, with a weighted-average remaining maturity of approximately 14 months.

4. DERIVATIVE INSTRUMENTS

The Company uses forward contracts to hedge its exposure to fluctuations in foreign currency exchange rates associated with its foreign currency denominated cash, accounts receivable, and intercompany receivables and payables held by its U.S. parent company and U.K. subsidiary.

The Company is primarily exposed to foreign currency exchange rate fluctuations in the U.S. dollar, the Euro, and the Australian dollar relative to the British pound and the Euro relative to the U.S. dollar. At the end of June 2016, the U.K. held a referendum in which U.K. voters approved an exit from the European Union, commonly referred to as “Brexit”. The announcement of Brexit resulted in a sharp decline in the value of the British pound, as compared to the U.S. dollar and other currencies. This decline primarily resulted in foreign currency transaction gains from the remeasurement of foreign currency denominated cash and accounts receivable held by the Company’s U.K. subsidiary with corresponding losses on the Company’s forward contracts included in other expense, net.

The forward contracts are not designated as hedging instruments. As a result, the Company records the fair value of these contracts at the end of each reporting period in the accompanying consolidated balance sheets as other current assets for unrealized gains and accrued expenses for unrealized losses, with any fluctuations in the value of these contracts recognized in other expense, net, in the accompanying consolidated statements of operations. The cash flows related to these forward contracts are classified as operating activities in the accompanying consolidated statements of cash flows. The Company does not enter into any forward contracts for trading or speculative purposes.

As of December 31, 2016 and 2015, the total notional amount of the Company's outstanding forward contracts was $128.4 million and $32.3 million, respectively. The Company did not have any forward contracts outstanding as of December 31, 2014.

The fair value of the Company's outstanding forward contracts was as follows:

(in thousands)	December 31, 2016		December 31, 2015	
	Recorded In:	Fair Value	Recorded In:	Fair Value
Asset Derivatives				
Foreign currency forward contracts	Other current assets	$ 628	Other current assets	$ 48
Liability Derivatives				
Foreign currency forward contracts	Accrued expenses	$ 883	Accrued expenses	$ 1,052

The Company had forward contracts outstanding with total notional values as follows:

Currency (in thousands)	As of December 31, 2016	2015
Euro	€ 29,820	€ 14,900
British pound	£ 6,440	£ —
Australian dollar	A$22,010	A$ 9,100
United States dollar	$ 73,125	$ 9,400

(in thousands)	Change in Fair Value in USD Year Ended December 31, 2016	2015	2014
Loss from the change in the fair value of forward contracts included in other expense, net	$(5,643)	$(1,047)	$ (532)
Foreign currency transaction gains (losses) from the remeasurement of foreign currency assets and liabilities	2,247	(4,168)	(3,769)

5. FAIR VALUE MEASUREMENTS

Assets and Liabilities Measured at Fair Value on a Recurring Basis

The Company records its marketable securities and forward contracts 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 money market funds are classified within Level 1 of the fair value hierarchy. The Company's marketable securities 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 foreign currency forward contracts, which are all classified within Level 2 of the fair value hierarchy, are valued based on the notional amounts and rates under the contracts and observable market inputs such as currency exchange rates and credit risk. 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 of investments between Level 1 and Level 2 during the years ended December 31, 2016 and 2015.

The Company's assets and liabilities measured at fair value on a recurring basis consisted of the followings:

(in thousands)	December 31, 2016	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)
Fair Value Assets:			
Money market funds	$ 458	$ 458	$ —
Marketable securities:			
Municipal bonds	$ 36,607	$ —	$ 36,607
Corporate bonds	26,560	—	26,560
Certificates of deposit	—	—	—
Total marketable securities	$ 63,167	$ —	$ 63,167
Foreign currency forward contracts	$ 628	$ —	$ 628
Fair Value Liabilities:			
Foreign currency forward contracts	$ 883	$ —	$ 883

(in thousands)	December 31, 2015	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)
Fair Value Assets:			
Money market funds	$ 573	$ 573	$ —
Marketable securities:			
Municipal bonds	$ 57,335	$ —	$ 57,335
Corporate bonds	66,815	—	66,815
Certificates of deposit	1,902	—	1,902
Total marketable securities	$ 126,052	$ —	$ 126,052
Foreign currency forward contracts	$ 48	$ —	$ 48
Fair Value Liabilities:			
Foreign currency forward contracts	$ 1,052	$ —	$ 1,052

For certain other financial instruments, including accounts receivable and accounts payable, the carrying value approximates their 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, such as property and equipment, and intangible assets are recognized at fair value when they are impaired. During 2016, 2015, and 2014, the Company did not recognize any impairments on its assets measured at fair value on a nonrecurring basis.

6. TRADE ACCOUNTS RECEIVABLE, NET OF ALLOWANCE

Unbilled trade accounts receivable primarily relate to services earned under time and materials arrangements and to license, maintenance, and cloud arrangements that have commenced or been delivered in excess of scheduled invoicing.

(in thousands)	December 31, 2016	2015
Trade accounts receivable	$ 234,473	$ 190,820
Unbilled accounts receivable	34,681	25,657
Total accounts receivable	269,154	216,477
Allowance for sales credit memos	(4,126)	(4,631)
	$ 265,028	$ 211,846

The Company records an allowance for estimates of potential sales credit memos when the related revenue is recorded and reviews this allowance periodically. The following reflects the activity of the allowance for sales credit memos:

(in thousands)	Year Ended December 31, 2016	2015	2014
Balance at beginning of year	$ 4,631	$ 1,540	$ 1,997
Provision for credit memos	3,290	8,005	2,164
Credit memos issued	(3,795)	(4,914)	(2,621)
	$ 4,126	$ 4,631	$ 1,540

7. PROPERTY AND EQUIPMENT

(in thousands)	December 31, 2016	2015
Leasehold improvements	$ 32,852	$ 29,501
Computer equipment	21,522	18,369
Furniture and fixtures	6,127	5,211
Computer software purchased	6,083	5,847
Computer software developed for internal use	12,069	721
Fixed assets in progress	772	2,173
	79,425	61,822
Less: accumulated depreciation and amortization	(41,144)	(30,503)
Property and equipment, net	$ 38,281	$ 31,319

Depreciation expense was approximately $11.2 million, $10.6 million, and $9.3 million, for the years ended December 31, 2016, 2015, and 2014, respectively.

8. ACQUISITIONS

Acquisition completed in 2016:

On April 11, 2016, the Company acquired OpenSpan, Inc. ("OpenSpan"), a privately held software provider of robotic process automation and workforce analytics software for $48.8 million in cash, net of $1.8 million in cash acquired. As of December 31, 2016, $7.4 million of the cash consideration remains in escrow and will remain for up to an 18-month period after the acquisition as security for the indemnification obligations of the selling shareholders.

During 2016, the Company incurred $2.6 million of direct and incremental expenses that were primarily legal and advisory fees and due diligence costs to affect the acquisition.

In allocating the total purchase consideration based on estimated fair values, the Company recorded $26.7 million of goodwill, which is nondeductible for income tax purposes, and $24.3 million of intangible assets with a weighted-average amortization period of 9.7 years.

Acquisitions completed in 2014:

The Company completed three acquisitions during the year ended December 31, 2014, which were determined to be immaterial, both individually and in the aggregate, for $6.3 million in cash consideration, inclusive of $2.1 million in cash acquired, and $1.1 million in additional cash consideration which was paid in 2015. During 2016 and 2015, the Company also paid $0.3 million and $0.5 million, respectively, in additional cash consideration to the selling shareholders of another one of the three companies acquired in 2014, based on the achievement of certain performance milestones. The final cash payment of $0.3 million was made in January 2017 to the same selling shareholders based on the achievement of additional performance milestones through the end of 2016.

9. GOODWILL AND OTHER INTANGIBLE ASSETS

As discussed in Note 17 “Geographic Information and Major Clients”, the Company operates in one reportable segment, Customer Engagement Solutions, and has one reporting unit.

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

(in thousands)	Year Ended December 31, 2016	2015	2014
Balance as of January 1,	$46,776	$46,860	$43,469
Goodwill acquired during the year	26,689	—	3,431
Translation adjustments	(301)	(84)	(40)
Balance as of December 31,	$73,164	$46,776	$46,860

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

(in thousands)	Range of Useful Lives	Cost	Accumulated Amortization	Net book value
December 31, 2016				
Customer related intangibles	4-10 years	$ 63,091	$ (37,573)	$25,518
Technology	3-10 years	58,942	(40,269)	18,673
Other intangibles	3 years	5,361	(5,361)	—
Total		$127,394	$ (83,203)	$44,191
December 31, 2015				
Customer related intangibles	4-9 years	$ 49,546	$ (30,465)	$19,081
Technology	3-9 years	48,342	(34,282)	14,060
Other intangibles	3 years	5,361	(5,084)	277
Total		$103,249	$ (69,831)	$33,418

Amortization expense of acquired intangibles was reflected in the Company's consolidated statements of operations as follows:

(in thousands)	Year Ended December 31, 2016	2015	2014
Amortization expense:			
Cost of revenue	$ 5,986	$ 5,392	$ 6,017
Selling and marketing	7,145	6,127	6,022
General and administrative	277	683	1,770
Total amortization expense	$13,408	$12,202	$13,809

As of December 31, 2016, future estimated amortization expense is as follows:

(in thousands)	Future estimated amortization expense
2017	$ 12,334
2018	11,334
2019	5,542
2020	2,646
2021	2,623
2022 and thereafter	9,712
	$ 44,191

10. ACCRUED EXPENSES

(in thousands)	December 31, 2016	2015
Partner commissions	$ 2,199	$ 3,319
Other taxes	9,031	10,070
Employee reimbursable expenses	1,624	1,426
Dividends payable	2,298	2,297
Professional services contractor fees	6,550	4,580
Self-insurance health and dental claims	2,182	2,129
Professional fees	3,654	2,937
Short-term deferred rent	1,770	1,600
Income taxes payable	1,391	5,464
Acquisition-related expenses and merger consideration	290	834
Restructuring	105	394
Marketing and sales program expenses	1,508	1,397
Cloud hosting expenses	83	1,370
Foreign currency forward contracts	883	1,052
Fixed assets in progress	855	1,632
Other	2,328	2,267
	$36,751	$42,768

11. DEFERRED REVENUE

(in thousands)	December 31, 2016	2015
Term license	$ 15,843	$ 19,792
Perpetual license	23,189	21,094
Maintenance	112,397	95,262
Cloud	13,604	8,948
Services	10,614	10,777
Current deferred revenue	175,647	155,873
Perpetual license	7,909	12,389
Maintenance	1,802	2,227
Cloud	1,278	1,189
Long-term deferred revenue	10,989	15,805
	$ 186,636	$ 171,678

12. COMMITMENTS AND CONTINGENCIES

Commitments

The Company leases space for its offices under noncancellable operating leases that expire at various dates through 2023.

As of December 31, 2016, the Company's future minimum rental payments required under operating leases with noncancellable terms in excess of one year were as follows:

(in thousands) For the calendar year	Operating Leases (1)
2017	$ 13,604
2018	13,632
2019	12,039
2020	11,116
2021	9,483
2022 & Thereafter	17,735
	$ 77,609

(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.

Rent expense under operating leases is recognized on a straight-line basis to account for scheduled rent increases and landlord tenant allowances. In connection with the Company's amended lease for its office headquarters dated November 11, 2014, the Company has a landlord tenant allowance totaling approximately $9.4 million, all of which was used and reimbursed to the Company as of December 31, 2016 and will be amortized as a reduction to rent expense on a straight-line basis over the term of the lease. Total rent expense under operating leases was approximately $13.4 million, $12.3 million, and $12.5 million for the years ended December 31, 2016, 2015 and 2014, respectively.

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.

13. STOCKHOLDERS' EQUITY

(a) Preferred stock

The Company has authorized 1,000,000 shares of preferred stock, which may be issued from time to time in one or more series. 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 fix 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, 2016.

(b) Common stock

The Company has 200,000,000 authorized shares of common stock, $0.01 par value per share, of which 76,591,000 shares were issued and outstanding at December 31, 2016.

Since 2004, the Company's Board of Directors has approved stock repurchase programs that have authorized the Company to repurchase in the aggregate up to $195 million of its common stock. On May 20, 2016, we announced that our Board of Directors extended the expiration date of the current stock repurchase program to June 30, 2017 and increased the amount of stock the Company is authorized to repurchase to $50 million between May 18, 2016 and June 30, 2017. Purchases under these programs have been made on the open market.

	Year Ended December 31,					
	2016		2015		2014	
(Dollars in thousands)	**Shares**	**Amount**	**Shares**	**Amount**	**Shares**	**Amount**
Prior year authorizations at January 1,		$ 40,534		$ 13,284		$ 14,433
Authorizations		25,879		50,000		14,410
Repurchases paid	1,078,251	(27,028)	944,398	(22,530)	756,143	(15,264)
Repurchases unsettled	—	—	7,836	(220)	13,983	(295)
Authorized dollars remaining as of December 31,		$ 39,385		$ 40,534		$ 13,284

(c) Dividends

On May 27, 2014, the Company announced an increase in its quarterly common stock cash dividend from $0.015 to $0.03 per share, on a post-split basis. The Company declared quarterly dividends totaling $0.12 per share, $0.12 per share, and $0.105 per share, on a post-split basis, for the years ended December 31, 2016, 2015, and 2014, respectively. For the years ended December 31, 2016, 2015, and 2014, the Company paid cash dividends of $9.2 million, $9.2 million, and $6.9 million, respectively. It is the Company's 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 notice.

14. STOCK-BASED COMPENSATION

The majority of the Company's stock-based compensation arrangements vest over a five year vesting schedule and the Company's stock options have a ten-year term. The Company recognizes stock-based compensation using the accelerated recognition method, treating each vesting tranche as if it were an individual grant.

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. The exercise price for stock options is greater than or equal to the fair market value of the shares at the grant date. RSUs deliver to the recipient a right to receive a specified number of shares of the Company's common stock upon vesting. Unlike stock options, there is no cost to the employee at share issuance. 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. Upon vesting of the RSUs, the Company withholds shares of common stock in an amount sufficient to cover the minimum statutory tax withholding obligations and issues shares of its common stock for the remaining amount.

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

Share-Based Compensation Plans:

(a) 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. In addition to options, eligible participants under the 2004 Plan may be granted stock purchase rights and other stock-based awards. In June 2016, the Company's stockholders approved an amendment to the 2004 Plan, which increased the number of shares authorized for issuance under the plan to 30,000,000, extended the term of the plan to 2026, and limited annual compensation to any non-employee Director to $500,000. The 2004 Plan was previously amended and approved by the Company's stockholders in July 2011, which increased the number of shares authorized for issuance under the plan to 24,000,000, giving effect to the two-for-one stock split approved by the Company's Board of Directors in 2014 (the "Stock Split"), and extending the term of the plan to 2021. Since 2006, the Company has granted to each non-employee director of the Company unrestricted shares of common stock on an annual basis in consideration of their board service, prorated if the non-employee director joins the Company's Board of Directors after the annual equity grant is made. The number of unrestricted shares granted to non-employee Directors was equal to $20,000, $119,000, and $95,000, divided by the fair market value of the Company's common stock on the grant dates, for 2016, 2015, and 2014, respectively. On May 18, 2016, the Company changed the annual equity grant from unrestricted common stock to RSUs, vesting 25% on the date of the annual meeting of stockholders and 25% quarterly thereafter. During 2016, the Company granted 36,000 RSUs to non-employee Directors equal to $961,000.

As of December 31, 2016, approximately 10,597,000 shares were subject to outstanding options and stock-based awards under the 2004 Plan.

(b) 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 1,000,000 shares, giving effect to the Stock Split, 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, 2016, 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, 2016, approximately 351,000 shares had been issued thereunder.

Shares reserved

As of December 31, 2016, there were approximately 10,230,000 shares remaining for issuance for future equity grants under the Company's stock plans, consisting of approximately 9,581,000 shares under the 2004 Plan and approximately 649,000 shares under the 2006 ESPP.

Equity grants, assumptions and activity

During 2016, the Company issued approximately 1,154,000 shares to its employees under the Company's share-based compensation plans and approximately 27,000 shares to the non-employee members of its Board of Directors.

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

	Year ended December 31,		
(in thousands)	**2016**	**2015**	**2014**
Stock-based compensation expense:			
Cost of revenues	$ 11,459	$ 8,772	$ 5,335
Operating expenses	29,362	21,282	13,870
Total stock-based compensation before tax	40,821	30,054	19,205
Income tax benefit	(12,198)	(8,098)	(5,563)

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, the expected term of the option, the expected volatility of the Company's common stock over the option's expected term, the risk-free interest rate over the option's expected term, and the Company's expected annual dividend yield. 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. The weighted-average grant-date fair value for stock options granted in 2016, 2015, and 2014, was $8.31, $7.62 and $7.58 per share, respectively.

The weighted-average assumptions used in the Black-Scholes option valuation model are as follows:

	Year ended December 31,		
	2016	2015	2014
Expected annual volatility (1)	40%	45%	47%
Expected term in years (2)	4.4	4.5	4.4
Risk-free interest rate (3)	1.21%	1.34%	1.33%
Expected annual dividend yield (4)	0.63%	0.68%	0.44%

(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 of time 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 expected annual dividend has historically been based on the expected dividend of $0.06 per share, per year ($0.015 per share, per quarter times 4 quarters), on a post-split basis, divided by the average stock price. On May 27, 2014, the Company announced an increase in its quarterly cash dividend from $0.015 to $0.03 per share. Thus, for grants made after this date, the expected annual dividend is based on the expected dividend of $0.12 per share, per year ($0.03 per share, per quarter times 4 quarters), divided by the average stock price.

The Company elected to adopt the alternative transition method ("short cut method") in calculating its historical pool of windfall tax benefits in regards to its share-based compensation.

The following table summarizes the combined stock option activity under the Company's stock option plans for the year ended December 31, 2016:

	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, 2016	6,563	$ 16.01		
Granted	2,691	25.72		
Exercised	(1,275)	14.41		
Forfeited/Cancelled	(516)	20.85		
Options outstanding as of December 31, 2016	7,463	$ 19.45		
Vested and expected to vest as December 31, 2016	6,154	$ 18.99	7.3	$ 104,655
Exercisable as of December 31, 2016	2,696	$ 14.21	5.7	$ 58,741

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 2016, 2015, and 2014 was $19.9 million, $18.6 million and $13.2 million, respectively. The aggregate intrinsic value of stock options outstanding and exercisable as of December 31, 2016 is based on the difference between the closing price of the Company's stock of $36.00 on December 31, 2016 and the exercise price of the applicable stock options.

As of December 31, 2016, the Company had unrecognized stock-based compensation expense related to the unvested portion of stock options of approximately $14.5 million that is expected to be recognized as expense over a weighted-average period of approximately 2.2 years.

RSUs

The weighted-average grant-date fair value for RSUs granted in 2016, 2015, and 2014 was $25.54, $20.49, and $19.88, respectively. The following table summarizes the combined RSU activity for periodic grants and the CICP under the 2004 Plan for the year ended December 31, 2016:

	Shares (in thousands)	Weighted-Average Grant-Date Fair Value	Aggregate Intrinsic Value (in thousands)
Nonvested as of January 1, 2016	2,607	$ 20.03	
Granted	1,929	25.54	
Vested	(1,071)	19.41	
Forfeited	(304)	22.22	
Nonvested as of December 31, 2016	3,161	$ 23.39	$ 113,824
Expected to vest as of December 31, 2016	2,350	$ 23.55	$ 84,592

The RSUs associated with periodic grants generally vest over five years with 20% vesting after one year and the remaining 80% vesting in equal quarterly installments over the remaining four years. Approximately 225,000 RSUs granted in connection with the 2016 CICP are expected to vest 100% in March 2017.

The fair value of RSUs vested in 2016, 2015, and 2014 was $29.2 million, $14.9 million, and $8.0 million, respectively. The aggregate intrinsic value of RSUs outstanding and expected to vest as of December 31, 2016 is based on the closing price of the Company’s stock of $36.00 on December 31, 2016.

As of December 31, 2016, the Company had approximately $27.8 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.

15. INCOME TAXES

Effective tax rate

The components of income before provision for income taxes are as follows for the years ended December 31:

(in thousands)	2016	2015	2014
Domestic	$37,329	$63,124	$36,485
Foreign	(2,127)	(2,619)	11,509
Total income before provision	$35,202	$60,505	$47,994

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The components of the provision for income taxes are as follows for the years ended December 31:

(in thousands)	2016	2015	2014
Current:			
Federal	$ 6,741	$17,864	$ 22,488
State	2,963	4,565	2,952
Foreign	4,322	3,853	3,195
Total current provision	14,026	26,282	28,635
Deferred:			
Federal	(1,120)	2,075	(11,972)
State	(480)	(466)	(1,209)
Foreign	(4,210)	(3,708)	(715)
Total deferred benefit	(5,810)	(2,099)	(13,896)
Total provision	$ 8,216	$24,183	$ 14,739

The effective income tax rate differed from the statutory federal income tax rate due to the following:

	2016	2015	2014
Statutory federal income tax rate	35.0%	35.0%	35.0%
Valuation allowance	0.3	0.7	0.5
Transaction costs	1.1	—	—
State income taxes, net of federal benefit and tax credits	3.7	4.6	1.8
Permanent differences	2.2	1.1	1.3
Domestic production activities	(3.2)	(3.1)	(4.9)
Federal research and experimentation credits	(2.3)	(1.2)	(1.7)
Tax effects of foreign activities	5.2	2.0	(2.2)
Tax-exempt income	(0.3)	(0.1)	(0.1)
Provision to return adjustments	0.3	0.3	—
Non-deductible compensation	6.2	3.3	2.5
Provision for uncertain tax positions	(2.3)	(2.6)	(0.7)
Excess tax benefits related to share-based compensation	(20.1)	—	—
Other	(2.5)	—	(0.8)
Effective income tax rate	23.3%	40.0%	30.7%

Deferred income taxes

Deferred income taxes reflect the tax attributes and tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. The Company retrospectively adopted ASU 2015-17 “Income Taxes (Topic 740): Balance Sheet Classification of Deferred Taxes” in the fourth quarter of 2016. As a result, all net deferred income taxes are classified as non-current in the consolidated balance sheets for all periods presented. See Note 2 “Significant Accounting Policies” —New accounting pronouncements for further detail.

Significant components of net deferred tax assets and liabilities are as follows:

(in thousands)	2016	2015
Deferred tax assets:		
Net operating loss carryforwards	$ 69,307	$ 65,601
Accruals and reserves	34,021	30,322
Software revenue	6,559	6,608
Depreciation	3,593	5,327
Tax credit carryforwards	8,094	6,686
Other	19	58
Total deferred tax assets	121,593	114,602
Less valuation allowances	(34,054)	(35,509)
Total net deferred tax assets	$ 87,539	$ 79,093
Deferred tax liabilities:		
Intangibles	$ (17,641)	$ (13,363)
Total deferred tax liabilities	(17,641)	(13,363)
Total net deferred income taxes	$ 69,898	$ 65,730

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. The $1.5 million net change in the valuation allowance during the period primarily relates to a $2.4 million decrease for movements in foreign exchange rates, partially offset by $0.9 million increase of acquired OpenSpan federal and state net operating losses and tax credits that are projected to expire unutilized.

The Company acquired approximately $22.4 million and $0.3 million of federal and state net operating losses (“NOLs”) respectively, and approximately $0.9 million of general business credits, in connection with the acquisition of OpenSpan on April 11, 2016. The Company has determined it may utilize $20.2 million and $0.1 million of the acquired OpenSpan federal and state NOLs, respectively, and $0.4 million of the general business credits subject to annual limitations, in accordance with Section 382 and Section 383 of the Internal Revenue Code of 1986, as amended, which are scheduled to expire by 2036. As of December 31, 2016, the Company anticipates using $16.9 million of the remaining NOLs by 2021.

As of December 31, 2016, the Company had approximately $38.5 million of acquired Antenna federal NOLs, which are subject to annual use limitations under Section 382 and Section 383 of the Internal Revenue Code of 1986, as amended. Based on those limitations, the Company anticipates using $6.2 million of the remaining NOLs by 2031. With regard to the acquired foreign NOLs of $58.1 million, a full valuation allowance has been recorded as of December 31, 2016 due to uncertainty regarding the availability of these NOLs to offset future income generated by the related foreign businesses due to limitations under local country change in control provisions.

As of December 31, 2016, the Company had approximately $101.9 million of acquired Chordiant federal NOLs, which are subject to annual use limitations under Section 382 and Section 383 of the Internal Revenue Code of 1986, as amended. Based on those limitations, the Company anticipates using $76.1 million of the remaining NOLs by 2029. In addition, the Company has $0.3 million of deferred tax assets related to state NOLs as of December 31, 2016.

As of December 31, 2016, the Company had available $23.8 million of foreign NOLS which have an unlimited carryover period.

As of December 31, 2016, the Company had available $7.1 million of state tax research and experimentation ("R&E") credits expiring in the years 2017 through 2031 and $0.9 million of investment and other state tax credits, which have an unlimited carryover.

The Company's India subsidiary is a development center in an area designated as a Special Economic Zone ("SEZ") and is entitled to a tax holiday in India. The tax holiday reduces or eliminates income tax in that country and is scheduled to expire in 2022. For the years ended December 31, 2016, 2015, and 2014, the effect of the income tax holiday was to reduce the overall income tax provision by approximately $1 million, $0.9 million, and $0.8 million, respectively. The benefit of the tax holiday on net income per share (diluted) was $0.01 for each of the years ended December 31, 2016, 2015, and 2014.

The Company elected to early adopt ASU 2016-09 in the fourth quarter of 2016, which requires, among other things, excess tax benefits to be recorded as a reduction of the provision for income taxes in the consolidated statement of operations, whereas they were previous recognized in equity. The Company is required to reflect any adoption adjustments as of January 1, 2016, the beginning of the annual period that includes the period of adoption. Upon adoption of ASU 2016-09, the Company recognized, on a modified retrospective basis, all historical excess tax benefits previously unrecognized, which resulted in a net cumulative-effect adjustment of a $0.3 million increase to retained earnings as of January 1, 2016, with an offsetting increase to long-term deferred income tax assets. The Company recognized a reduction to its provision for income taxes of $6.7 million for the year ended December 31, 2016 related to net excess tax benefits from awards that vested or settled in 2016. See Note 2 "Significant Accounting Policies—New accounting pronouncements" for additional information related to this adoption.

Undistributed earnings of the Company's foreign subsidiaries amounted to approximately $33.7 million as of December 31, 2016. The Company has not provided any additional federal or state income taxes or foreign withholding taxes on the undistributed earnings as such earnings have been indefinitely reinvested in the business. It is impractical to estimate the amount of tax the Company could have to pay upon repatriation due to the complexity of foreign tax credit calculations and because the Company considers its earnings permanently reinvested.

Uncertain tax benefits and other considerations

A reconciliation of the beginning and ending balances of the total amounts of gross unrecognized tax benefits is as follows:

(in thousands)	**2016**	**2015**	**2014**
Balance as of January 1,	$23,972	$ 43,396	$40,929
Additions based on tax positions related to the current year	80	817	4,041
Additions for tax positions of prior years	110	183	285
(Reductions) Additions for acquired uncertain tax benefits	387	—	(716)
Reductions for tax positions of prior years	(1,541)	(19,855)	(853)
Reductions for a lapse of the applicable statute of limitations	(337)	(569)	(290)
Balance as of December 31,	$22,671	$ 23,972	$43,396

As of December 31, 2016, the Company had approximately $22.7 million of total unrecognized tax benefits, which would decrease the Company's effective tax rate if recognized. The $1.5 million reduction for tax positions of prior years primarily relates the lapse in the applicable statute of limitations, revision of accounting estimates, and the impact of foreign currency exchange rates. The Company expects that the changes in the unrecognized benefits within the next twelve months will be approximately $0.1 million due to the lapse of statute of limitations.

The Company recognizes interest accrued and penalties related to unrecognized tax benefits in the income tax provision. For the year ended December 31, 2016 the Company did not recognize any significant change in net interest expense. For the year ended December 31, 2015 and 2014, the Company recognized a decrease of approximately $0.6 million and an increase of $0.3 million, respectively, of interest expense. As of December 31, 2016, 2015 and 2014, the company did not recognized any significant penalties. As of December 31, 2016, 2015 and 2014, the Company had accrued approximately $1.2 million, $1.2 million, and $1.5 million, respectively, for interest and penalties.

The Company files income tax returns in the U.S. and in foreign jurisdictions. We have no tax returns under examination by the Internal Revenue Service as of December 31, 2016. However, certain states and foreign jurisdictions are auditing our income tax returns for periods ranging from 2010 through 2014. The Company does not expect the results of these audits to have a material effect on our financial condition, results of operations, or cash flows. With few exceptions, the statute of limitations remains open in all jurisdictions for the tax years 2013 to the present.

16. 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 options and RSUs, using the treasury stock method and the average market price of the Company's common stock during the applicable period. Certain shares related to some of the Company's outstanding stock options and RSUs were excluded from the computation of diluted earnings per share because they were antidilutive in the periods presented, but could be dilutive in the future.

	Year Ended December 31,		
(in thousands, except per share amounts)	**2016**	**2015**	**2014**
Basic			
Net income	$26,986	$36,322	$33,255
Weighted-average common shares outstanding	76,343	76,507	76,327
Earnings per share, basic	$ 0.35	$ 0.47	$ 0.44
Diluted			
Net income	$26,986	$36,322	$33,255
Weighted-average common shares outstanding	76,343	76,507	76,327
Weighted-average effect of dilutive securities:			
Stock options	2,025	1,601	1,698
RSUs	1,364	935	506
Effect of assumed exercise of stock options and RSUs	3,389	2,536	2,204
Weighted-average common shares outstanding, assuming dilution	79,732	79,043	78,531
Earnings per share, diluted	$ 0.34	$ 0.46	$ 0.42
Outstanding options and RSUs excluded as impact would be antidilutive	322	182	98

17. GEOGRAPHIC INFORMATION AND MAJOR CLIENTS

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 develops and licenses its strategic software applications and Pega Platform, and provides consulting services, maintenance, and training related to its offerings. 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 reportable segment—Customer Engagement Solutions and one reporting unit.

The Company's international revenue is from clients based outside of the U.S. The Company derived its revenue from the following geographic areas:

	Year ended December 31,					
(Dollars in thousands)	**2016**		**2015**		**2014**	
U.S.	$430,562	57%	$379,936	56%	$327,154	55%
Other Americas	59,160	8%	57,892	8%	32,642	6%
United Kingdom	101,733	14%	96,314	14%	93,923	16%
Other EMEA (1)	92,540	12%	87,240	13%	87,050	15%
Asia Pacific	66,271	9%	61,313	9%	49,235	8%
	$750,266	100%	$682,695	100%	$590,004	100%

(1) Includes Europe, the Middle East and Africa, but excludes the United Kingdom ("Other EMEA").

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

	December 31,			
(Dollars in thousands)	**2016**		**2015**	
U.S.	$27,993	73%	$17,600	56%
India	7,158	19%	10,530	34%
International, other	3,130	8%	3,189	10%
	$38,281	100%	$31,319	100%

There were no clients accounting for 10% or more of the Company's total revenue in 2016, 2015, and 2014. There was one client accounting for 10% or more of the Company's total outstanding trade receivables as of December 31, 2015, as listed below. The Company's financial services, healthcare, and insurance clients as a group represent a significant amount of the Company's revenues and receivables. However, the Company determined this concentration did not have a material impact on its allowance for sales credit memos as of December 31, 2016.

	December 31,	
(Dollars in thousands)	**2016**	**2015**
Trade receivables, net of allowances	$265,028	$211,846
Client A	— %	10%

Marketable securities are another financial instrument that potentially subject the Company to a concentration of credit risk. See Note 3 "Marketable Securities" and Note 5 "Fair Value Measurements" for further discussion.

18. EMPLOYEE BENEFIT PLANS

The Company sponsors a 401(k) defined contribution retirement plan for qualifying employees pursuant to which the Company makes discretionary matching contributions. The Company's expense under the plan totaled approximately $4.5 million in 2016, $4.1 million in 2015, and $3.4 million in 2014. In addition, the Company has defined contribution plans for qualifying international employees and contributions expensed under those plans totaled approximately $7.6 million in 2016, $6.4 million in 2015, and $5.1 million in 2014.

19. SELECTED QUARTERLY INFORMATION (UNAUDITED)

	2016 (1)			
(in thousands, except per share amounts)	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
Revenue	$ 178,858	$ 188,996	$ 182,802	$ 199,610
Gross profit	122,348	128,896	122,365	137,401
Income from operations	14,125	6,360	5,498	11,776
Income before provision for income taxes	13,493	5,498	5,515	10,696
Net income	10,400	4,536	3,301	8,749
Net earnings per share, basic	$ 0.14	$ 0.06	$ 0.04	$ 0.11
Net earnings per share, diluted	$ 0.13	$ 0.06	$ 0.04	$ 0.11

(1) The Company elected to early adopt ASU 2016-09 in the fourth quarter of 2016, which requires, among other things, excess tax benefits to be recorded as a reduction of the provision for income taxes in the consolidated statement of operations, whereas they were previously recognized in equity. The Company is required to reflect any adoption adjustments as of January 1, 2016, the beginning of the annual period that includes the period of adoption. As such, certain information above includes the impact of the ASU 2016-09 adoption. See Note 2 “Significant Accounting Policies—New accounting pronouncements” for additional information related to this adoption.

	2015			
(in thousands, except per share amounts)	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
Revenue	$ 153,918	$ 162,019	$ 162,403	$ 204,355
Gross profit	103,859	107,238	106,962	151,190
Income from operations	11,909	5,250	10,711	36,791
Income before provision for income taxes	9,260	4,501	10,246	36,498
Net income	5,935	3,104	6,325	20,958
Net earnings per share, basic	$ 0.08	$ 0.04	$ 0.08	$ 0.27
Net earnings per share, diluted	$ 0.08	$ 0.04	$ 0.08	$ 0.26

ITEM 9. Changes In and Disagreements with Accountants on Accounting and Financial Disclosure

None.

ITEM 9A. Controls and Procedures

(a) Evaluation of Disclosure Controls and Procedures.

Our management, with the participation of our Chief Executive Officer, or CEO, and Chief Financial Officer, or 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, 2016. 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, 2016.

(b) 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, 2016 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 disclosure controls and procedures were effective as of December 31, 2016 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, 2016 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 on page 44 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, the information required by this Item is contained in our proxy statement for our 2017 annual stockholders meeting (the "2017 proxy statement") under the heading "Election of Directors," and is incorporated herein by reference. Information relating to certain filings on Forms 3, 4, and 5 is contained in our 2017 proxy statement under the heading "Section 16(a) Beneficial Ownership Reporting Compliance," and is incorporated herein by reference. Information required by this item pursuant to Items 407(c) (3), 407(d) (4), and 407(d) (5) of Regulation S-K relating to an audit committee financial expert, the identification of the audit committee of our Board of Directors and procedures of security holders to recommend nominees to our Board of Directors is contained in the 2017 proxy statement under the heading "Corporate Governance" and is incorporated herein by reference.

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, or 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.

EXECUTIVE OFFICERS

The names of our executive officers and certain information about them are set forth below as of February 1, 2017:

Alan Trefler, age 60, a founder of Pegasystems, has served as Chief Executive Officer and Chairman of the Board of Directors since the Company was organized in 1983. Prior to 1983, he managed an electronic funds transfer product for TMI Systems Corporation, a software and services company. Mr. Trefler holds a B.A. degree in economics and computer science from Dartmouth College.

Kenneth Stillwell , age 46, joined Pegasystems in July 2016 as Chief Financial Officer and Chief Administrative Officer. From January 2015 to July 2016, Mr. Stillwell served as Senior Vice President and Chief Financial Officer of Dynatrace, a digital performance management solutions provider. From March 2013 to December 2014, Mr. Stillwell served as Executive Vice President and Chief Financial Officer of SOVOS, a financial compliance software as a service company. Prior to SOVOS, Mr. Stillwell spent five years at PTC, a publicly traded software provider, where he served as the divisional CFO of two major segments. Mr. Stillwell holds a B.S. in business/economics from the University of Pittsburgh and a M.S. in accounting and finance from the University of South Carolina, and he is a certified public accountant.

Efstathios Kouninis , age 55 *,* joined Pegasystems in April 2008 as Vice President of Finance. The Board of Directors appointed Mr. Kouninis as the Company's Chief Accounting Officer in May 2008 and Treasurer in January 2014. From February 2006 to April 2008, Mr. Kouninis served as Chief Financial Officer and Treasurer of Tasker Products Corporation, a publicly traded manufacturer of antimicrobial chemicals. From November 2004 to February 2006, Mr. Kouninis served on the Staff of the Division of Corporation Finance of the U. S. Securities and Exchange Commission. Mr. Kouninis holds a B.S. from the University of Massachusetts, a Post Baccalaureate in accounting, and a M.S. in taxation from Bentley College.

Douglas Kra, age 54 *,* joined Pegasystems in November 2004 as Vice President of Global Services. In January 2010, Mr. Kra was promoted to Senior Vice President of Global Services. In July 2014, the Company re-organized its sales and consulting services functions under one responsibility for specific geographic regions, and Mr. Kra was promoted to Senior Vice President of Global Customer Success for international regions. From 2002 to 2004, Mr. Kra served as Vice President at eLoyalty Corp., a consulting company specializing in customer relationship management. From 2000 to 2001, Mr. Kra served as President of Zefer Corp., an internet consulting firm. Prior to Zefer, Mr. Kra spent ten years at Cambridge Technology Partners Inc. in a variety of senior roles. Mr. Kra holds a B.A. in computer science from Brandeis University and an M.B.A. in finance from the New York University Stern School of Business.

Michael Pyle , age 62 *,* joined Pegasystems in 1985 and has served as Senior Vice President of Engineering since August 2000. Including his positions with Pegasystems, Mr. Pyle's professional background encompasses more than thirty years of software development and managerial experience throughout Europe and the U.S. Mr. Pyle completed his B.C.S. specializing in computer science and systems programming at the Civil Service College in London.

Leon Trefler, age 56, joined Pegasystems in April 1998 as an Account Executive for Strategic Business Development. Since then he has held various senior sales management positions across the Company and in Channel Sales. In 2002, he launched the commercialization of PegaRULES Process Commander, the predecessor to the Pega Platform. From April 2007 to January 2010, Mr. Trefler served as Vice President of Sales, North America and in January 2010, Mr. Trefler was promoted to Senior Vice President of Sales. In July 2014, the Company re-organized its sales and consulting services functions under one responsibility for specific geographic regions, and Mr. Trefler was promoted to Senior Vice President of Global Customer Success for the Americas region. Mr. Trefler holds a B.A. degree from Dartmouth College.

Alan Trefler and Leon Trefler are brothers. There are no other family relationships among any of our executive officers or Directors.

ITEM 11. Executive Compensation

The information required by this item is contained in the 2017 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

Information required by this item with respect to stock ownership of certain beneficial owners and management is contained in the 2017 proxy statement under the heading "Security Ownership of Certain Beneficial Owners and Management" and is incorporated herein by reference.

Equity Compensation Plan Information

The following table provides certain information with respect to our equity compensation plans in effect as of December 31, 2016:

(In thousands, except per share amounts)	(a) Number of shares of common stock to be issued upon exercise of outstanding stock options and vesting of RSUs (3)	(b) Weighted-average exercise price per share of outstanding stock options (4)	(c) Number of shares of common stock remaining available for future issuance (excluding those in column (a)) (5)
Equity compensation plans approved by stockholders (1)	10,597	$ 19.48	10,230
Equity compensation plans not approved by stockholders (2)	27	$ 11.61	—

(1) We currently maintain two equity compensation plans: the 2004 Long-Term Incentive Plan (as amended and restated, the "2004 Plan") and the 2006 Employee Stock Purchase Plan as amended, (the "2006 ESPP"). In

addition to the issuance of stock options, the 2004 Plan allows for the issuance of stock purchase rights and other stock-based awards, including RSUs. Since 2006, the Company has granted unrestricted shares of its common stock to its non-employee directors under the 2004 Plan. Our stockholders previously approved each of these plans and all amendments that were subject to stockholder approval. See Note 14 "Stock-Based Compensation" included in the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for further information and description of our equity compensation plans.

(2) These stock options were assumed in connection with our acquisition of Chordiant in 2010 and were originally granted under the Chordiant Software, Inc. 2005 Equity Incentive Plan (the "2005 Plan"). No additional awards were or may be granted under the 2005 Plan following the date of acquisition. This plan was not approved by our stockholders since it was adopted on the date of acquisition. In connection with our acquisition of Chordiant, all outstanding equity awards issued under the 2005 Plan with an exercise price of $3.00, on a post-split basis, or lower were assumed by us and converted into the right to receive 0.13 shares of Pegasystems common stock for every one share of Chordiant common stock covered by such awards. All other outstanding equity awards issued under the 2005 Plan were cancelled.

The 2005 Plan was approved by Chordiant's stockholders and provided for the grant of incentive stock options, nonstatutory stock options, stock purchase awards, RSAs, RSUs, and other forms of equity compensation. Awards granted under the 2005 Plan generally expire four to ten years after the grant date and generally become exercisable over a period of two to four years, with either yearly or monthly vesting.

(3) The number of shares of common stock issued upon exercise of vested stock options and vesting of RSUs will be less than 10,230,000 because of the "net settlement" feature of most of these stock options and RSUs. This feature enables the employee to satisfy the cost to exercise (in the case of stock options) and, if applicable, taxes due (in the case of stock options and RSUs) by surrendering shares to the Company based on the fair value of the shares at the exercise date (in the case of stock options) or vesting date (in the case of RSUs), instead of selling all of the shares on the open market to satisfy these obligations. The settlement of exercised stock options and vested RSUs on a net share basis will result in fewer shares issued by the Company. During 2016, stock option and RSU holders net settled stock options and RSUs representing the right to purchase a total of 2,277,000 shares, of which only 1,092,000 were issued to the stock option and RSU holders and the balance of the shares were surrendered to the Company to pay for the exercise price and the applicable taxes.

(4) The weighted-average exercise price does not take into account the shares issuable upon vesting of outstanding RSUs, which have no exercise price.

(5) Includes approximately 649,000 shares remaining available for issuance as of December 31, 2016 under the 2006 ESPP.

ITEM 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item is contained in the 2017 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 contained in the 2017 proxy statement under the heading "Independent Registered Public Accounting Firm Fees and Services" and is incorporated herein by reference.

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PART IV

ITEM 15. Exhibits, Financial Statement Schedules

(a) The following are filed as part of this Annual Report on Form 10-K:

(1) Financial Statements

The following consolidated financial statements are included in Item 8:

(b) Exhibits

The exhibits listed in the Exhibit Index immediately preceding such exhibits are filed as part of this Annual Report on 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

None.

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.

By: /s/ KENNETH STILLWELL

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

Date: February 24, 2017

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report on Form 10-K has been signed below on February 24, 2017 by the following persons on behalf of the Registrant and in the capacities indicated.

Signature	Title
/s/ ALAN TREFLER **Alan Trefler**	Chief Executive Officer and Chairman (Principal Executive Officer)
/s/ KENNETH STILLWELL **Kenneth Stillwell**	Chief Financial Officer and Chief Administrative Officer (Principal Financial Officer)
/s/ EFSTATHIOS KOUNINIS **Efstathios Kouninis**	Vice President of Finance and Chief Accounting Officer (Principal Accounting Officer)
/s/ RICHARD JONES **Richard Jones**	Director
/s/ PETER GYENES **Peter Gyenes**	Director
/s/ STEVEN KAPLAN **Steven Kaplan**	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
/s/ WILLIAM WYMAN **William Wyman**	Director

EXHIBIT INDEX

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 3.1 to the Registrant's December 17, 2013 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.)
10.1++	2004 Long-Term Incentive Plan (as amended and restated), dated April 15, 2016 (Filed as Appendix A within the Registrant's 2016 Proxy Statement, filed April 18, 2016 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.
+10.4++	Form of Restricted Stock Unit Agreement, as amended.
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.)
10.8++	Amendment to Stock Option Agreement between the Registrant and Richard H. Jones dated December 29, 2006. (Filed as Exhibit 99.1 to the Registrant's January 4, 2007 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++	2014 Section 16 Officer/FLT Member Corporate Incentive Compensation Plan. (Filed as Exhibit 99.1 to the Registrant's February 18, 2014 Form 8-K and incorporated herein by reference.)
10.12++	2014 Section 16 Executive Officers Base Salaries and Target Bonus Payments. (Filed as Exhibit 99.2 to the Registrant's February 18, 2014 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.)

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EXHIBIT INDEX—(Continued)

Exhibit No.	Description
10.14++	2015 Section 16 Officer/FLT Member Corporate Incentive Compensation Plan. (Filed as Exhibit 99.1 to the Registrant's February 3, 2015 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 10.1 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 10, 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.)
+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**	XBRL Instance document.
101.SCH**	XBRL Taxonomy Extension Schema Document.
101.CAL**	XBRL Taxonomy Calculation Linkbase Document.
101.DEF**	XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB**	XBRL Taxonomy Label Linkbase Document.
101.PRE**	XBRL Taxonomy Presentation Linkbase Document.

++ Management contracts and compensatory plan or arrangements required to be filed pursuant to Item 15(b) of Form 10-K.
+ Filed herewith
** Submitted electronically herewith

Attached as Exhibit 101 to this report are the following formatted in XBRL (Extensible Business Reporting Language): (i) Consolidated Balance Sheets as of December 31, 2016 and December 31, 2015, (ii) Consolidated Statements of Operations for the years ended December 31, 2016, 2015 and 2014, (iii) Consolidated Statements of Comprehensive Income for the years ended December 31, 2016, 2015 and 2014, (iv) Consolidated Statements of Stockholders' Equity (v) Consolidated Statements of Cash Flows for the years ended December 31, 2016, 2015 and 2014, and (vi) Notes to Consolidated Financial Statements.

Exhibit 10.3

PEGASYSTEMS INC.
One Rogers Street
Cambridge, MA 02142-1209 USA

Notice of Grant of Stock Option and Option Agreement

You have been granted an award of Nonstatutory Stock Options pursuant to the terms of the Pegasystems Inc. Amended and Restated 2004 Long-Term Incentive Plan (the “Plan”).

If you have not yet completed the acceptance process for any of your awards, you may complete the acceptance process by (A) reviewing your award details, (B) reviewing your award documents listed in this Section B of your Online Award Acceptance (the “Award Documents”), and (C) confirming your acceptance of your award.

By accepting this award, you agree that this award is granted and governed by the terms and conditions of the Plan, this notice, and all your Award Documents listed herein, including Exhibit A to this Notice of Stock Option and Option Agreement, and incorporated by reference. This notice, together with your Award Documents and your electronic acceptance, collectively comprise your total agreement (the “Award Agreement”).

Pegasystems Inc.

By:

Alan Trefler, Chairman and
Chief Executive Officer

Exhibit A

Notice of Grant of Stock Option and Option Agreement for {Non-}U.S. Employees

1. ***Exercise Price*.** The Exercise Price is equal to Fair Market Value, as defined in Section 2(n) of the Plan, of a share of the Company's Common Stock on the date of the Notice of Grant of Stock Option and Option Agreement for {Non-U.S. Employees} (of which this Exhibit A is a part) (the "Option Agreement").

2. ***Option Exercise*.** Once vested, and subject to the other provisions of this Option Agreement, the Option shall remain exercisable in whole or in part at any time through and including the day immediately preceding the date set forth under the heading "Expiration" on the Option Agreement (the "Expiration Date"), after which the Option shall expire and no longer be exercisable.

The Option shall be exercisable by notice to the Company or the Company's designated stock option administrator, which shall:

(a) state the election to exercise the Option, the number of shares of Common Stock with respect to which it is being exercised, and, if different than the Optionee, the person in whose name the stock certificate or certificates for such shares of Common Stock are to be registered, and the address and Social Security number of such person;

(b) be signed by the person or persons entitled to exercise the Option, and if the Option is being exercised by a person or persons other than the Optionee, be accompanied by proof satisfactory to the Company's legal counsel of the right of such person or persons to exercise the Option; and

(c) if to the Company, be in writing and delivered in person or by certified mail to the Chief Financial Officer of the Company or, if to the Company's designated stock option administrator, be in the manner and form specified by such stock option administrator.

Payment of the full purchase price of any shares of Common Stock, with respect to which the Option is being exercised, shall accompany the notice of exercise of the Option and such payment may be made in cash or check payable to the Company. Alternatively, the Optionee may elect to pay the full purchase price of any shares of Common Stock, with respect to which the Option is being exercised, by having the Company withhold, such number of shares of Common Stock as are equal in value to the full purchase price. Unless the Company has elected to have shares recorded in book entry form, the certificate or certificates for shares of Common Stock as to which the Option is exercised shall be registered in the name of the person or persons exercising the Option.

3. ***Termination of Service*.** If the Optionee terminates Service other than by reason of the Optionee's death, Disability or Retirement, the Optionee may exercise his or her Option for three months following such termination to the extent that the Option is vested on the date of termination (but in no event later than the expiration of the term of the Option).

4. ***Retirement of Optionee*.** If the Optionee terminates Service as a result of Retirement, the Optionee may exercise his or her Option for 24 months following such termination to the extent that the Option is vested on the date of termination (but in no event later than the expiration of the term of the Option).

5. ***Disability of Optionee*.** If the Optionee terminates Service as a result of the Optionee's Disability, the Optionee may exercise his or her Option for 24 months following such termination to the extent that the Option is vested on the date of termination (but in no event later than the expiration of the term of the Option).

6. ***Death of Optionee*.** If the Optionee dies while a Service Provider, the Option may be exercised by the Optionee's estate or by a person who acquires the right to exercise the Option by bequest or inheritance for 12 months following the Optionee's termination of Service because of death.

7. ***Optionee's Agreement*.** The Optionee agrees to all the terms stated in the Option Agreement (of which this Exhibit is a part), as well as to the terms of the Plan (which shall control in case of conflict with the Option Agreement), a copy of which is attached and of which the Optionee acknowledges receipt.

8. ***Withholding*.** The Optionee consents to fulfill all withholding obligations for all applicable payroll and income taxes with respect to the Option when they are due and arrange for satisfactory payment of all withholding obligations in a manner as set forth in Section 13(h) of the Plan. The Company may delay issuance of a certificate until proper payment of such taxes has been made by the Optionee. The Company may satisfy such withholding obligations by withholding such number of shares of Common Stock as are equal in value to the amount of the required withholding.

{8. ***Withholding*.** Regardless of any action the Company and/or the Optionee's employer (the "Employer") take with respect to any or all income tax (including U.S. federal, state and local tax and/or non-U.S. tax), social insurance, payroll tax, payment on account or other tax-related withholding ("Tax-Related Items"), the Optionee acknowledges that the ultimate liability for all Tax-Related Items legally due by the Optionee is and remains the Optionee's responsibility and that the Company and/or the Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Option, including the grant, vesting or exercise of the Options, the subsequent sale of any shares of Common Stock acquired at exercise and the receipt of any dividends; and (ii) do not commit to structure the terms of the grant or any aspect of the Option to reduce or eliminate the Optionee's liability for Tax-Related Items.

Prior to the relevant taxable event, the Optionee shall pay or make arrangements satisfactory to the Company and/or the Employer to satisfy all withholding and payment on account obligations of the Company and/or the Employer. In this regard, the Optionee authorizes the Company and/or the Employer to withhold all applicable Tax-Related Items legally payable by the Optionee from any wages or other cash compensation paid to the Optionee by the Company and/or the Employer. Alternatively, or in addition, if permissible under local law, the Optionee authorizes the Company and/or the Employer, at its discretion and pursuant to such procedures as it may specify from time to time, to satisfy the obligations with regard to all Tax-Related Items legally payable by the Optionee by one or a combination of the following: (i) withholding otherwise deliverable shares of Common Stock, provided that the Company only withholds the amount of shares of Common Stock necessary to satisfy the minimum withholding amount; (ii) arranging for the sale of shares of Common Stock otherwise deliverable to the Optionee (on the Optionee's behalf and at the Optionee's direction pursuant to this authorization); or (iii) withholding from the proceeds of the sale of shares of Common Stock acquired upon exercise of the Option. If the obligation for Tax-Related Items is satisfied by withholding a number of shares of Common Stock as described herein, the Optionee is deemed to have been issued the full number of shares of Common Stock subject to the Option, notwithstanding that a number of the shares of Common Stock are held back solely for the purpose of paying the Tax-Related Items due as a result of any aspect of the Option. The Optionee shall pay to the Company and/or the Employer any amount of Tax-Related Items that the Company and/or the Employer may be required to withhold as a result of the Optionee's participation in the Plan that cannot be satisfied by the means previously described. The Company may refuse to deliver to the Optionee any shares of Common Stock pursuant to the Option if the Optionee fails to comply with the Optionee's obligations in connection with the Tax-Related Items as described in this section.}

9. ***Rights as Shareholders*.** The Optionee shall have no rights as a shareholder of the Company with respect to any of the shares of Common Stock covered by the Option until the issuance of a stock certificate or certificates upon the exercise of the Option, and then only with respect to the shares of Common Stock represented by such certificate or certificates.

10. ***Non-Transferability*.** The Option may not be transferred in any manner other than as permitted in Section 13(j) of the Plan {by will or by the laws of descent and distribution}. The terms of the Option shall be binding upon the executors, administrators, heirs and successors of the Optionee.

{11. ***Employment Agreement*.** In consideration for this Option, the Recipient reaffirms the terms of the Recipient's Employment Agreement with Employer, including but not limited to the provisions (if any) related to competition and solicitation. The Recipient further agrees that to the extent the nature of the Employer's business has evolved since the date of the Employment Agreement the covenants shall also apply to the business as evolved.}

11. {12.} ***Compliance with Securities, Tax and Other Law*.** The Option may not be exercised if the issuance of shares of Common Stock upon such exercise would constitute a violation of any applicable federal or state securities law or any other law or valid regulation. As a condition to the exercise of the Option, the Company may require the Optionee, or any person acquiring the right to exercise the Option, to make any representation or warranty that the Company deems to be necessary under any applicable securities, tax, or other law or regulation.

12. {13.} ***Adjustments upon Changes in Capitalization*.** In the event of any change in the shares subject to the Plan or to any Option granted under the Plan by reason of a merger, consolidation, reorganization, recapitalization, stock dividend, stock split, combination or exchange of shares {of Common Stock}, or other change in the structure of the Company, the number of shares {of Common Stock} subject to each outstanding Option and/or the Option price with respect to the shares {of Common Stock} shall be appropriately adjusted by the Company and such adjustment shall be final, binding and conclusive.

13. {14.} ***No Right to Employment*.** The granting of the Option does not confer upon the Optionee the right to continue in the Service of the Company {and/or the Employer}, or affect in any way the right and power of the Company {and/or the Employer} to terminate the Service of the Optionee at any time with or without assigning a reason therefor, to the same extent as the Company {and/or the Employer} might have done if the Option had not been granted.

14. {15.} ***No Guarantee*.** The Company offers no guarantee or assurance that the Company's stock has any value at the time of this grant or will have any value or liquidity at any future time.

{16. ***Acknowledgment of Nature of Plan and Option*.** In accepting the Option, the Optionee acknowledges that:

(a) the Plan is established voluntarily by the Company, it is discretionary in nature, and it may be modified, amended, suspended or terminated by the Company at any time, unless otherwise provided in the Plan and this Option Agreement;

(b) the Option is voluntary and occasional and does not create any contractual or other right to receive future grants of Options, or benefits in lieu of Options, even if Options have been granted repeatedly in the past;

(c) all decisions with respect to future Options, if any, will be at the sole discretion of the Company;

(d) the Optionee's participation in the Plan is voluntary;

(e) the Option is an extraordinary item that does not constitute compensation for services of any kind rendered to the Company or any Related Company, and which is outside the scope of the employment contract, if any;

(f) the Option is not part of normal or expected compensation or salary for any purposes, including, but not limited to, calculation of any severance, resignation, termination, redundancy, end of service payments, bonuses, long-service awards, pension or retirement or welfare benefits or similar payments and in no event should be considered as compensation for, or relating in any way to, past services for the Company or any Related Company;

(g) in the event that the Optionee is not an Employee of the Company or any Related Company, the Option and the Optionee's participation in the Plan will not be interpreted to form an employment or service contract or relationship with the Company or any Related Company;

(h) the future value of the underlying shares of Common Stock is unknown and cannot be predicted with any certainty;

(i) if you exercise your Option and obtain shares of Common Stock, the value of those shares of Common Stock acquired upon exercise may increase or decrease in value, even below the Option price;

(j) in consideration of the Option, no claim or entitlement to compensation or damages shall arise from termination of the Option or from any diminution in value of the Option or shares of Common Stock acquired upon exercise of the Option resulting from termination of the Optionee's service by the Company or any Related Company (for any reason whatsoever and whether or not in breach of local labor laws) and the Optionee irrevocably releases the Company and any Related Company from any such claim that may arise; if, notwithstanding the foregoing, any such claim is found by a court of competent jurisdiction to have arisen, then, by signing the Option Agreement, the Optionee shall be deemed irrevocably to have waived the Optionee's entitlement to pursue such claim;

(k) in the event of termination of the Optionee's Service (whether or not in breach of local labor laws), the Optionee's right to receive an Option and vest in the Option under the Plan, if any, will terminate effective as of the date that the Optionee is no longer actively employed and will not be extended by any notice period mandated under local law (*e.g.* , active employment would not include a period of "garden leave" or similar period pursuant to local law); the Administrator shall have the exclusive discretion to determine when the Optionee is no longer actively employed for purposes of the Option;

(l) the Company is not providing any tax, legal or financial advice, nor is the Company making any recommendations regarding the Optionee's participation in the Plan or the Optionee's acquisition or sale of the underlying shares of Common Stock; and

(m) the Optionee is hereby advised to consult with the Optionee's personal tax, legal and financial advisors regarding the Optionee's participation in the Plan before taking any action related to the Plan.}

{17. ***Data Privacy Notice and Consent*** ***.*** ***The Optionee hereby explicitly and unambiguously consents to the collection, use and transfer, in electronic or other form, of the Optionee's personal data as described in this Option Agreement and any other Option grant materials by and among, as applicable, the Employer, the Company and its Subsidiaries for the exclusive purpose of implementing, administering and managing the Optionee's participation in the Plan.***

The Optionee understands that the Company and the Employer may hold certain personal information about the Optionee, including, but not limited to, the Optionee's name, home address and telephone number, date of birth, social insurance number or other identification number, salary, nationality, job title, any shares of stock or directorships held in the Company, details of all Options or any other entitlement to shares of stock granted, exercised, canceled, vested, unvested or outstanding in the Optionee's favor, for the exclusive purpose of implementing, administering and managing the Plan ("Data").

The Optionee understands that Data will be transferred to a third party stock plan service provider(s) as may be selected by the Company, which is assisting the Company with the implementation, administration and management of the Plan. The Optionee understands the recipients of the Data may be located in the Optionee's country, in the United States or elsewhere, and that the data recipients' country may have different data privacy laws and protections than the Optionee's country. The Optionee understands that the Optionee may request a list with the names and addresses of any potential recipients of the Data by contacting the Optionee's local human resources representative. The Optionee authorizes the Company and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Plan to receive, possess, use, retain and transfer the Data, in electronic or other form, for the sole purpose of implementing, administering and managing the Optionee's participation in the Plan. The Optionee understands that Data will be held only as long as is necessary to implement, administer and manage the Optionee's participation in the Plan. The Optionee understands that the Optionee may, at any time, view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case without cost, by contacting in writing the Optionee's local human resources representative. The Optionee understands, however, that refusing or withdrawing the Optionee's consent may affect the Optionee's ability to participate in the Plan. For more information on the consequences of the Optionee's refusal to consent or withdrawal of consent, the Optionee understands that the Optionee may contact the Optionee's local human resources representative.}

15. {18.} ***Amendment and Termination of Option*** ***.*** The Company may amend, modify or terminate any outstanding Option, provided that the Recipient's consent to such action shall be required unless it occurs pursuant to a Sale of the Company or the Committee determines that the action would not materially and adversely affect the Recipient.

16. ***Standards Letter*** ***.*** In consideration for this Option, the Recipient reaffirms the terms of the Recipient's Standards Letter agreement with Pegasystems, including but not limited to the provisions related to competition and solicitation. The Recipient further agrees that to the extent the nature of the Company's business has evolved since the date of the Standards Letter the covenants shall also apply to the business as evolved.

{19. ***Language*** ***.*** If the Optionee has received this Option Agreement or any other document related to the Plan translated into a language other than English and if the translated version is different from the English version, the English version will control.}

{20. ***Electronic Delivery*** **.** The Company may, in its sole discretion, decide to deliver any documents related to the Option or future grants made under the Plan by electronic means or request that the Optionee consent to participate in the Plan by electronic means. The Optionee hereby consents to receive such documents by electronic delivery and agrees to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company.}

17. {21.} ***Governing Law and Venue*** **.** The Option Agreement shall be governed by and interpreted in accordance with the laws of The Commonwealth of Massachusetts, without regard to any applicable conflicts of law provisions thereof.

For purposes of litigating any dispute that arises directly or indirectly from the relationship of the parties evidenced by this Option or this Option Agreement, the parties hereby submit to and consent to the exclusive jurisdiction of The Commonwealth of Massachusetts and agree that such litigation shall be conducted only in the courts of Middlesex County, Massachusetts, or the federal courts for the United States for the district of Massachusetts, and no other courts, where this grant of Options is made and/or to be performed.

18. {22.} ***Severability*** **.** In the event any one or more of the provisions of the Option Agreement shall for any reason be held to be invalid, illegal or unenforceable, the remaining provisions of the Option Agreement shall be unimpaired, and the invalid, illegal or unenforceable provision shall be replaced by a mutually acceptable provision, which being valid, legal and enforceable, comes closest to the intention of the parties underlying the invalid, illegal or unenforceable provision.

19. {23.} ***Definitions*** **.** All capitalized terms used herein and not otherwise defined shall have the meanings assigned to such terms in the Plan.

{24. ***Exhibit B*** **.** Notwithstanding any provision herein, the Optionee’s participation in the Plan shall be subject to any special terms and conditions as set forth in Exhibit B for the Optionee’s country of residence, if any. The Exhibit B constitutes part of this Option Agreement.}

{Exhibit B

To Notice of Grant of Option and Option Agreement for Non-U.S. Employees

This Exhibit B includes additional terms and conditions that govern the Options granted to the Optionee if the Optionee resides in the countries contained herein. Capitalized terms used but not defined herein shall have the meanings ascribed to them in the Notice of Grant of Option and Option Agreement for Non-U.S. Employees (of which this Exhibit B is a part) or the Plan.

This Exhibit B also includes information regarding exchange controls and certain other issues of which the Optionee should be aware with respect to the Optionee's participation in the Plan. The information is based on the securities, exchange control and other laws in effect in the respective countries as of December 2009, unless otherwise notated. Such laws are often complex and change frequently. As a result, the Company strongly recommends that the Optionee not rely on the information noted herein as the only source of information relating to the consequences of the Optionee's participation in the Plan because the information may be out of date at the time the Optionee acquires shares of Common Stock or sells shares of Common Stock the Optionee acquires under the Plan.

In addition, the information is general in nature and may not apply to the Optionee's particular situation, and the Company is not in a position to assure the Optionee of any particular result. **Accordingly, the Optionee is strongly advised to seek appropriate professional advice as to how the relevant laws in the Optionee's country apply to the Optionee's specific situation.**

If the Optionee is a citizen or resident of another country, or is considered a resident of another country for local law purposes, the information contained in this Exhibit B may not be applicable to the Optionee.

Australia

Withholding

This provision supplements Section 8 (Withholding):

Prior to the relevant taxable event, the Optionee will provide the Company with their Australian Tax File Number (TFN) or Australian Business Number (ABN). Failure to do so will result in the requirement for the Company to withhold Australian tax at the rate of 46.5%.

Reform to the taxation of employee share schemes

With effect from 1 July 2009, Optionee share options shall be taxed upfront, unless there is a "real risk of forfeiture". Where there is a "real risk of forfeiture," options shall generally be taxed at the earliest of:

- Vesting of the option
- Cessation of employment
- 7 years after grant

Canada

Option Exercise

The paragraphs below replace Section 2 (Option Exercise) of Exhibit A to the Option Agreement:

Once vested, the Option shall remain exercisable in whole or in part at any time through and including the day immediately preceding the date set forth under the heading "Expiration" on the Option Agreement (the "Expiration Date"), after which the Option shall expire and no longer be exercisable.

The Option shall be exercisable by notice to the Company or the Company's designated stock option administrator, which shall:

(a) state the election to exercise the Option and the number of shares of Common Stock with respect to which it is being exercised,

(b) be signed by the Optionee; and

(c) if to the Company, be in writing and delivered in person or by certified mail to the Chief Financial Officer of the Company or, if to the Company's designated stock option administrator, be in the manner and form specified by such stock option administrator.

Payment of the full purchase price of any shares of Common Stock, with respect to which the Option is being exercised, shall accompany the notice of exercise of the Option and such payment may be made in cash or check payable to the Company. Alternatively, the Optionee may elect to pay the full purchase price of any shares of Common Stock, with respect to which the Option is being exercised, by having the Company withhold such number of shares of Common Stock as are equal in value to the full purchase price. The certificate or certificates for shares of Common Stock as to which the Option is exercised shall be registered in the name of the Optionee.

For further clarity, any shares issued of the Common Stock of the Company upon exercise of an Option shall be issued solely in the name of the Optionee and not in the name of any other person, including a person with whom the Optionee is dealing at non-arm's length.

Upon exercise of the Option, the Optionee shall receive shares of the Common Stock of the Company and under no circumstances shall the Administrator elect to have the employee receive cash (or any other security) in lieu of the Common Stock of the Company. To this effect, section 13(e) of the Plan (and any other similar section) do not apply in Canada.

Furthermore, at all times the Optionee should hold less than 10% of the shares of the Common Stock of the Company or any Related Company.

Withholding

The paragraphs below replace Section 8 of Exhibit A to the Option Agreement:

Generally, there are Canadian requirements to withhold source deductions on stock options benefits. Although stock options benefits are considered to be remuneration subject to source deductions, Canada recognizes that requiring additional withholding from cash payments, such as normal salary, as a result of a stock option benefit can create hardship for the employee. This hardship will be created when either the benefit is very large in proportion to the employee's normal salary or the option is exercised later in the year. As a result, employers may make withholdings from employees' cash remuneration to the extent possible, without imposing actual hardship. Where the non-cash benefit is the only form of income received from that employer, the employer will not be required to withhold tax on the amount of such benefits.

Stock option benefits are also subject to social security taxes in Canada. These benefits are subject to Canada Pension Plan withholdings but not Employment Insurance withholdings. The province of Ontario will also levy payroll taxes to fund the Canadian health service.

The employment benefit and, if applicable, related 50% deduction will be reported on the Optionee T4 for the year in which the tradable options are exercised or sold. The Optionee must report these amounts on his or her individual income tax return for the same year.

If the Optionee qualifies and elects to defer a part of the employment benefit arising on exercise to the date of sale, the employer (i.e. the Related Company) will report the deferred benefit on the T4 slip in the year of exercise, however the benefit will not be included in income for that year. The Optionee must complete and file Form T1212, “Statement of Deferred Security Option Benefits” with his or her federal tax return for each year in which arises a balance of deferred benefit outstanding. In the year the Optionee sells the shares, the Optionee must report the deferred benefit on his or her tax return.

Acknowledgement of nature of plan

The paragraphs below replace Section 15 of Exhibit A to the Option Agreement [new or amended paragraphs are shown in italics at g and j]:

In accepting the Option, the Optionee acknowledges that:

(a) the Plan is established voluntarily by the Company, it is discretionary in nature, and it may be modified, amended, suspended or terminated by the Company at any time, unless otherwise provided in the Plan and this Option Agreement;

(b) the Option is voluntary and occasional and does not create any contractual or other right to receive future grants of Options, or benefits in lieu of Options, even if Options have been granted repeatedly in the past;

(c) all decisions with respect to future Options, if any, will be at the sole discretion of the Company;

(d) the Optionee’s participation in the Plan is voluntary;

(e) the Option is an extraordinary item that does not constitute compensation for services of any kind rendered to the Company or any Related Company, and which is outside the scope of the employment contract, if any;

(f) the Option is not part of normal or expected compensation or salary for any purposes, including, but not limited to, calculation of any severance, resignation, termination, redundancy, end of service payments, bonuses, long-service awards, pension or retirement or welfare benefits or similar payments and in no event should be considered as compensation for, or relating in any way to, past services for the Company or any Related Company;

(g) the Company has decided to grant Options under the Plan to individuals who are employees of the Company or any Related Company; and under no circumstances, the Optionee should be considered a Consultant or a “non-employee Officer or non-employee Director” of the Company or any Related Company;

(h) the future value of the underlying shares of Common Stock is unknown and cannot be predicted with any certainty;

(i) if you exercise your Option and obtain shares of Common Stock, the value of those shares of Common Stock acquired upon exercise may increase or decrease in value, even below the Option price;

(j) at all times the Optionee should hold less than 10% of the shares of the Common Stock of the Company or any Related Company;

(k) in consideration of the Option, no claim or entitlement to compensation or damages shall arise from termination of the Option or from any diminution in value of the Option or shares of Common Stock acquired upon exercise of the Option resulting from termination of the Optionee’s service by the Company or any Related Company (for any reason whatsoever and whether or not in breach of local labor laws) and the Optionee irrevocable releases the Company and any Related Company from any such claim that may arise; if, notwithstanding the foregoing, any such claim is found by a court of competent jurisdiction to have arisen, then, by signing the Option Agreement, the Optionee shall be deemed irrevocably to have waived the Optionee’s entitlement to pursue such claim;

(l) in the event of termination of the Optionee’s Service (whether or not in breach of local labor laws), the Optionee’s right to receive an Option and vest in the Option under the Plan, if any, will terminate effective as of the date that the Optionee is no longer actively employed and will not be extended by any notice period mandated under local law (e.g., active employment would not include a period of “garden leave” or similar period pursuant to local law); the Administrator shall have the exclusive discretion to determine when the Optionee is no longer actively employed for purposes of the Option;

(m) the Company is not providing any tax, legal or financial advice, nor is the Company making any recommendations regarding the Optionee’s participation in the Plan or the Optionee’s acquisition or sale of the underlying shares of Common Stock; and

(n) the Optionee is hereby advised to consult with the Optionee’s personal tax, legal and financial advisors regarding the Optionee’s participation in the Plan before taking any action related to the Plan.

France

This information is correct as of November 2011.

Exchange Control Information

If the Optionee retains Shares outside of France or maintains a foreign bank account, the Optionee is required to report such to the French tax authorities when filing his or her annual tax return.

Germany

Exchange Control Information

Cross-border payments in excess of € 12,500 must be reported monthly to the German Federal Bank. If the Optionee uses a German bank to transfer a cross-border payment in excess of € 12,500 in connection with the sale of shares of Common Stock acquired under the Plan, the bank will make the report for the Optionee. In addition, the Optionee must report any receivables or payables or debts in foreign currency exceeding € 5,000,000 on a monthly basis.

Hong Kong

Obligation to report the share option gains to the tax authority

The Optionee is obliged to declare the gains realized by the exercise, assignment or release of the share options to the Hong Kong Inland Revenue Department (“IRD”) in their Individual Tax Return for the year of assessment in which the share options are exercised, assigned or released. If the Optionee is eligible to lodge any offshore non-taxable claim on their share option gains, the Optionee is required to lodge such claim in their Individual Tax Return. Therefore, it is the Optionee’s responsibility to prove to the satisfaction of the IRD on their non-taxable claim lodged with documentary evidence in support.

Reporting requirement

Upon the commencement of Hong Kong employment/assignment of the Optionee, the Optionee’s employer (the “Employer”) is obliged to file the Commencement Notice (Form IR 56E) for reporting the term of employment and share options details to the IRD within 3 months from the date of commencement of employment. Annual Employer’s Return (Form IR 56B) is required to be filed to the IRD by end of April to report the remuneration paid/accrued to the Optionee, including the share option gains, for each year ended 31 March. Further to the filing of the said Forms, the IRD will normally create a tax file for the Optionee and issue the annual Individual Tax Return to the Optionee (usually in May) to ascertain their tax position. If there is no Individual Tax Return issued by the IRD to the Optionee for reporting the share option gain in the year of exercise, the Optionee is obliged to voluntarily inform the IRD on this tax chargeability arising from the exercise as well as other Hong Kong taxable employment income within four months after the end of the basis period during which the year of assessment is concerned (i.e. the informing deadline is 31 July given the fiscal year ends on 31 March).

Leaving Hong Kong

If the share option is only exercised, assigned or released after the Optionee permanently departs from Hong Kong, the Employer should report the share option gains by filing the Departure Notice (Form IR 56G) and provide a copy for the Optionee. The Optionee also needs to discharge their voluntary informing chargeability obligation as mentioned above not later than 4 months after the end of the year of assessment in which the share option gains are derived. Even if the Employer fails to submit the Departure Notice to report the taxable share option gain, the Optionee still needs to comply with their own reporting obligation.

In order to assist with finalizing the salary-related tax liabilities prior to permanent departure, the Optionee is allowed, as a concession, to elect to have the tax liabilities finalized on the basis of a notional exercise of the share options. The notional gain is calculated on the basis as if the options had been exercised on a day within 7 days before the date of submission of the Optionee's tax return for the final year of assessment in which the Optionee departs. As a further concession, the IRD is prepared to accept an election made within 3 months from the date of departure from Hong Kong if no election has been made before departure. In this case, the date of departure will be taken as the date of notional exercise for the purpose of calculating the gain.

An election once made cannot be withdrawn before the actual exercise, assignment or release, except:

(i) within the objection period of the assessment in which the gain of the notional exercise is included; or

(ii) total forfeiture of the options with no replacement or compensation before the actual exercise.

If it transpires that the gain in respect of the actual exercise, assignment or release is less than the amount assessed in respect of the notional exercise, the IRD has indicated in its Departmental Interpretation and Practice Note that they will favorably consider any application for appropriate amendment and re-assessment.

Withholding

The paragraphs below supplement Section 8 (Withholding) of Exhibit A to the Option Agreement.

The Employer is not required to withhold the Optionee's share option gains unless the Optionee permanently departs from Hong Kong. The Employer is statutorily required to withhold money payment from the Optionee for a period of one month after the Departure Notification (Form IR 56G) was filed to the IRD, unless consent (by the issue of a Letter of Release to the employer with a copy to the Optionee after they have settled all their tax liabilities) is given by the IRD. Hence, if the Optionee derives share option gains and there is money paid to them by the Employer, the Employer has the withholding obligation.

India

Exchange Control Information

As per the foreign exchange laws ("regulations") in India, there are no restrictions on the amount of remittances that the Optionee can make for acquiring Options provided that the following conditions are fulfilled:

1. The Company issuing the shares effectively, directly or indirectly, holds in the Indian company, whose employees / directors are being offered shares, not less than 51% of its equity, and

2. The shares under the Plan are offered by the issuing company globally on a uniform basis (with the same terms and with the same rights) .

Ireland

Restriction on Types of Shares Issued to Directors

If the Optionee is a director or shadow director of an Irish Subsidiary, the Optionee's Options will be paid in newly issued shares of Common Stock only. In no event will the Options be settled in treasury shares.

Director Notification Requirement

If the Optionee is a director, shadow director or secretary of an Irish Subsidiary, the Optionee must notify the Irish Subsidiary in writing within five business days of receiving or disposing of an interest in the Company (*e.g* ., Options, shares of Common Stock, etc.), or within five business days of becoming aware of the event giving rise to the notification requirement, or within five business days of becoming a director or secretary if such an interest exists at the time. This notification requirement also applies with respect to the interests of a spouse or minor children (whose interests will be attributed to the director, shadow director or secretary).

Italy

This information is correct as of August 2011.

Purpose

The Plan is discretionary in nature and is offered only to individual employees and/or specific categories of employees.

Nature of Plan

This provision supplements Section 11 (Acknowledgement of Nature of Plan and Option) of Exhibit A to the Option Agreement:

The Optionee understands that the Company has unilaterally, gratuitously and discretionally decided to grant Options under the Plan to individuals who may be employees of the Company or its Subsidiaries throughout the world. The decision is a limited decision that is entered into upon the express assumption and condition that any grant will not bind the Company or any Related Company. Consequently, the Optionee understands that the Option is granted on the assumption and condition that the Option and any shares of Common Stock acquired upon exercise of the Option are not a part of any employment contract (either with the Company or any Related Company) and shall not be considered a mandatory benefit, salary for any purposes (including severance compensation) or any other right whatsoever. Further, the Optionee understands that the Optionee will not be entitled to continue vesting in any Option once the Optionee's Service with the Company or any Related Company ceases. In addition, the Option understands that this grant would not be made to the Optionee but for the assumptions and conditions referred to above; thus, the Optionee acknowledges and freely accepts that should any or all of the assumptions be mistaken or should any of the conditions not be met for any reason, then any grant of or right to the Option shall be null and void.

It is a condition of participation in the Plan that the Optionee expressly agrees to the terms of the Plan, including the provisions in this Exhibit B.

Options Payable Only in Shares of Common Stock

Notwithstanding any discretion in the Plan or anything contrary in the Option Agreement, if the Optionee is resident in Italy, the grant of Options does not provide any right for the Optionee to receive a cash payment and the Options are payable in shares of Common Stock only.

Securities Reporting

Individuals in Italy are required to report assets held abroad on their annual tax returns (Form RW) if the value of such assets exceeds 10,000 Euros at the end of the calendar year. The Italian tax authorities have taken the position that vested Stock Options in a foreign company are considered 'assets held abroad'.

Employees must therefore also report vested Stock Options in their annual tax returns (Form Unico, Schedule RW) if the threshold is exceeded.

In addition, employees must report in Section III of Form RW the transfer of money exceeding 10,000 Euros:

- From Italy to another jurisdiction;
- From another jurisdiction to Italy;
- Between non-Italian jurisdictions, if the transfer relates to investments held overseas.

This also applies to transfers to countries that have adopted the Euro.

Japan

This information is correct as of August 2009.

Exchange Control Information

Although there are no restrictions on the transfer of funds outside Japan, certain reporting obligations to the tax authorities or the Ministry of Finance may be required.

Optionees must notify the Ministry of Finance of share purchases in excess of 30,000,000 Yen. An additional notification is required for purchase of shares with a value in excess of 100,000,000 Yen.

Japanese banks including Japanese branches of foreign banks have to report transfers of funds of more than 1,000,000 Yen in and out of Japan to the government automatically. Sometimes the tax authorities check individual tax returns to these records.

Netherlands

By participating in the Plan the Optionee acknowledges that the Optionee's Options can cease to vest on termination of employment under the terms of the Plan. It is a condition of participation in the Plan that the Optionee agrees to these terms.

Poland

Securities reporting

If the Optionee holds more than €10,000 of foreign securities (including following the grant of Options) the Optionee must declare details of the shares and options (whether or not the options have vested) to the National Bank of Poland. The form of declaration must be submitted within 30 days of the end of the year.

Russia

This information is correct as of August 2011.

Options Payable Only in Shares of Common Stock

Notwithstanding any discretion in the Plan or anything contrary in the Option Agreement, if the Optionee is resident in Russia, the grant of Options does not provide any right for the Optionee to receive a cash payment and the Options are payable in shares of Common Stock only.

Exchange Control Information

The Optionee has a reporting obligation to inform the Russian tax authorities of any bank accounts opened outside of Russia (This applies to Russian national employees only).

Singapore

Leaving Singapore

With effect from January 1, 2003, Optionees who are foreign citizens or are Singapore Permanent residents leaving Singapore permanently are taxed on a "deemed exercise" basis for any options or units or shares granted or issued during Singapore employment. This would also include any unvested or restricted options or units or shares granted whilst exercising employment in Singapore.

As per the deemed exercise rule, all Options, units, or stock which have been granted during Singapore employment are deemed to have been exercised, irrespective whether the Options have vested or not. The taxable value is the difference between the fair market value (which would be the fair market value one month prior to the date of departure) and the exercise price.

Director withholding

Independent Directors who are Non Resident in Singapore and have received Options by virtue of their being on the Board of the Singapore Company will be subject to tax in Singapore and liable for tax withholding.

Spain

This provision supplements Section 15 (Acknowledgment of Nature of Plan and Option) of Exhibit A to the Option Agreement:

In accepting the Options, the Optionee consents to participation in the Plan and acknowledges that the Optionee has received a copy of the Plan.

The Optionee understands that the Company has unilaterally, gratuitously and discretionally decided to grant Options under the Plan to individuals who may be employees of the Company or its Subsidiaries throughout the world. The decision is a limited decision that is entered into upon the express assumption and condition that any grant will not bind the Company or any Related Company. Consequently, the Optionee understands that the Options are granted on the assumption and condition that the Options and any shares of Common Stock acquired upon exercise of the Options are not a part of any employment contract (either with the Company or any Related Company) and shall not be considered a mandatory benefit, salary for any purposes (including severance compensation) or any other right whatsoever. Further, the Optionee understands that the Optionee will not be entitled to continue vesting in any Options once the Optionee's Service with the Company or any Related Company ceases. In addition, the Optionee understands that this grant would not be made to the Optionee but for the assumptions and conditions referred to above; thus, the Optionee acknowledges and freely accepts that should any or all of the assumptions be mistaken or should any of the conditions not be met for any reason, then any grant of or right to the Options shall be null and void.

Exchange Control Information

The Optionee must declare the acquisition of shares of Common Stock to the Dirección General de Política Comercial e Inversiones Exteriores (the DGPCIE) of the Ministerio de Economía for statistical purposes.

As the shares are listed on a stock exchange the acquisition will be filled in a form D-5B. The form will be declared to the Registro de Inversiones of the Dirección General de Política Comercial e Inversiones Exteriores of the Ministerio de Industria, Turismo y Comercio.

The Optionee must also declare ownership of any shares of Common Stock with the Directorate of Foreign Transactions each January whilst the shares of Common Stock are owned in the following cases:

- The shares of the company are listed on the stock exchange.
- The shareholding in the company has to be at least 10% or more.
- The investment is more than 1,502,530.26 Euros.

Foreign currency payments (i.e., dividends or sale proceeds) have to be declared when the amount exceed 6,010.12 Euros on form B3.

The information provided to the financial institution is the following:

- The Optionee's name, address, and fiscal identification number
- Non resident's name, address and fiscal identification number.
- The amount of the payment, payment method, currency of origin and value in euros.
- The reasons for the payment.

A payment is made by bank transfer the following information should be provided to the financial institution when the amount exceeds 50,000 euros:

- Resident name, address and fiscal identification number.
- Non resident name, address and fiscal identification number.
- The amount, currency of origin and value of payment in euros.
- The reason for the payment.

Sweden

No country specific terms and conditions apply.

United Kingdom

Withholding

The paragraphs below replace Section 8 (Withholding) of Exhibit A to the Option Agreement:

Regardless of any action the Company or the Optionee's employer (the "Employer") takes with respect to any or all income tax, primary and secondary Class 1 National Insurance contributions, payroll tax or other tax-related withholding attributable to or payable in connection with or pursuant to the grant, vesting, exercise, release or assignment of any Option ("Tax-Related Items"), the Optionee acknowledges that the ultimate liability for all Tax-Related Items legally due by the Optionee is and remains the Optionee's responsibility. Furthermore, the Company and/or the Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Option, including the grant, vesting or exercise of the Options, the subsequent sale of any shares of Common Stock acquired at exercise and the receipt of any dividends; and (ii) do not commit to structure the terms of the grant or any aspect of the Option to reduce or eliminate the Optionee's liability for Tax-Related Items.

As a condition of any Options becoming exercisable and the issuance of shares of Common Stock upon exercise of the Options, the Company and/or the Employer shall be entitled to withhold and the Optionee agrees to pay, or make adequate arrangements satisfactory to the Company and/or the Employer to satisfy, all obligations of the Company and/or the Employer to account to HM Revenue & Customs ("HMRC") for any Tax-Related Items by the Due Date, which is 90 days, or such other period as required under U.K. law, after the event giving rise to the Tax-Related Items (the "Chargeable Event"). In this regard, except as provided in the next sentence, such payment shall be made by means of the Company withholding and/or reacquiring a number of shares of Common Stock issued upon exercise of the Options having a Fair Market Value equal to the amount of Tax-Related Items that the Company determines it or the Employer is required to account to HMRC under applicable tax laws with respect to the Options (with such obligation determined based on any applicable minimum statutory withholding rates). In the event that the Company cannot (under applicable legal, regulatory, listing or other requirements, or otherwise) satisfy such obligation in such method, the Company may satisfy its entitlement to withhold under this Option Agreement by either or a combination of the following methods: (i) by requiring the Optionee to pay such amount in cash or check; and/or (ii) by deducting such amount out of any other compensation otherwise payable to the Optionee. For these purposes, the Fair Market Value of the shares of Common Stock to be withheld or repurchased, as applicable, shall be determined on the date that Tax-Related Items are to be determined.

The Optionee shall pay to the Company or the Employer any amount of Tax-Related Items that the Company or the Employer may be required to account to HMRC with respect to the Chargeable Event that cannot be satisfied by the means previously described. If payment or withholding is not made by the Due Date, the Optionee agrees that the amount of any uncollected Tax-Related Items shall (assuming the Optionee is not a director or executive officer of the Company (within the meaning of Section 13(k) of the U.S. Securities and Exchange Act of 1934, as amended)), constitute a loan owed by the Optionee to the Employer, effective on the Due Date. The Optionee agrees that the loan will bear interest at the then-current HMRC Official Rate and it will be immediately due and repayable, and the Company and/or the Employer may recover it at any time thereafter by any of the means referred to above. If any of the foregoing methods of collection are not allowed under Applicable Laws or if the Optionee fails to comply with the Optionee's obligations in connection with the Tax-Related Items as described in this section, the Company may refuse to deliver the shares of Common Stock acquired under the Plan.

Joint Election

As a condition to exercising the Options, the Optionee agrees to accept any liability for secondary Class 1 National Insurance contributions (the "Employer's Liability") which may be payable by the Company and/or the Employer in connection with the Options and any event giving rise to Tax-Related Items. To accomplish the foregoing, the Optionee agrees to execute a joint election with the Company (the "Election"), the form of such Election being formally approved by HMRC, and any other consent or elections required to accomplish the transfer of the Employer's Liability to the Optionee. The Optionee further agrees to execute such other joint elections as may be required between the Optionee and any successor to the Company and/or the Employer. If the Optionee does not enter into the Election when the Optionee accepts the Option Agreement or when otherwise requested by the Company and/or Employer, or if the Election is revoked at any time by HMRC, the Optionee will not be entitled to exercise the Option unless the Optionee agree to pay an amount equal to the Employer's Liability to the Company, the Employer and/or any Related Company. The Optionee further agrees that the Company and/or the Employer may collect the Employer's Liability by any of the means set forth in the Withholding section of the Option Agreement.}

PEGASYSTEMS INC.
One Rogers Street
Cambridge, MA 02142-1209 USA

Notice of Grant of Award and Award Agreement

You have been granted an award of Restricted Stock Units pursuant to the terms of the Pegasystems Inc. Amended and Restated 2004 Long-Term Incentive Plan (the "Plan").

If you have not yet completed the acceptance process for any of your awards, you may complete the acceptance process by (A) reviewing your award details, (B) reviewing your award documents listed in this Section B of your Online Award Acceptance (the "Award Documents"), and (C) confirming your acceptance of your award.

By accepting this award, you agree that this award is granted and governed by the terms and conditions of the Plan, this notice, and all your Award Documents listed herein and incorporated by reference. This notice, together with your Award Documents and your electronic acceptance, collectively comprise your total agreement (the "Award Agreement").

Pegasystems Inc.

By:

Alan Trefler, Chairman and
Chief Executive Officer

Exhibit A

Notice of Grant of Award and Award Agreement for {Non-} U.S. Employees

1. ***Conversion of Restricted Stock Units to Common Stock*.** Each restricted stock unit ("RSU") granted in the Notice of Grant of Award and Award Agreement {for Non-U.S. Employees} (of which this Exhibit A is a part) (the "Award Agreement") represents the right of the person receiving such grant (the "Recipient") to receive one share of the common stock ("Common Stock") of Pegasystems Inc. (the "Company") subject to the vesting requirements listed in the Award Agreement and to the other terms and conditions of this Award Agreement. On each vesting date listed in the Award Agreement, the Company will issue such number of shares of Common Stock as are equal to the applicable number of RSUs vesting on such date, less such number of shares of Common Stock as are required to be withheld to satisfy Recipient's tax withholding obligations. The Recipient shall not be entitled to receive any dividends declared on shares of Common Stock for any periods prior to the relevant vesting date, nor shall the Recipient be entitled to any dividend equivalent payouts.

2. ***Vesting*.** RSUs will vest on the dates listed in the Award Agreement if the Recipient remains in the active employment of the Company {and/or the Recipient's employer (the "Employer")} in good standing from the date of grant through the applicable vesting date. RSUs will cease to vest immediately upon the cessation of Recipient's active employment with the Company, for any reason.

3. ***Recipient's Agreement*.** The Recipient agrees to all the terms stated in the Award Agreement (of which this Exhibit is a part), as well as to the terms of the Plan (which shall control in case of conflict with the Award Agreement), a copy of which is attached and of which the Recipient acknowledges receipt.

4. ***Withholding*.** The Recipient consents to fulfill all withholding obligations for all applicable payroll and income taxes with respect to the Award when they are due and arrange for satisfactory payment of all withholding obligations in a manner as set forth in Section 13(h) of the Plan. The Company may satisfy such withholding obligations by withholding such number of shares of Common Stock as are equal in value to the amount of the required withholding.

{4. ***Withholding*.** Regardless of any action the Company and/or the Employer take with respect to any or all income tax (including U.S. federal, state and local tax and/or non-U.S. tax), social insurance, payroll tax, payment on account or other tax-related withholding ("Tax-Related Items"), the Recipient acknowledges that the ultimate liability for all Tax-Related Items legally due by the Recipient is and remains the Recipient's responsibility and that the Company and/or the Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Award, including the grant of the RSUs, the vesting of the RSUs, the delivery of shares of Common Stock, the subsequent sale of any shares of Common Stock acquired at vesting and the receipt of any dividends or dividend equivalents; and (ii) do not commit to structure the terms of the grant or any aspect of the Award to reduce or eliminate the Recipient's liability for Tax-Related Items.

Prior to the relevant taxable event, the Recipient shall pay or make arrangements satisfactory to the Company and/or the Employer to satisfy all withholding and payment on account obligations of the Company and/or the Employer. In this regard, the Recipient authorizes the Company and/or the Employer to withhold all applicable Tax-Related Items legally payable by the Recipient from any wages or other cash compensation paid to the Recipient by the Company and/or the Employer. Alternatively, or in addition, if permissible under local law, the Recipient authorizes the Company and/or the Employer, at its discretion and pursuant to such procedures as it may specify from time to time, to satisfy the obligations with regard to all Tax-Related Items legally payable by the Recipient by one or a combination of the following: (i) withholding otherwise deliverable shares of Common Stock, provided that the Company only withholds the amount of shares of Common Stock necessary to satisfy the minimum withholding amount; (ii) arranging for the sale of shares of Common Stock otherwise deliverable to the

Recipient (on the Recipient's behalf and at the Recipient's direction pursuant to this authorization); or (iii) withholding from the proceeds of the sale of shares of Common Stock acquired upon vesting of the Award. If the obligation for Tax-Related Items is satisfied by withholding a number of shares of Common Stock as described herein, the Recipient is deemed to have been issued the full number of shares of Common Stock subject to the Award, notwithstanding that a number of the shares of Common Stock are held back solely for the purpose of paying the Tax-Related Items due as a result of any aspect of the Award. The Recipient shall pay to the Company and/or the Employer any amount of Tax-Related Items that the Company and/or the Employer may be required to withhold as a result of the Recipient's participation in the Plan that cannot be satisfied by the means previously described. The Company may refuse to deliver to the Recipient any shares of Common Stock pursuant to the Award if the Recipient fails to comply with the Recipient's obligations in connection with the Tax-Related Items as described in this section.}

5. ***Rights as Shareholders*** **.** The Recipient shall have no rights as a shareholder of the Company with respect to any of the RSUs until the issuance of shares of Common Stock at the time of vesting, and then only with respect to those shares of Common Stock issued.

6. ***Non-Transferability*** **.** The Award may not be transferred in any manner other than as permitted in Section 13(j) of the Plan {by will or by the laws of descent and distribution}. The terms of the Award shall be binding upon the executors, administrators, heirs and successors of the Recipient.

7. ***Compliance with Securities, Tax and Other Law*** **.** No shares of Common Stock may be issued if the issuance of shares would constitute a violation of any applicable federal or state securities law or any other law or valid regulation. As a condition to issuance of Common Stock, the Company may require the Recipient, or any person acquiring the right to receive the Common Stock, to make any representation or warranty that the Company deems to be necessary under any applicable securities, tax, or other law or regulation.

8. ***Adjustments upon Changes in Capitalization*** **.** In the event of any change in the shares subject to the Plan or to any Award granted under the Plan by reason of a merger, consolidation, reorganization, recapitalization, stock dividend, stock split, combination or exchange of shares of Common Stock, or other change in the structure of the Company, the number of RSUs and the number of shares of Common Stock shall be appropriately adjusted by the Company and such adjustment shall be final, binding and conclusive.

9. ***No Right to Employment*** **.** The granting of the Award does not confer upon the Recipient the right to continue in the service of the Company {and/or the Employer}, or affect in any way the right and power of the Company {and/or the Employer} to terminate the service of the Recipient at any time with or without assigning a reason therefor, to the same extent as the Company {and/or the Employer} might have done if the Award had not been granted.

10. ***No Guarantee*** **.** The Company offers no guarantee or assurance that the Company's stock has any value at the time of this grant or will have any value or liquidity at any future time.

11. ***Standards Letter {Employment Agreement}*** **.** In consideration for this Award, the Recipient reaffirms the terms of the Recipient's Standards Letter {Employment Agreement} with Pegasystems {the Employer}, including but not limited to the provisions {(if any)} related to competition and solicitation. The Recipient further agrees that to the extent the nature of the Company's {Employer's} business has evolved since the date of the Standards Letter {Employment Agreement} the covenants shall also apply to the business as evolved.

{12 . ***Acknowledgment of Nature of Plan and Award*** **.** In accepting the Award, the Recipient acknowledges that:

(a) the Plan is established voluntarily by the Company, it is discretionary in nature, and it may be modified, amended, suspended or terminated by the Company at any time, unless otherwise provided in the Plan and this Award Agreement;

(b) the Award is voluntary and occasional and does not create any contractual or other right to receive future awards of RSUs, or benefits in lieu of RSUs, even if RSUs have been awarded repeatedly in the past;

(c) all decisions with respect to future awards, if any, will be at the sole discretion of the Company;

(d) the Recipient's participation in the Plan is voluntary;

(e) the Award is an extraordinary item that does not constitute compensation for services of any kind rendered to the Company or any Related Company, and which is outside the scope of the service or employment contract, if any;

(f) the Award is not part of normal or expected compensation or salary for any purposes, including, but not limited to, calculation of any severance, resignation, termination, redundancy, end of service payments, bonuses, long-service awards, pension or retirement or welfare benefits or similar payments and in no event should be considered as compensation for, or relating in any way to, past services for the Company or any Related Company;

(g) in the event that the Recipient is not an Employee of the Company or any Related Company, the Award and the Recipient's participation in the Plan will not be interpreted to form an employment or service contract or relationship with the Company or any Related Company;

(h) the future value of the underlying shares of Common Stock is unknown and cannot be predicted with any certainty;

(i) in consideration of the Award, no claim or entitlement to compensation or damages shall arise from termination of the Award or from any diminution in value of the Award or shares of Common Stock acquired upon vesting of the Award resulting from termination of the Recipient's service by the Company or any Related Company (for any reason whatsoever and whether or not in breach of local labor laws) and the Recipient irrevocably releases the Company and any Related Company from any such claim that may arise; if, notwithstanding the foregoing, any such claim is found by a court of competent jurisdiction to have arisen, then, by signing the Award Agreement, the Recipient shall be deemed irrevocably to have waived the Recipient's entitlement to pursue such claim;

(j) in the event of termination of the Recipient's service (whether or not in breach of local labor laws), the Recipient's right to receive an Award and vest in the Award under the Plan, if any, will terminate effective as of the date that the Recipient is no longer actively employed and will not be extended by any notice period mandated under local law (*e.g.* , active employment would not include a period of "garden leave" or similar period pursuant to local law); the Administrator shall have the exclusive discretion to determine when the Recipient is no longer actively employed for purposes of the Award;

(k) the Company is not providing any tax, legal or financial advice, nor is the Company making any recommendations regarding the Recipient's participation in the Plan or the Recipient's acquisition or sale of the underlying shares of Common Stock; and

(l) the Recipient is hereby advised to consult with the Recipient's personal tax, legal and financial advisors regarding the Recipient's participation in the Plan before taking any action related to the Plan.

13. ***Data Privacy Notice and Consent*** ***. The Recipient hereby explicitly and unambiguously consents to the collection, use and transfer, in electronic or other form, of the Recipient's personal data as described in this Award Agreement and any other RSU grant materials by and among, as applicable, the Employer, the Company and its Subsidiaries for the exclusive purpose of implementing, administering and managing the Recipient's participation in the Plan.***

The Recipient understands that the Company and the Employer may hold certain personal information about the Recipient, including, but not limited to, the Recipient's name, home address and telephone number, date of birth, social insurance number or other identification number, salary, nationality, job title, any shares of stock or directorships held in the Company, details of all RSUs or any other entitlement to shares of stock awarded, granted, canceled, vested, exercised, unvested or outstanding in the Recipient's favor, for the exclusive purpose of implementing, administering and managing the Plan ("Data").

The Recipient understands that Data will be transferred to a third party stock plan service provider(s) as may be selected by the Company, which is assisting the Company with the implementation, administration and management of the Plan. The Recipient understands the recipients of the Data may be located in the Recipient's country, in the United States or elsewhere, and that the data recipients' country may have different data privacy laws and protections than the Recipient's country. The Recipient understands that the Recipient may request a list with the names and addresses of any potential recipients of the Data by contacting the Recipient's local human resources representative. The Recipient authorizes the Company and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Plan to receive, possess, use, retain and transfer the Data, in electronic or other form, for the sole purpose of implementing, administering and managing the Recipient's participation in the Plan. The Recipient understands that Data will be held only as long as is necessary to implement, administer and manage the Recipient's participation in the Plan. The Recipient understands that the Recipient may, at any time, view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case without cost, by contacting in writing the Recipient's local human resources representative. The Recipient understands, however, that refusing or withdrawing the Recipient's consent may affect the Recipient's ability to participate in the Plan. For more information on the consequences of the Recipient's refusal to consent or withdrawal of consent, the Recipient understands that the Recipient may contact the Recipient's local human resources representative.}

12. {14} ***Amendment and Termination of Award*** **.** The Company may amend, modify or terminate any outstanding Award, provided that the Recipient's consent to such action shall be required unless it occurs pursuant to a Sale of the Company or the Committee determines that the action would not materially and adversely affect the Recipient.

{15. ***Language*** . If the Recipient has received this Award Agreement or any other document related to the Plan translated into a language other than English and if the translated version is different from the English version, the English version will control.}

16. ***Electronic Delivery*** **.** The Company may, in its sole discretion, decide to deliver any documents related to the Award or future awards made under the Plan by electronic means or request that the Recipient consent to participate in the Plan by electronic means. The Recipient hereby consents to receive such documents by electronic delivery and agrees to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company.}

13. {17} ***Governing Law and Venue*** **.** The Award Agreement shall be governed by and interpreted in accordance with the laws of The Commonwealth of Massachusetts, without regard to any applicable conflicts of law provisions thereof.

For purposes of litigating any dispute that arises directly or indirectly from the relationship of the parties evidenced by this Award or this Award Agreement, the parties hereby submit to and consent to the exclusive jurisdiction of The Commonwealth of Massachusetts and agree that such litigation shall be conducted only in the courts of Middlesex County, Massachusetts, or the federal courts for the United States for the district of Massachusetts, and no other courts, where this Award of RSUs is made and/or to be performed.

14. {18} ***Severability*** **.** In the event any one or more of the provisions of the Award Agreement shall for any reason be held to be invalid, illegal or unenforceable, the remaining provisions of the Award Agreement shall be unimpaired, and the invalid, illegal or unenforceable provision shall be replaced by a mutually acceptable provision, which being valid, legal and enforceable, comes closest to the intention of the parties underlying the invalid, illegal or unenforceable provision.

15. {19} ***Definitions*** **.** All capitalized terms used herein and not otherwise defined shall have the meanings assigned to such terms in the Plan.

{20. ***Exhibit B*** . Notwithstanding any provision herein, the Recipient’s participation in the Plan shall be subject to any special terms and conditions as set forth in Exhibit B for the Recipient’s country of residence, if any. The Exhibit B constitutes part of this Award Agreement.}

{Exhibit B

To Notice of Grant of Award and Award Agreement for Non-U.S. Employees

This Exhibit B includes additional terms and conditions that govern the RSUs granted to the Recipient if the Recipient resides in the countries contained herein. Capitalized terms used but not defined herein shall have the meanings ascribed to them in the Notice of Grant of Award and Award Agreement for Non-U.S. Employees (of which this Exhibit B is a part) or the Plan.

This Exhibit B also includes information regarding exchange controls and certain other issues of which the Recipient should be aware with respect to the Recipient's participation in the Plan. The information is based on the securities, exchange control and other laws in effect in the respective countries as of December 2009, unless otherwise notated. Such laws are often complex and change frequently. As a result, the Company strongly recommends that the Recipient not rely on the information noted herein as the only source of information relating to the consequences of the Recipient's participation in the Plan because the information may be out of date at the time the Recipient acquires shares of Common Stock or sells shares of Common Stock the Recipient acquires under the Plan.

In addition, the information is general in nature and may not apply to the Recipient's particular situation, and the Company is not in a position to assure the Recipient of any particular result. **Accordingly, the Recipient is strongly advised to seek appropriate professional advice as to how the relevant laws in the Recipient's country apply to the Recipient's specific situation.**

If the Recipient is a citizen or resident of another country, or is considered a resident of another country for local law purposes, the information contained in this Exhibit B may not be applicable to the Recipient.

Australia

Withholding

This provision supplements Section 8 (Withholding):

Prior to the relevant taxable event, the Recipient will provide the Company with their Australian Tax File Number (TFN) or Australian Business Number (ABN). Failure to do so will result in the requirement for the Company to withhold Australian tax at the rate of 46.5%.

Reform to the taxation of Employee share schemes

With effect from 1 July 2009, RSUs shall be taxed up front, unless there is a "real risk of forfeiture". Where there is a "real risk of forfeiture," RSUs shall generally be taxed at the earliest of:

- Vesting of the award (when it is no longer subject to forfeiture)
- Cessation of employment
- 7 years after grant

Canada

Vesting of RSUs

Income tax arises on the fair market value of the shares on vesting. No deferral election is possible for RSUs.

For further clarity, any shares issued of the Common Stock of the Company under an RSU shall be issued solely in the name of the Recipient and not in the name of any other person, including a person with whom the Recipient is dealing at non-arm's length.

The Recipient shall receive shares of the Common Stock of the Company and under no circumstances shall the Administrator elect to have the Recipient receive cash (or any other security) in lieu of the Common Stock of the Company. To this effect, section 13(e) of the Plan (and any other similar section) do not apply in Canada.

Furthermore, at all times the Recipient should hold less than 10% of the shares of the Common Stock of the Company or any Related Company.

Withholding

The paragraphs below replace Section 4 of Exhibit A to the Award Agreement:

Generally, there are Canadian requirements to withhold source deductions on the vesting of RSUs. Although RSU benefits are considered to be remuneration subject to source deductions, Canada recognizes that requiring additional withholding from cash payments, such as normal salary, as a result of a stock benefit can create hardship for the employee. This hardship will be created when either the benefit is very large in proportion to the employee's normal salary or the award vests later in the year. As a result, employers may make withholdings from employees' cash remuneration to the extent possible, without imposing actual hardship. Where the non-cash benefit is the only form of income received from that employer, the employer will not be required to withhold tax on the amount of such benefits.

RSU benefits are also subject to social security taxes in Canada. These benefits are subject to Canada Pension Plan withholdings but not Employment Insurance withholdings. The province of Ontario will also levy payroll taxes to fund the Canadian health service.

The employment benefit will be reported on the Recipient T4 for the year in which the RSUs vest. The Recipient must report these amounts on his or her individual income tax return for the same year.

Acknowledgement of nature of plan

The paragraphs below replace Section 11 of Exhibit A to the Award Agreement [new or amended paragraphs are shown in italics at g and i]:

In accepting the RSU Award, the Recipient acknowledges that:

(a) the Plan is established voluntarily by the Company, it is discretionary in nature, and it may be modified, amended, suspended or terminated by the Company at any time, unless otherwise provided in the Plan and this Agreement;

(b) the Award is voluntary and occasional and does not create any contractual or other right to receive future grants of RSU Awards, or benefits in lieu of RSUs, even if RSUs have been granted repeatedly in the past;

(c) all decisions with respect to future RSUs, if any, will be at the sole discretion of the Company;

(d) the Recipient's participation in the Plan is voluntary;

(e) the Award is an extraordinary item that does not constitute compensation for services of any kind rendered to the Company or any Related Company, and which is outside the scope of the employment contract, if any;

(f) the Award is not part of normal or expected compensation or salary for any purposes, including, but not limited to, calculation of any severance, resignation, termination, redundancy, end of service payments, bonuses, long-service awards, pension or retirement or welfare benefits or similar payments and in no event should be considered as compensation for, or relating in any way to, past services for the Company or any Related Company;

(g) *the Company has decided to grant Awards under the Plan to individuals who are Employees of the Company or any Related Company; and under no circumstances, the Employee should be considered a Consultant or a "non-employee Officer or non-employee Director" of the Company or any Related Company;*

(h) the future value of the underlying shares of Common Stock is unknown and cannot be predicted with any certainty;

(i) *at all times the Recipient should hold less than 10% of the shares of the Common Stock of the Company or any Related Company;*

(j) in consideration of the Award, no claim or entitlement to compensation or damages shall arise from termination of the Award or from any diminution in value of the Award or shares of Common Stock acquired resulting from termination of the Recipient's service by the Company or any Related Company (for any reason whatsoever and whether or not in breach of local labor laws) and the Recipient irrevocable releases the Company and any Related Company from any such claim that may arise; if, notwithstanding the foregoing, any such claim is found by a court of competent jurisdiction to have arisen, then, by signing the Award Agreement, the Recipient shall be deemed irrevocably to have waived the Recipient's entitlement to pursue such claim;

(k) in the event of termination of the Recipient's service (whether or not in breach of local labor laws), the Recipient's right to receive an Award and vest in the Award under the Plan, if any, will terminate effective as of the date that the Recipient is no longer actively employed and will not be extended by any notice period mandated under local law (e.g., active employment would not include a period of "garden leave" or similar period pursuant to local law); the Administrator shall have the exclusive discretion to determine when the Recipient is no longer actively employed for purposes of the Award;

(l) the Company is not providing any tax, legal or financial advice, nor is the Company making any recommendations regarding the Recipient's participation in the Plan or the Recipient's acquisition or sale of the underlying shares of Common Stock; and

(m) the Recipient is hereby advised to consult with their personal tax, legal and financial advisors regarding the employee's participation in the Plan before taking any action related to the Plan.

<u>France</u>

This information is correct as of February 2016.

Language Consent

By accepting the Award, the Recipient confirms having read and understood the documents relating to this grant (the Plan, the French RSU Plan and this Agreement) which were provided in English language. The Participant accepts the terms of those documents accordingly.

En acceptant l'attribution conditionnelle des actions, vous confirmez ainsi avoir lu et compris les documents relatifs à cette attribution (le Plan, le French RSU Plan et le présent Contrat) qui ont été communiqués en langue anglaise. Vous acceptez ainsi les termes en connaissance de cause.

Sale of the shares

The Shares held by a French Participant pursuant to a RSU shall not be sold by the latter during certain Closed Periods as provided for by Section L. 225-197-1 of the French Commercial Code, as interpreted by the French administrative guidelines.

The term " Closed Period " shall mean a closed period as set forth in Section L. 225-197-1 of the French Commercial Code, as amended, which is as follows:

- ten (10) or more quotation days preceding and 3 quotation days following the disclosure to the public of the consolidated financial statements or the annual statements of the Company; or
- any period during which the corporate management of the Company (*i.e.* , those involved in the governance of the Company, such as the Board, Committee, supervisory directorate, etc.) possess confidential information which could, if disclosed to the public, significantly impact the trading price of the Common Stock, until ten (10) quotation days after the day such information is disclosed to the public.

French Tax Regime

The Recipient is solely responsible for reporting the gain from the sale of Shares pursuant to the vesting of an RSU in his annual personal income tax return and for paying the related income tax.

The gain is subject to income tax with progressive tax rates. The taxable gain may be reduced by a tax allowance depending on the number of years between the Vesting Date and the date when the Shares are sold:

- 50% between 2 and under 8 years,
- 65 % as from 8 years.

The gain is subject to social taxes at the current rate of 15.5 % on 100% of the gain (the social tax at 5.1% is tax deductible from the taxable income of the following year).

Exchange Control Information

If the Recipient retains Shares outside of France or maintains a foreign bank account, the Recipient is required to report such to the French tax authorities when filing his or her annual tax return.

Germany

Exchange Control Information

Cross-border payments in excess of €12,500 must be reported monthly to the German Federal Bank. If the Recipient uses a German bank to transfer a cross-border payment in excess of €12,500 in connection with the sale of shares of Common Stock acquired under the Plan, the bank will make the report for the Recipient. In addition, the Recipient must report any receivables or payables or debts in foreign currency exceeding €5,000,000 on a monthly basis.

Hong Kong

Obligation to report the RSUs to the tax authority

The Recipient is obliged to declare the gains realized in relation to RSUs to the Hong Kong Inland Revenue Department ("IRD") in their Individual Tax Return for the relevant year of assessment. If the Recipient is eligible to lodge any offshore non-taxable claim on RSU gains, the Recipient is required to lodge such claim in their Individual Tax Return. Therefore, it is the Recipient's responsibility to prove to the satisfaction of the IRD on their non-taxable claim lodged with documentary evidence in support.

The IRD has issued the revised Departmental Interpretation and Practice Note ("DIPN") No. 38 regarding the employee share-based benefits in March 2008 which has expressed the IRD's view on the timing and taxability of the share award benefits. This sets a general guideline for taxpayers in ascertaining the tax treatment of their share award benefits. DIPN is not legally binding and not a rule of law and the revised DIPN No. 38 may not cover every type of share award benefit. Participants should take individual tax advice on their share award benefits.

Reporting requirement

Upon the commencement of Hong Kong employment/assignment of the Recipient, the employer (the "Employer") is obliged to file the Commencement Notice (Form IR 56E) for reporting the term of employment and RSU details to the IRD within 3 months from the date of commencement of employment. Annual Employer's Return (Form IR 56B) is required to be filed to the IRD by end of April to report the remuneration paid/accrued to the Recipient, including the RSU gains, for each year ended 31 March. Further to the filing of the said Forms, the IRD will normally create a tax file for the Recipient and issue the annual Individual Tax Return to the Recipient (usually in May) to ascertain their tax position. If there is no Individual Tax Return issued by the IRD to the Recipient for reporting the RSU gain in the year of award or of vesting, as appropriate, the Recipient is obliged to voluntarily inform the IRD on this tax chargeability arising from the exercise as well as other Hong Kong taxable employment income within four months after the end of the basis period during which the year of assessment is concerned (i.e. the informing deadline is 31 July given the fiscal year ends on 31 March).

Leaving Hong Kong

If the RSU benefit is taxable in Hong Kong even if it is received after the Recipient permanently departs from Hong Kong, the Employer should report the RSU gains by filing the Departure Notice (Form IR 56G) and provide a copy for the Recipient. The Recipient also needs to discharge their voluntary informing chargeability obligation as mentioned above not later than 4 months after the end of the year of assessment in which the RSU gains are derived. Even if the Employer fails to submit the Departure Notice to report the taxable RSU gain, the Recipient still needs to comply with his or her own reporting obligation.

Withholding

The paragraphs below supplement Section 4 (Withholding) of Exhibit A to the RSU Award Agreement.

The Employer is not required to withhold the Recipient's share gains unless the Recipient permanently departs from Hong Kong. The Employer is statutorily required to withhold money payment from the Recipient for a period of one month after the Departure Notification (Form IR 56G) was filed to the IRD, unless consent (by the issue of a Letter of Release to the employer with a copy to the Recipient after they have settled all their tax liabilities) is given by the IRD. If the Recipient derives share gains and there is money paid to them by the Employer, the Employer has the withholding obligation.

To facilitate finalizing the salary-related tax liabilities prior to permanent departure, the Recipient is allowed, as a concession, to elect to have the tax liabilities finalized on the basis of a deemed vesting of the share awards. The Recipient may elect to be assessed on either (i) the deemed value on a day within 7 days before the submission of the Recipient's tax return for the final year of assessment in which the Recipient departs or (ii) the deemed value on the date of departure if the election is made within 3 months from the date of permanent departure from Hong Kong.

Once an election is accepted by the IRD and the assessment is made accordingly, the election cannot be withdrawn. A subsequent request to revise the assessment will not be entertained unless the assessment is objected to within the statutory time allowed for objection.

If the actual share award gain is higher than the amount assessed under deemed vesting, the IRD has indicated in DIPN No. 38 that it will not seek to increase the assessment for the sole reason that the value upon vesting has increased.

India

No country specific terms and conditions apply.

Italy

This information is correct as of August 2011.

Purpose

The Plan is discretionary in nature and is offered only to individual employees and/or specific categories of employees.

Nature of Plan

This provision supplements Section 11 (Acknowledgement of Nature of Plan and Award) of Exhibit A to the Award Agreement:

The Recipient understands that the Company has unilaterally, gratuitously and discretionally decided to grant RSUs under the Plan to individuals who may be employees of the Company or its Subsidiaries throughout the world. The decision is a limited decision that is entered into upon the express assumption and condition that any grant will not bind the Company or any Related Company. Consequently, the Recipient understands that the RSU is granted on the assumption and condition that the RSU and any shares of Common Stock acquired upon vesting of the RSU are not a part of any employment contract (either with the Company or any Related Company) and shall not be considered a mandatory benefit, salary for any purposes (including severance compensation) or any other right whatsoever. Further, the Recipient understands that the Recipient will not be entitled to continue vesting in any RSU once the Recipient's service with the Company or any Related Company ceases. In addition, the Recipient understands that this award would not be made to the Recipient but for the assumptions and conditions referred to above; thus, the Recipient acknowledges and freely accepts that should any or all of the assumptions be mistaken or should any of the conditions not be met for any reason, then any grant of or right to the RSU shall be null and void.

It is a condition of participation in the Plan that the Recipient expressly agrees to the terms of the Plan, including the provisions in this Exhibit B.

RSUs Payable Only in Shares of Common Stock

Notwithstanding any discretion in the Plan or anything contrary in the Award Agreement, if the Recipient is resident in Italy, the award of RSUs does not provide any right for the Recipient to receive a cash payment and the RSUs are payable in shares of Common Stock only.

Securities Reporting

Individuals in Italy are required to report assets held abroad on their annual tax returns (Form RW) if the value of such assets exceeds 10,000 Euros at the end of the calendar year. The Italian tax authorities have taken the position that vested RSUs in a foreign company are considered 'assets held abroad'.

Employees must therefore also report vested RSUs in their annual tax returns (Form Unico, Schedule RW) if the threshold is exceeded.

In addition, employees must report in Section III of Form RW the transfer of money exceeding 10,000 Euros:

- From Italy to another jurisdiction;
- From another jurisdiction to Italy;
- Between non-Italian jurisdictions, if the transfer relates to investments held overseas.

This also applies to transfers to countries that have adopted the Euro.

Japan

This information is correct as of August 2009.

Exchange Control Information

Although there are no restrictions on the transfer of funds outside Japan, certain reporting obligations to the tax authorities or the Ministry of Finance may be required.

Recipients must notify the Ministry of Finance of share purchases in excess of 30,000,000 Yen. An additional notification is required for purchase of shares with a value in excess of 100,000,000 Yen.

Japanese banks including Japanese branches of foreign banks have to report transfers of funds of more than 1,000,000 Yen in and out of Japan to the government automatically. Sometimes the tax authorities check individual tax returns to these records.

Netherlands

By participating in the Plan the Recipient acknowledges that his or her Award can cease to vest on termination of employment under the terms of the Plan. It is a condition of participation in the Plan that the Recipient agrees to these terms.

Poland

Securities reporting

If the Recipient holds more than €10,000 of foreign securities (including following the grant of Awards) the Recipient must declare details of the shares (whether or not the shares have vested) to the National Bank of Poland. The form of declaration must be submitted within 30 days of the end of the year.

Russia

This information is correct as of August 2011.

RSUs Payable Only in Shares of Common Stock

Notwithstanding any discretion in the Plan or anything contrary in the Award Agreement, if the Recipient is resident in Russia, the award of RSUs does not provide any right for the Recipient to receive a cash payment and the RSUs are payable in shares of Common Stock only.

Exchange Control Information

The Recipient has a reporting obligation to inform the Russian tax authorities of any bank accounts opened outside of Russia (This applies to Russian national employees only).

Singapore

Leaving Singapore

With effect from January 1, 2003, Recipients who are foreign citizens or are Singapore Permanent residents leaving Singapore permanently are taxed on a “deemed exercise” basis for any options or units or shares granted or issued during Singapore employment. This would also include any unvested or restricted options or units or shares granted whilst exercising employment in Singapore.

As per the deemed exercise rule, all Awards, units, or stock which have been granted during Singapore employment are deemed to have been exercised, irrespective whether the Awards have vested or not. The taxable value is the fair market value (which would be the fair market value one month prior to the date of departure).

Director withholding

Independent Directors who are Non Resident in Singapore and have received Awards by virtue of their being on the Board of the Singapore Company will be subject to tax in Singapore and liable for tax withholding.

Spain

This provision supplements Section 11 (Acknowledgment of Nature of Plan and Award) of Exhibit A to the Award Agreement:

In accepting the RSUs, the Recipient consents to participation in the Plan and acknowledges that the Recipient has received a copy of the Plan.

The Recipient understands that the Company has unilaterally, gratuitously and discretionally decided to grant RSUs under the Plan to individuals who may be employees of the Company or its Subsidiaries throughout the world. The decision is a limited decision that is entered into upon the express assumption and condition that any grant will not bind the Company or any Related Company. Consequently, the Recipient understands that the RSUs are granted on the assumption and condition that the RSUs and any shares of Common Stock acquired upon vesting of the RSUs are not a part of any employment contract (either with the Company or any Related Company) and shall not be considered a mandatory benefit, salary for any purposes (including severance compensation) or any other right whatsoever. Further, the Recipient understands that the Recipient will not be entitled to continue vesting in any RSUs once the Recipient's employment with the Company or any Related Company ceases. In addition, the Recipient understands that this grant would not be made to the Recipient but for the assumptions and conditions referred to above; thus, the Recipient acknowledges and freely accepts that should any or all of the assumptions be mistaken or should any of the conditions not be met for any reason, then any grant of or right to the RSUs shall be null and void.

Exchange Control Information

The Recipient must declare the acquisition of shares of Common Stock to the Dirección General de Política Comercial e Inversiones Exteriores (the DGPCIE) of the Ministerio de Economía for statistical purposes.

As the shares are listed on a stock exchange the acquisition will be filled in a form D-5B. The form will be declared to the Registro de Inversiones of the Dirección General de Política Comercial e Inversiones Exteriores of the Ministerio de Industria, Turismo y Comercio.

The Recipient must also declare ownership of any shares of Common Stock with the Directorate of Foreign Transactions each January whilst the shares of Common Stock are owned in the following cases:

- The shares of the company are listed on the stock exchange.
- The shareholding in the company has to be at least 10% or more.
- The investment is more than 1,502,530.26 Euros.

Foreign currency payments (i.e., dividends or sale proceeds) have to be declared when the amount exceeds 6,010.12 Euros on form B3.

The information provided to the financial institution is the following:

- The Recipient's name, address, and fiscal identification number
- Non resident's name, address and fiscal identification number.
- The amount of the payment, payment method, currency of origin and value in euros.
- The reasons for the payment.

A payment is made by bank transfer the following information should be provided to the financial institution when the amount exceeds 50,000 Euros:

- Resident name, address and fiscal identification number.
- Non resident name, address and fiscal identification number.

- The amount, currency of origin and value of payment in euros.
- The reason for the payment.

<u>Sweden</u>

No country specific terms and conditions apply.

<u>United Kingdom</u>

RSUs Payable Only in Shares of Common Stock

Notwithstanding any discretion in the Plan or anything to the contrary in the Award Agreement, if the Recipient is resident and ordinarily resident in the United Kingdom, the grant of RSUs does not provide any right for the Recipient to receive a cash payment and the RSUs are payable in shares of Common Stock only.

Withholding

The paragraphs below replace Section 4 (Withholding) of Exhibit A to the Award Agreement:

Regardless of any action the Company or the Recipient's employer (the "Employer") takes with respect to any or all income tax, primary and secondary Class 1 National Insurance contributions, payroll tax or other tax-related withholding attributable to or payable in connection with or pursuant to the grant, vesting, release or assignment of any RSUs subject to the Award ("Tax-Related Items"), the Recipient acknowledges that the ultimate liability for all Tax-Related Items legally due by the Recipient is and remains the Recipient's responsibility. Furthermore, the Company and/or the Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the RSUs, including the grant of the RSUs, the vesting of the RSUs, the delivery of shares of Common Stock, the subsequent sale of any shares of Common Stock acquired under the Plan and the receipt of any dividends or dividend equivalents; and (ii) do not commit to structure the terms of the grant or any aspect of the RSUs to reduce or eliminate the Recipient's liability to Tax-Related Items.

As a condition of any RSUs subject to the Award vesting and the issuance of shares of Common Stock in payment of the RSUs, the Company and/or the Employer shall be entitled to withhold, and the Recipient agrees to pay, or make adequate arrangements satisfactory to the Company and/or the Employer to satisfy, all obligations of the Company and/or the Employer to account to HM Revenue & Customs ("HMRC") for any Tax-Related Items by the Due Date, which is 90 days, or such other period as required under U.K. law, after the event giving rise to the Tax-Related Items (the "Chargeable Event"). In this regard, except as provided in the next sentence, such payment shall be made by means of the Company withholding and/or reacquiring a number of shares of Common Stock issued in payment of (or otherwise issuable in payment of, as the case may be) the RSUs having a Fair Market Value equal to the amount of Tax-Related Items that the Company determines it or the Employer is required to account to HMRC under applicable tax laws with respect to the RSUs (with such withholding obligation determined based on any applicable minimum statutory withholding rates). In the event that the Company cannot (under applicable legal, regulatory, listing or other requirements, or otherwise) satisfy such obligation in such method, the Company and/or the Company may satisfy its entitlement to withhold under this Award Agreement by either or a combination of the following methods: (i) by requiring the Recipient to pay such amount in cash or check; and/or (ii) by deducting such amount out of any other compensation otherwise payable to the Recipient. For these purposes, the Fair Market Value of the shares of Common Stock to be withheld or repurchased, as applicable, shall be determined on the date that Tax-Related Items are to be determined.

The Recipient shall pay to the Company or the Employer any amount of Tax-Related Items that the Company or the Employer may be required to account to HMRC with respect to the Chargeable Event that cannot be satisfied by the means previously described. If payment or withholding is not made by the Due Date, the Recipient agrees that the amount of any uncollected Tax-Related Items shall (assuming the Recipient is not a director or executive officer of the Company (within the meaning of Section 13(k) of the U.S. Securities and Exchange Act of 1934, as amended)), constitute a loan owed by the Recipient to the Employer, effective on the Due Date. The Recipient agrees that the loan will bear interest at the then-current HMRC Official Rate and it will be immediately due and repayable, and the Company and/or the Employer may recover it at any time thereafter by any of the means referred to above. If any of the foregoing methods of collection are not allowed under Applicable Laws or if the Recipient fails to comply with the Recipient's obligations in connection with the Tax-Related Items as described in this section, the Company may refuse to deliver the shares of Common Stock acquired under the Plan.

Joint Election

As a condition of the Recipient's participation in the Plan and the vesting of the RSUs, the Recipient agrees to accept any liability for secondary Class 1 National Insurance contributions (the "Employer's Liability") which may be payable by the Company and/or the Employer in connection with the RSUs and any event giving rise to Tax-Related Items. To accomplish the foregoing, the Recipient agrees to execute a joint election with the Company (the "Election"), the form of such Election being formally approved by HMRC, and any other consent or elections required to accomplish the transfer of the Employer's Liability to the Recipient. The Recipient further agrees to execute such other joint elections as may be required between the Recipient and any successor to the Company and/or the Employer. If the Recipient does not enter into the Election when the Recipient accepts the Award Agreement or when otherwise requested by the Company and/or Employer, or if the Election is revoked at any time by HMRC, the RSUs will cease vesting and become null and void, and no shares of Common Stock will be acquired under the Plan, unless the Recipient agrees to pay an amount equal to the Employer's Liability to the Company, the Employer and/or any Related Company. The Recipient further agrees that the Company and/or the Employer may collect the Employer's Liability by any of the means set forth in the Withholding section of the Award Agreement.}

Exhibit 21.1

SUBSIDIARIES OF PEGASYSTEMS INC.

Name of Subsidiary	State or Jurisdiction of Entity
Antenna Canada, Inc.	Canada
Antenna Software India Private Ltd.	India
Antenna Software, LLC	Delaware
Antenna Volantis Mobile Systems Private Ltd.	India
Antenna Volantis, Inc.	Oregon
OpenSpan Software Limited	United Kingdom
Pegasystems AG	Switzerland
Pegasystems Bilgi Teknolojileri Anonim Şirketi	Turkey
Pegasystems BV	Netherlands
Pegasystems Canada Inc.	Canada
Pegasystems France, S.A.R.L.	France
Pegasystems GmbH	Germany
Pegasystems Investment Inc.	Massachusetts
Pega Japan K.K.	Japan
Pegasystems Limited	United Kingdom
Pegasystems Mauritius	Mauritius
Pegasystems New Zealand Limited	New Zealand
Pegasystems PTE Limited	Singapore
Pegasystems PTY Limited	Australia
Pegasystems Rus LLC	Russia
PEGASYSTEMS Software (Beijing) Co., Limited	China
Pegasystems Software Ltd.	United Kingdom
Pegasystems sp. z o.o.	Poland
Pegasystems Spain, S.L.	Spain
Pegasystems Thailand Limited	Thailand
Pegasystems Worldwide Inc.	Massachusetts
Pegasystems Worldwide India Private Limited	India
RPA Antenna Inc.	New Jersey

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statements Nos. 333-09305, 333-53746, 333-89707, 333-104788, 333-116660, 333-135596, 333-166287, 333-166544, 333-176810, and 333-213953 on Form S-8 of our report dated February 24, 2017, relating to the financial statements and financial statement schedules 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, 2016.

/S/ DELOITTE & TOUCHE LLP

Boston, Massachusetts
February 24, 2017

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 24, 2017

/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 24, 2017

/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, 2016 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.

/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)

Dated: February 24, 2017