

EPAM Systems, Inc.
Form 10-K
February 26, 2019

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, 2018

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

Commission file number: 001-35418

EPAM SYSTEMS, INC.

(Exact name of registrant as specified in its charter)

Delaware 223536104

(State or other jurisdiction of (I.R.S. Employer
incorporation or organization) Identification No.)

EPAM Systems, Inc.

41 University Drive,

Suite 202

Newtown, Pennsylvania 18940

(Address of principal executive offices, including zip code)

267-759-9000

(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
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Common Stock, par value \$0.001 per share	New York Stock Exchange
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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 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 (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

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

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

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

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes
No

As of June 30, 2018 the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was approximately \$6,392 million based on the closing sale price as reported on the New York Stock Exchange. Solely for purposes of the foregoing calculation, "affiliates" are deemed to consist of each officer and director of the registrant, and each person known to the registrant to own 10% or more of the outstanding voting power of the registrant.

The number of shares of common stock, \$0.001 par value, of the registrant outstanding as of February 12, 2019 was 54,177,444 shares.

DOCUMENTS INCORPORATED BY REFERENCE

The registrant intends to file a definitive Proxy Statement for its 2019 annual meeting of stockholders pursuant to Regulation 14A within 120 days of the end of the registrant's fiscal year ended December 31, 2018. Portions of the registrant's Proxy Statement are incorporated by reference into Part III of this Form 10-K. With the exception of the portions of the Proxy Statement expressly incorporated by reference, such document shall not be deemed filed with this Form 10-K.

EPAM SYSTEMS, INC.
 FORM 10-K
 FOR THE YEAR ENDED DECEMBER 31, 2018
 TABLE OF CONTENTS

	Page
<u>PART I</u>	<u>2</u>
<u>Item 1. Business</u>	<u>2</u>
<u>Item 1A. Risk Factors</u>	<u>9</u>
<u>Item 1B. Unresolved Staff Comments</u>	<u>21</u>
<u>Item 2. Properties</u>	<u>21</u>
<u>Item 3. Legal Proceedings</u>	<u>21</u>
<u>Item 4. Mine Safety Disclosures</u>	<u>21</u>
<u>PART II</u>	<u>22</u>
<u>Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities</u>	<u>22</u>
<u>Item 6. Selected Financial Data</u>	<u>25</u>
<u>Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations</u>	<u>26</u>
<u>Item 7A. Quantitative and Qualitative Disclosures About Market Risk</u>	<u>46</u>
<u>Item 8. Financial Statements and Supplementary Data</u>	<u>47</u>
<u>Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure</u>	<u>47</u>
<u>Item 9A. Controls and Procedures</u>	<u>47</u>
<u>Item 9B. Other Information</u>	<u>48</u>
<u>PART III</u>	<u>49</u>
<u>Item 10. Directors, Executive Officers and Corporate Governance</u>	<u>49</u>
<u>Item 11. Executive Compensation</u>	<u>49</u>
<u>Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters</u>	<u>49</u>
<u>Item 13. Certain Relationships and Related Transactions, and Director Independence</u>	<u>49</u>
<u>Item 14. Principal Accountant Fees and Services</u>	<u>49</u>
<u>PART IV</u>	<u>50</u>
<u>Item 15. Exhibits, Financial Statement Schedules</u>	<u>50</u>
<u>SIGNATURES</u>	<u>53</u>
<u>INDEX TO CONSOLIDATED FINANCIAL STATEMENTS</u>	<u>F-1</u>

In this annual report, "EPAM," "EPAM Systems, Inc.," the "Company," "we," "us" and "our" refer to EPAM Systems, Inc. and its consolidated subsidiaries.

"EPAM" is a trademark of EPAM Systems, Inc. "ISO 9001:2015" and "ISO 27001:2013" are trademarks of the International Organization for Standardization. "ISAE" is a trademark of the International Federation of Accountants. All other trademarks and servicemarks used herein are the property of their respective owners.

Unless otherwise indicated, information contained in this annual report concerning our industry and the markets in which we operate, including our general expectations and market position, market opportunity and market share, is based on information from various sources (including industry publications, surveys and forecasts and our internal research), on assumptions that we have made, which we believe are reasonable, based on such data and other similar sources and on our knowledge of the markets for our services. The projections, assumptions and estimates of our future performance and the future performance of the industry in which we operate, are subject to a high degree of uncertainty and risk due to a variety of factors, including those described under "Item 1A. Risk Factors" and elsewhere in this annual report. These and other factors could cause results to differ materially from those expressed in the estimates included in this annual report.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This annual report on Form 10-K contains estimates and forward-looking statements, principally in “Item 1. Business,” “Item 1A. Risk Factors” and “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations.” Our estimates and forward-looking statements are mainly based on our current expectations and estimates of future events and trends, which affect or may affect our businesses and operations. Although we believe that these estimates and forward-looking statements are based upon reasonable assumptions, they are subject to several risks and uncertainties and are made in light of information currently available to us. Important factors, in addition to the factors described in this annual report, may materially and adversely affect our results as indicated in forward-looking statements. You should read this annual report and the documents that we have filed as exhibits hereto completely and with the understanding that our actual future results may be materially different from what we expect.

The words “may,” “will,” “should,” “could,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “predict,” “intend,” “potentially,” “continue” or the negative of these terms or other comparable terminology and similar words are intended to identify estimates and forward-looking statements. Estimates and forward-looking statements speak only as of the date they were made. Estimates and forward-looking statements involve risks and uncertainties and are not guarantees of future performance. As a result of the risks and uncertainties described above, the estimates and forward-looking statements discussed in this annual report might not occur and our future results, level of activity, performance or achievements may differ materially from those expressed in these forward-looking statements due to, including, but not limited to, the factors mentioned above, and the differences may be material and adverse. Because of these uncertainties, you should not place undue reliance on these forward-looking statements. We undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise, except as may be required under applicable law.

GEOGRAPHICAL REFERENCES

We use the collective terms “CIS” and “APAC” to describe a portion of our geographic operations and assets. In our operations, CIS refers to Armenia, Belarus, Kazakhstan, Russia and Ukraine. APAC, which stands for Asia Pacific, includes all of Asia (including India) and Australia.

PART I

Item 1. Business

Company Background

EPAM is a leading global provider of software product development and digital platform engineering services to many Fortune 500 and 1000 customers located around the world, primarily in North America, Europe, Asia and Australia. We focus on helping our customers thrive in a market constantly challenged by the pressures of digitization through our innovative and scalable software solutions, high quality business consulting and experience design, and a continually evolving mix of advanced capabilities, blending our engineering and technology capabilities with business and experience consulting to deliver true end-to-end value. We focus on building long-term partnerships with customers, enabling them to reimagine their businesses through a digital lens. Our industry expertise includes financial services, travel and consumer, software and hi-tech, business information and media, life sciences and healthcare, as well as other industries in which we are continuously growing.

Our historical core competency, software development and product engineering services, and our work with global enterprise leaders in enterprise software platforms and emerging technology companies, created our foundation for the evolution of our other offerings, which include advanced technology software solutions, intelligent enterprise services and digital engagement. Our strategic acquisitions have expanded our service capabilities such as digital strategy and design, consulting and test automation. We expect our strategic acquisitions will continue to enable us to offer a broader range of services to our customers from a wide variety of locations.

Business Strategy

Our service offerings have been evolving to provide more customized and integrated solutions to our customers where we combine best-in-class software engineering with customer experience design, business consulting and technology innovation services. We are continually expanding our service capabilities, moving beyond traditional services into business consulting, design and physical product development and areas such as artificial intelligence, robotics and virtual reality.

EPAM's key service offerings and solutions include the following practice areas:

Engineering

Our engineering foundation underpins how we architect, build and scale next-generation software solutions and agile delivery teams. Our engineering expertise allows us to build enterprise technologies that improve business processes, offer smarter analytics and result in greater operational excellence through requirements analysis and platform selection, deep and complex customization, cross-platform migration, implementation and integration.

We use our experience, custom tools and specialized knowledge to integrate our customers' chosen application platforms with their internal systems and processes and to create custom solutions filling the gaps in their platforms' functionality in order to address the needs of the customers' users and customers. We address our customers' increased need for tighter enterprise integration between software development, testing and maintenance with private, public and mobile infrastructures through our infrastructure management services. These solutions cover the full lifecycle of infrastructure management including application, database, network, server, storage and systems operations management, as well as monitoring, incident notification and resolution. We deliver maintenance and support services through our proprietary distributed project management processes and tools, which reduce the time and costs related to maintenance, enhancement and support activities.

We have deep expertise and the ability to offer a comprehensive set of software product development services including product research, customer experience design and prototyping, program management, component design and integration, full lifecycle software testing, product deployment and end-user customization, performance tuning, product support and maintenance, managed services, as well as porting and cross-platform migration. We focus on software products covering a wide range of business applications as well as product development for multiple mobile platforms and embedded software product services.

Table of Contents

Operations

We turn our customers' operations into intelligent enterprise hubs with our proprietary platforms, integrated engineering practices and smart automation. Developing a digital experience or product from end-to-end requires input and expertise from a variety of professionals with a broad range of skills. Our multidisciplinary teams and global delivery framework come together to deliver well-rounded technology solutions that bring competitive advantage to our customers. In addition to utilizing our dedicated delivery centers, which allow us to deploy key delivery talent, we work closely with leading companies in various industries to enable our customers to better leverage technology and address the simultaneous pressures of driving value for their consumer and offering a more engaging experience.

Optimization

We turn process optimization into real transformation by using process automation and cognitive techniques to transform legacy processes and deliver streamlined operations that increase revenues and reduce costs for our customers. We rely on our teams, methodologies and tools to optimize every stage of software delivery for improved quality and better features with each release.

We maintain a dedicated group of testing and quality assurance professionals with experience across a wide range of technology platforms and industry verticals, who perform software application testing, test management, automation and consulting services focused on helping customers improve their existing software testing and quality assurance practices. We employ industry-recognized and proprietary defect tracking tools and frameworks to deliver a comprehensive range of testing services that identify threats and close loopholes to protect our customers' business systems from information loss.

Consulting

Over the years, as a complement to our core engineering skills, we have added capabilities in business consulting to give us an agile, hybrid approach to the market. Our consulting services drive deeper relationships as we help our customers with larger and more complex challenges. Our industry, technology and experience consulting services are interconnected to deliver maximum impact for our customers. The functional business expertise of our professionals is supplemented by a thorough understanding of technology platforms and their interactions as well as application of data science and machine learning to deliver best insights into our customers' business.

Our technical advisory services help customers stay ahead of current technology changes and innovate, where innovation beyond technology is also delivered through collaborative workshops, challenges and new organizational models.

Design

We apply design thinking to digital and service strategy, user experience and the product lifecycle with a focus on innovative design ideas and product development. Our digital and service design practice provides strategy, design, creative and program management services for customers looking to improve the user experience.

We are continuously looking to strengthen and grow our design and consulting practices as evidenced by recent business acquisitions. During 2018, we acquired Continuum Innovation LLC, which will enhance our consulting, physical design and product development capabilities and Think Limited, which will enhance our global product and design offerings.

Table of Contents

Global Delivery Model

We believe the development of a robust global delivery model creates a key competitive advantage, enabling us to better understand and meet our customers' diverse needs and to provide a compelling value proposition. We continuously grow our delivery platform both organically and through strategically acquired locations and personnel with diversified skills that support our strategy. We had 26,760 revenue generating personnel as of December 31, 2018, which mainly includes our core information technology professionals as well as designers, consultants and scientists.

We serve our customers through on-site, off-site and offshore locations across the world and use strategically located delivery centers to offer a strong, diversified and cost-effective delivery platform. Our largest delivery centers are located in Belarus, Ukraine and Russia.

As of December 31, 2018, we had 8,242 IT professionals located in Belarus. The majority of these IT professionals are located in Minsk, the capital of Belarus, which is well-positioned to serve as a prime IT outsourcing destination given its strong industrial base and established educational infrastructure. Furthermore, the government in Belarus strongly supports the technology industry and encourages investment in this sector through various long-term tax incentives.

Our locations in Ukraine and Russia offer many of the same benefits as Belarus, including educational infrastructure, availability of qualified software engineers and government support of the technology industry. As of December 31, 2018, we had 5,836 IT professionals in Ukraine and 4,438 IT professionals in Russia. Our delivery model has not been materially affected by the political and economic uncertainty in Ukraine and Russia to date.

Our other significant locations with IT professionals are the United States with 1,787, Hungary with 1,337, Poland with 1,194, India with 1,053 and China with 470 as of December 31, 2018.

Customers

We maintain a geographically diverse client base, which primarily consists of Fortune 500 and 1000 customers located in North America, Europe, CIS and APAC. Our focus on delivering quality service is reflected in established relationships with many of our customers, with 54.8% and 30.9% of our revenues in 2018 coming from customers that had used our services for at least five and ten years, respectively. Our sustained growth and increased capabilities are furthered by both organic growth and strategic acquisitions. We continually evaluate potential acquisition targets that can expand our vertical-specific domain expertise, geographic footprint, service portfolio, client base and management expertise.

As we remain committed to diversifying our client base and adding more customers to our client mix, we expect revenue concentration from our top customers to continue to decrease over the long-term. The following table shows revenues from the top five and ten customers in the respective year as a percentage of revenues for that year:

	% of Revenues for		
	Year Ended		
	December 31,		
	2018	2017	2016
Top five customers	22.3%	24.0%	28.4%
Top ten customers	31.6%	33.9%	38.4%

See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II of this annual report for additional information related to revenue.

See Note 15 "Segment Information" in the notes to our consolidated financial statements in this Annual Report on Form 10-K for information regarding long-lived assets and customer revenues by geographic location as well as financial information related to our reportable segments.

Table of Contents

Industry Expertise

Strong industry-specific knowledge, backed by extensive experience merging technology with the business processes of our customers, allows us to deliver tailored solutions to various industry verticals. Our customers operate in five main industry verticals as well as a number of other verticals in which we are increasing our presence.

Financial Services. We have significant experience working with global investment banks, commercial and retail lending institutions, credit card and payment solution companies, wealth management institutions, fund operators and various other providers of financial services. We assist these customers with challenges stemming from new regulations, compliance requirements, customer-based needs and risk management. Our financial services domain experts have been recognized with industry awards for engineering and deploying unique applications and business solutions that facilitate growth, competitiveness, and customer loyalty while driving cost efficiency for global financial institutions.

Travel and Consumer. Our capabilities span a range of platforms, applications and solutions that businesses in travel and hospitality use to serve their customers, capture management efficiencies, control operating expenses and grow revenues. Some of the world's leading airlines, hotel providers and travel agencies rely on our knowledge in creating high-quality tools for operating and managing their business. Within this vertical, we also serve global, regional and local retailers, online retail brands, consumer goods manufacturers and distributors and online marketplaces. We deliver a wide range of services to retail and eCommerce customers from complex system modernizations to leading edge innovations in multi-channel sales and distribution. We have transformed organizations to use technology to expand and revolutionize their business models. Our services directly impact the consumer experience of our customers' brands, and allow our customers to reach more consumers.

Software and Hi-Tech. We provide complex software product development services to meet software and technology companies' constant need for innovation and agility. We help some of the most prominent software brands in the world build, what we believe to be the best software. Through our extensive experience with many industry leaders in Hi-Tech R&D, software engineering and integration, we have developed proprietary internal processes, methodologies and IT infrastructure, which give us an edge when it comes to serving customers in the Hi-Tech and Software Product markets. Our services span the complete software development lifecycle for software product development using our comprehensive development methodologies, testing, performance tuning, deployment, maintenance and support.

Business Information and Media. We help our business information and media customers build products and solutions for all modern platforms including web media streaming and mobile information delivery. Our solutions help customers develop new revenue sources, accelerate the creation, collection, packaging and management of content and reach broader audiences. We serve varied customers in this vertical including search engine providers, entertainment media, news providers, broadcasting companies, financial information providers, content distributors, knowledge management organizations and advertising networks.

Life Sciences and Healthcare. We help our customers in the Healthcare industry respond to changing regulatory environments and improve the quality of care while managing the cost of care. Our professionals deliver an end-to-end experience that includes strategy, architecture, development and managed services to customers ranging from the traditional healthcare providers to innovative startups. In the Life Sciences category, we partner with global pharmaceutical, medical technology and biotechnology companies to deliver sophisticated scientific informatics and innovative enterprise technology solutions. Our personnel in Life Sciences leverage their vast technology expertise to offer deep scientific and mathematical knowledge to broad-based initiatives. Our Life Sciences solutions enable customers to speed research and accelerate time-to-market while improving collaboration, knowledge management and operational excellence.

Emerging Verticals. We also serve the diverse technology needs of customers in the energy, telecommunications, automotive and manufacturing industries, as well as government customers. These customers are included in our Emerging Verticals, which are further discussed in "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II of this annual report.

Sales and Marketing

We market and sell our services through our senior management, sales and business development teams, account managers, and professional staff. Our client service professionals and account managers, who maintain direct customer relationships, play an integral role in engaging with current customers to identify and pursue potential business opportunities. This strategy has been effective in promoting repeat business and growth from within our existing client base and we believe that our reputation as a reliable provider of software engineering solutions drives additional business from inbound requests and referrals. In addition to effective client management, our sales model also utilizes an integrated sales and marketing approach that leverages a dedicated sales team to identify and acquire new accounts.

Table of Contents

We maintain a marketing team, which coordinates corporate-level branding efforts such as participation in and hosting of industry conferences and events as well as sponsorship of programming competitions. We have been recognized by many top global independent research agencies, such as Forrester, Gartner, Zinnov and HFS and by publications such as Forbes and Fortune.

Employees

Our employees are a key factor in our ability to grow our revenues and serve our customers. We have dedicated full-time employees who oversee all aspects of our human capital management process including a professional talent acquisition team whose objective is to locate and attract qualified and experienced IT professionals within various EPAM locations. It is critical that we effectively plan our short-term and long-term recruitment needs and deploy the necessary personnel and processes to optimize utilization and quickly satisfy the demands of our customers. As our business grows, we also focus on hiring and retaining individuals with appropriate skills to fill our executive, finance, legal, HR and other key management positions.

At December 31, 2018, 2017 and 2016, we had a total of 30,156, 25,962 and 22,383 employees, respectively. Of these employees, as of December 31, 2018, 2017 and 2016, respectively, 26,760, 22,998 and 19,670 were revenue generating IT professionals.

In our competitive industry, the ability to hire and retain highly-skilled information technology professionals is critical to our success. We believe the quality of our employees serves as a key point of differentiation in how we deliver a superior value proposition to our customers. To attract, retain and motivate our IT professionals, we offer a challenging work environment, ongoing skills development initiatives, attractive career advancement, and promotion opportunities thus providing an environment and culture that rewards entrepreneurial initiative and performance.

We dedicate significant resources to the training, continuing education and career development programs of our entry-level and experienced IT professionals. We believe in the importance of supporting educational initiatives and we sponsor employees' participation in internal and external training and certifications. Entry-level IT professionals undergo a rigorous training program that consists of approximately three to six months of classroom training, as well as numerous hours of hands-on training through actual engagements. This comprehensive program results in employees who are highly proficient and possess deep technical expertise that enables them to immediately serve our customers' needs. For our mid-level and senior IT professionals, we offer continuing education programs aimed at helping them advance in their careers. We also provide mentoring opportunities, management and soft skills training, intensive workshops and management and technical advancement programs in order to support the development of middle and senior management through formal leadership training, evaluation, development and promotion.

Historically, we developed our base of IT professionals by hiring highly-qualified, experienced professionals from Eastern Europe and by recruiting students from the region's leading universities. We have established EPAM delivery centers near many of these university campuses and we continue supporting the universities through EPAM-branded research labs, developing training courses and curriculum, providing teaching equipment and engaging students to identify their talents in information technology. Our strong relationships with these leading technical institutions provide us access to a highly-qualified talent pool. In addition, in recent years, we have been exploring additional markets, such as India, as a new source of talent.

We believe that we maintain a good working relationship with our employees and our employees have not entered into any collective bargaining agreements (other than broad industry-wide agreements as required in certain countries in Europe and Mexico) or engaged in any labor disputes.

Competition

The markets in which we compete are changing rapidly and we face competition from both global technology solutions providers as well as those based primarily in specific geographies with lower cost labor such as Eastern Europe, India and China. We believe that the principal competitive factors in our business include technical expertise and industry knowledge, end-to-end solution offerings, reputation and track record for high-quality and on-time delivery of work, effective employee recruiting, training and retention, responsiveness to customers' business needs, scale, financial stability and price.

We face competition from various technology services providers such as Accenture, Atos, Capgemini, Cognizant Technology Solutions, Deloitte Digital, DXC Technology, Exlservice, Genpact, GlobalLogic, Globant, HCL

Technologies, HP Enterprise, IBM Services, Infosys, Luxoft Holding, Inc., Mindtree, Perficient, Tata Consultancy Services, Virtusa Corporation, and Wipro, among others. Additionally, we compete with numerous smaller local companies in the various geographic markets in which we operate.

Table of Contents

We believe that our focus on complex software product development solutions, our technical employee base, and our development and continuous improvement in process methodologies, applications and tools position us well to compete effectively in the future.

Quality Management and Information Security

We are continuously investing in applications, tools and infrastructure to manage all aspects of our global delivery process in order to manage quality and security risks, while providing control and visibility across all project lifecycle stages both internally and to our customers. We maintain processes and infrastructure to protect our clients' and their customers' confidential and sensitive information and allocate resources to ensure information security, cybersecurity and data privacy. We have made significant investments in the appropriate people, processes and technology to establish and manage compliance with confidentiality policies, laws and regulations governing our activities, such as the European Union data protection legal framework referred to as the General Data Protection Regulation ("GDPR"), among others.

We focus on establishing stringent security standards and internal controls and meet the standards of ISO 27001:2013 and ISO 9001:2015. We are an ISAE 3402 Type 2 certified IT services provider. This certification is issued by an auditor in compliance with the globally recognized assurance standard. The certification, along with others we hold, provide our customers with independent third-party verification of our information security, quality management and general controls practices.

We have developed sophisticated project management techniques facilitated through our proprietary Project Management Tools, a web-based collaborative environment for software development, which we consider critical for visibility into project deliverables, resource management, team messaging and project-related documents. These tools promote collaboration and effective oversight, reduce work time and costs, and increase quality for our IT management and our customers.

Corporate and Social Responsibility

We are committed to integrating positive social, environmental and ethical practices into our business operations and strategy. This commitment is key to our continual development as a business and drives value for our employees, customers, business partners, the community and other stakeholders. We practice the principles established in our Code of Ethical Conduct by making positive contributions to the communities in which we operate and championing corporate social responsibility efforts.

Through our focused efforts in the areas of Education, Environment, and Community, we are committed to sharing the expertise and attributes of our highly skilled global workforce to effectively support the needs of, and positively add to the world at large and the communities where we work and live. By understanding our impact on local, regional and global communities, we strive to create positive change and opportunities in areas where it is needed most. Such efforts include our global technology education initiatives, through which we provide innovative, industry-relevant technology training and mentorship programs to students globally as well as through other technology conferences, seminars, and hackathon events where we encourage social innovation and jumpstart collaboration among our local tech communities.

We believe responsible stewardship of the environment is critical, and we take this responsibility seriously. We continually strive to improve our environmental performance through implementation of sustainable development and environmental practices. In addition, as an innovation-driven business, EPAM's success depends on hiring the most talented employees in the industry. We are committed to respecting our employees' fundamental human rights at work. We similarly expect our suppliers, vendors, and subcontractors and all other third-party companies that comprise EPAM's supply chain to respect human rights and to avoid complicity in human rights abuses. EPAM seeks to provide our customers with exceptional personnel, which includes people with varied and diverse characteristics, to drive the innovation and thought diversity for which we are known. We aim to continuously retain and supply a pipeline of qualified, diverse candidates to foster this goal.

Intellectual Property

Protecting our intellectual property rights is important to our business. We have invested, and will continue to invest, in research and development to enhance our domain knowledge and create complex, specialized solutions for our customers. We rely on a combination of intellectual property laws, trade secrets, confidentiality procedures and

contractual provisions to protect our intellectual property. We require our employees, vendors and independent contractors to enter into written agreements upon the commencement of their relationships with us, which assign to us all intellectual property and work product made, developed or conceived by them in connection with their employment with us. These agreements also provide that any confidential or proprietary information disclosed or otherwise made available by us remains confidential.

7

Table of Contents

We also enter into confidentiality and non-disclosure agreements with our customers. These customary agreements cover our use of our customers' software systems and platforms as our customers usually own the intellectual property in the products we develop for them. Furthermore, we usually grant a perpetual, worldwide, royalty-free, nonexclusive, transferable and non-revocable license to our customers to use our preexisting intellectual property, but only to the extent necessary in order to use the software or systems we developed for them.

Regulations

Due to the industry and geographic diversity of our operations and services, our operations are subject to a variety of rules and regulations. Several foreign and U.S. federal and state agencies regulate various aspects of our business. See "Item 1A. Risk Factors — Risks Relating to Our Business — We are subject to laws and regulations in the United States and other countries in which we operate, including export restrictions, economic sanctions and the Foreign Corrupt Practices Act, or FCPA, and similar anti-corruption laws. If we are not in compliance with applicable legal requirements, we may be subject to civil or criminal penalties and other remedial measures".

Corporate Information

EPAM Systems, Inc. was incorporated in the State of Delaware on December 18, 2002. Our predecessor entity was founded in 1993. Our principal executive offices are located at 41 University Drive, Suite 202, Newtown, Pennsylvania 18940 and our telephone number is 267-759-9000. We maintain a website at <http://www.epam.com>. Our website and the information accessible through our website are not incorporated into this annual report.

We make certain filings with the Securities and Exchange Commission ("SEC"), including our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments and exhibits to those reports. We make such filings available free of charge through the Investor Relations section of our website, <http://investors.epam.com>, as soon as reasonably practicable after they are filed with the SEC. The filings are also available through the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549 or by calling 1-800-SEC-0330. In addition, the SEC maintains a website at <http://www.sec.gov> that contains reports, proxy and information statements, and other information regarding issuers that file electronically through the EDGAR System.

Table of Contents

Item 1A. Risk Factors

Our operations and financial results are subject to various risks and uncertainties, which could adversely affect our business, financial condition, results of operations, cash flows, and the trading price of our common stock. Listed below, not necessarily in order of importance or probability of occurrence, are the most significant risk factors applicable to us. Additionally, forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified. See “Special Note Regarding Forward-Looking Statements”.

Risks Relating to Our Business

We may be unable to effectively manage our rapid growth or achieve anticipated growth, which could place significant strain on our management personnel, systems and resources.

We have experienced rapid growth and significantly expanded our business over the past several years, both organically and through strategic acquisitions. Our rapid growth has placed, and will continue to place, significant demands on our management and our administrative, operational and financial infrastructure. Continued expansion increases the challenges we face in:

- recruiting, training and retaining sufficiently skilled professionals and management personnel;
- adhering to and further improving our high-quality process execution standards and maintaining high levels of customer satisfaction;
- managing a larger number of customers in a greater number of industries and locations;
- maintaining effective oversight of personnel and delivery centers;
- coordinating effectively across geographies and business units to execute our strategic plan; and
- developing and improving our internal administrative, operational and financial infrastructure.

Moreover, we intend to continue our expansion for the foreseeable future and pursue available opportunities. As we introduce new services or enter into new markets, we may face new market, technological, operational, compliance and administrative risks and challenges. As a result of these and other challenges associated with expansion, we may not be able to achieve our anticipated growth and our business, prospects, financial condition and results of operations could be materially adversely affected.

Our failure to successfully attract, hire, train and retain new personnel with the qualifications necessary to fulfill the needs of our existing and future customers could materially adversely affect our ability to provide high quality services to those customers.

The ability to hire and retain highly skilled information technology professionals, including project managers, IT engineers and other technical personnel, is critical to our success. To maintain and renew existing engagements and obtain new business, we must attract, hire, train and retain personnel with diverse skill sets and competencies, including those with management experience, across the geographically diverse locations in which we operate. Competition for highly skilled professionals is intense in the markets where we operate, and we may experience significant employee turnover rates due to such competition. If we are unable to attract, hire, train or retain highly skilled personnel, our ability to meet and develop ongoing and future business could be jeopardized and our business, financial condition and results of operations could be adversely affected.

A significant increase in the attrition rate among professionals with specialized skills could decrease our operating efficiency and productivity and could lead to a decline in demand for our services. In addition, any reductions in headcount for economic or business reasons, however temporary, could negatively affect our reputation as an employer, and our ability to hire personnel to meet our business requirements may suffer.

Increases in wages for our people and other compensation expense could prevent us from sustaining our competitive advantage and result in dilution to our stockholders.

Wage costs for industry professionals in the emerging markets in which we have significant operations and delivery centers are lower than comparable wage costs in more developed countries. However, wage costs in the service industry in these countries may increase at a faster rate than in the past, which ultimately may make us less competitive unless we are able to increase the efficiency and productivity of our people. Wage inflation may also increase our cost of providing services and reduce our profitability.

Table of Contents

Additionally, we have granted certain equity-based awards under our stock incentive plans and entered into other stock-based compensation arrangements in the past, and expect to continue this practice. The expenses associated with stock-based compensation may reduce the attractiveness to us of issuing equity awards under our equity incentive plan. However, if we do not grant equity awards, or if we reduce the value of equity awards we grant, we may not be able to attract and retain key personnel. If we grant more equity awards to attract and retain key personnel, the expenses associated with such additional equity awards could materially adversely affect our results of operations. Furthermore, any new regulations, volatility in the stock market and other factors could diminish our use and the value of our equity-based awards. This could put us at a competitive disadvantage or cause us to consider changes to our pay structure. The issuance of equity-based compensation also results in additional dilution to our stockholders.

Our success depends substantially on the continuing efforts of our senior executives and other key personnel, and our business may be severely disrupted if we lose their services.

Our future success heavily depends upon the continued services of our senior executives and other key employees. If one or more of our senior executives or key employees are unable or unwilling to continue in their present positions, it could disrupt our business operations, and we may not be able to replace them easily or at all. In addition, competition for senior executives and key personnel in our industry is intense, and we may be unable to retain our senior executives and key personnel or attract and retain new senior executives and key personnel in the future, in which case our business may be severely disrupted. If any of our senior executives or key personnel, such as business development managers, joins a competitor or forms a competing company, we may lose customers, suppliers, know-how and key personnel to them.

Our profitability will suffer if we are not able to maintain our resource utilization and productivity levels.

Our profitability is significantly impacted by our utilization and productivity levels of fixed-cost resources, such as our professionals as well as other resources such as computers and office space. Our ability to manage our utilization levels depends significantly on our ability to hire and train high-performing professionals, to plan effectively for future needs, to staff projects appropriately, and on the general economy and its effect on our customers and their business decisions regarding the use of our services. If we experience a slowdown or stoppage of work for any customer or on any project for which we have dedicated personnel or facilities, we may not be able to reallocate these assets to other customers and projects to keep their utilization and productivity levels high. If we are not able to maintain optimal resource utilization levels without corresponding cost reductions or price increases, our profitability will suffer.

Our global business exposes us to operational and economic risks.

We are a global company with substantial international operations. The global nature of our business creates operational and economic risks.

Risks inherent in conducting international operations include:

- foreign exchange fluctuations;
- application and imposition of protective legislation and regulations relating to import or export, including tariffs, quotas and other trade protection measures;
- difficulties in enforcing intellectual property and/or contractual rights;
- complying with a wide variety of foreign laws;
- potentially adverse tax consequences;
- competition from companies with more experience in a particular country or with international operations; and
- overall foreign policy and variability of foreign economic conditions.

Our global operations are conducted predominantly in U.S. dollars, however we generate a significant portion of our revenues and incur expenditures in various currencies other than U.S. dollars. The majority of our customers are in North America and Western Europe, while most of our personnel and delivery centers are located in lower cost locations. These factors expose us to foreign exchange risks relating to revenues, compensation, purchases, capital expenditures, receivables and other balance-sheet items. As we continue to leverage our global delivery model, a larger portion of our revenues and incurred expenses may be in currency other than U.S. dollars. In some countries, we may be subject to regulatory or practical restrictions on the movement of cash and the exchange of foreign currencies, which would limit our ability to use cash across our global operations and increase our exposure to

currency fluctuations. This risk could increase as we continue expanding our global operations, which may include entering emerging markets that may be more likely to impose these types of restrictions. Currency exchange volatility caused by political or economic instability or other factors, could also materially impact our results. See “Item 7A. Quantitative and Qualitative Disclosures About Market Risk.”

Table of Contents

Our industry is sensitive to the economic environment and the industry tends to decline during general economic downturns. Given our significant revenues from North America and Europe, if those economies weaken or slow, pricing for our services may be depressed and our customers may reduce or postpone their technology related spending significantly, which may in turn lower the demand for our services and negatively affect our revenues and profitability.

War, terrorism, other acts of violence or natural or manmade disasters may affect the markets in which we operate, our customers, and our service delivery.

Our business may be negatively affected by instability, disruption or destruction in a geographic region in which we operate, regardless of cause, including war, terrorism, riot, civil insurrection or social unrest; and natural or manmade disasters, including famine, flood, fire, earthquake, storm or disease. Such events may cause customers to delay their decisions on spending for the services we provide and give rise to sudden significant changes in regional and global economic conditions and cycles. These events also pose significant risks to our people and to physical facilities and operations around the world, whether the facilities are ours or those of our customers, which could materially adversely affect our financial results. By disrupting communications and travel, giving rise to travel restrictions, and increasing the difficulty of obtaining and retaining highly-skilled and qualified professionals, these events could make it difficult or impossible for us to deliver services to our customers. Travel restrictions could cause us to incur additional unexpected labor costs and expenses or could restrain our ability to retain the skilled personnel we need for our operations. In addition, any extended disruptions of electricity, other public utilities or network services at our facilities, as well as system failures at, or security breaches in, our facilities or systems, could also adversely affect our ability to serve our customers.

Emerging markets are subject to greater risks than more developed markets, including significant legal, economic, tax and political risks.

We have significant operations in certain emerging market economies in Eastern Europe, India and other Asian countries. Emerging markets are vulnerable to market downturns and economic slowdowns elsewhere in the world and are subject to greater risks than more developed markets, including those that may result from foreign laws and regulations, the potential imposition of trade or foreign exchange restrictions or sanctions, tax increases, fluctuations in exchange rates, inflation, unstable political and military situations, labor issues, and less established legal systems. The economies of certain countries where we operate have experienced periods of considerable instability and have been subject to abrupt downturns. Such economic instability and any future deterioration in the international economic situation could have a material adverse effect on our business, financial condition and results of operations.

Our operations may be adversely affected by ongoing conflict in Ukraine.

Continuing military activities in Ukraine have combined with Ukraine's weak economic conditions to fuel ongoing economic uncertainty in Ukraine, Russia and other markets. The European Union, United States and other nations have imposed, and may continue imposing, further economic sanctions, including specific sanctions on certain Russian entities (specifically in the energy, defense and financial sectors). Prolonged political instability in Ukraine, sanctions against Russia and Russia's potential response to such sanctions could have a material adverse effect on our operations. We have delivery centers in Ukraine employing 5,836 billable professionals as of December 31, 2018, none of which is located in the most volatile regions of Eastern Ukraine. We also have delivery centers in Russia, employing 4,438 billable professionals as of December 31, 2018 located in various cities including Moscow and St. Petersburg. To date we have not experienced any interruption in our office infrastructure, utility supply or internet connectivity needed to support our customers. We continue to monitor the situation closely. Our contingency plans include relocating work and/or personnel to other locations and adding new locations, as appropriate.

The U.S. Congress and Trump administration may make substantial changes to fiscal, political, regulatory and other federal policies that may adversely affect our business, and financial results.

Changes in general economic or political conditions in the United States or other regions could adversely affect our business. For example, the administration under President Donald Trump has put forth and may continue to propose significant changes with respect to a variety of issues, including international trade agreements, import and export regulations, tariffs and customs duties, foreign relations, immigration laws, and corporate governance laws, that could have a positive or negative impact on our business.

Table of Contents

We do not have long-term commitments from our customers, and our customers may terminate contracts before completion or choose not to renew contracts. A loss of business from significant customers could materially affect our results of operations.

Our ability to maintain continuing relationships with our major customers is essential to the growth and profitability of our business. However, the volume of work performed for any specific customer is likely to vary from year to year, especially since we generally are not our customers' exclusive IT services provider and we generally do not have long-term commitments from customers to purchase our services. The ability of our customers to terminate engagements with or without cause makes our future revenues uncertain. Although a substantial majority of our revenues are generated from customers who also contributed to our revenues during the prior year, our engagements with our customers are typically for projects that are singular in nature. Therefore, we must seek to obtain new engagements when our current engagements end.

There are a number of factors relating to our customers that are outside of our control, which might lead them to terminate a contract or project with us, including:

financial difficulties;

corporate restructuring, or mergers and acquisitions activity;

change in strategic priorities, resulting in elimination of the impetus for the project or a reduced level of technology related spending;

change in outsourcing strategy resulting in moving more work to the customer's in-house technology departments or to our competitors; and

replacement of existing software with packaged software supported by licensors.

Termination or non-renewal of a customer contract could cause us to experience a higher than expected number of unassigned employees and thus compress our margins until we are able to reallocate our headcount. The loss of any of our major customers, or a significant decrease in the volume of work they outsource to us or the price at which we sell our services to them, if not replaced by new service engagements, could materially adversely affect our revenues and results of operations.

Our revenues are highly dependent on a limited number of industries, and any decrease in demand for outsourced services in these industries could reduce our revenues and adversely affect our results of operations.

A substantial portion of our customers is concentrated in five specific industry verticals: Financial Services; Software & Hi-Tech; Business Information & Media; Travel & Consumer; and Life Sciences & Healthcare. Our business growth largely depends on continued demand for our services from customers in these five industry verticals and other industries that we may target in the future, as well as on trends in these industries to outsource the type of services we provide.

A downturn in any of our targeted industries, a slowdown or reversal of the trend to outsource IT services in any of these industries or the introduction of regulations that restrict or discourage companies from outsourcing could result in a decrease in the demand for our services and could have a material adverse effect on our business, financial condition and results of operations. Other developments in the industries in which we operate may also lead to a decline in the demand for our services, and we may not be able to successfully anticipate and prepare for any such changes. Decreased demand for our services, or increased pricing pressure on us from our customers in these key industries could adversely affect our results of operations.

Furthermore, developments in the industries we serve and our expansion into new industries could shift customer demand to new services, solutions or technology. If our customers demand new services, solutions or technologies, we may be less competitive in these new areas or may need to make significant investments to meet that demand.

Additionally, as we expand into serving new verticals, our solutions and technology may be used by, or generally affect, a broader base of customers and end users, which may expose us to new business and operational risks.

Table of Contents

If our pricing structures are based on inaccurate expectations and assumptions regarding the cost and complexity of performing our work, or if we are not able to maintain favorable pricing for our services, then our contracts could be unprofitable.

We face a number of risks when pricing our contracts and setting terms with our customers. Our pricing is highly dependent on our internal forecasts, assumptions and predictions about our projects, the marketplace, global economic conditions (including foreign exchange volatility) and the coordination of operations and personnel in multiple locations with different skill sets and competencies. Our pricing and cost estimates for the work that we perform may include anticipated long-term cost savings that we expect to achieve and sustain over the life of the contract. Because of these inherent uncertainties, we may underprice our projects (particularly with fixed-price contracts), fail to accurately estimate the costs of performing the work or fail to accurately assess the risks associated with potential contracts. Any increased or unexpected costs, delays or failures to achieve anticipated cost savings, or unexpected risks we encounter in connection with the performance of this work, including those caused by factors outside our control, could make these contracts less profitable or unprofitable. Moreover, if we are not able to pass on to our customers increases in compensation costs (whether driven by competition for talent or ordinary-course pay increases) or charge premium prices when justified by market demand or the type of service, our profitability may suffer.

In addition, a number of our contracts contain conditions in pricing terms that are dependent on our ability to meet defined performance goals, service levels and completion schedules. Our failure to meet these specified conditions or our failure to meet customer expectations in such contracts may result in less profitable or unprofitable engagements. If we are not successful in managing increasingly large and complex projects, we may not achieve our financial goals and our results of operations could be adversely affected.

To successfully perform larger and more complex projects, we need to establish and maintain effective, close relationships with our customers, continue high levels of customer satisfaction and develop a thorough understanding of our customers' operations. In addition, we may face a number of challenges managing larger and more complex projects, including:

- maintaining high-quality control and process execution standards;
- maintaining planned resource utilization rates on a consistent basis and using an efficient mix of on-site, off-site and offshore staffing;
- maintaining productivity levels and implementing necessary process improvements; and
- controlling costs.

Our ability to successfully manage large and complex projects depends significantly on the skills of our professionals. In addition, large and complex projects may involve multiple engagements or stages, and there is a risk that a customer may choose not to retain us for additional stages or may cancel or delay additional planned engagements. Such cancellations or delays may make it difficult to plan our project resource requirements. If we fail to successfully obtain engagements for large and complex projects, we may not achieve our revenue growth and other financial goals. Even if we are successful in obtaining such engagements, failure to effectively manage these large and complex projects could damage our reputation, cause us to lose business, compress our margins and adversely affect our business and results of operations.

We face risks associated with having a long selling and implementation cycle for our services that require us to make significant resource commitments prior to realizing revenues for those services.

We have a long selling cycle for our services. Before potential customers commit to use our services, they require us to expend substantial time and resources educating them on the value of our services and our ability to meet their requirements. Therefore, our selling cycle is subject to many risks and delays over which we have little or no control, including our customers' decision to select another service provider or in-house resources to perform the services and the timing of our customers' budget cycles and approval processes. If our sales cycle unexpectedly lengthens for one or more large projects, it would negatively affect the timing of our revenues and our revenue growth. In certain cases, we may begin work and incur costs prior to executing a contract. A delay in our ability to obtain a signed agreement or other evidence that the parties to the agreement have approved the contract and are committed to perform their respective obligations of an arrangement, or to complete certain contract requirements, may cause fluctuations in recognized revenues between periods.

Implementing our services also involves a significant commitment of resources over an extended period of time from both our customers and us. Our current and future customers may not be willing or able to invest the time and resources necessary to implement our services, and we may fail to close sales with potential customers to whom we have devoted significant time and resources. Any significant failure to generate revenues or delays in recognizing revenues after incurring costs related to our sales or services processes could have a material adverse effect on our business.

Table of Contents

If we are unable to collect our receivables from, or bill our unbilled services to our customers, our results of operations and cash flows could be materially adversely affected.

Our business depends on our ability to successfully obtain payment from our customers of the amounts they owe us for work performed. There is no guarantee that we will accurately assess the creditworthiness of our customers. If our customers suffer financial difficulties, it could cause them to delay payments to us, request modifications to their payment arrangements that could increase our receivables balance, or default on their payment obligations to us.

Timely collection of customer balances also depends on our ability to complete our contractual commitments and bill and collect our contracted revenues. If we are unable to meet our contractual requirements, we might experience delays in collection of or inability to collect accounts receivable, and in such cases, our results of operations and cash flows could be materially adversely affected.

We face intense and increasing competition for customers and opportunities from onshore and offshore IT services and other consulting companies. If we are unable to compete successfully against competitors, pricing pressures or loss of market share could have a material adverse effect on our business.

The market for our services is highly competitive, and we expect competition to persist and intensify. We face competition from offshore IT services providers in other outsourcing destinations with low wage costs such as India and China, as well as competition from large, global consulting and outsourcing firms and in-house IT departments of large corporations. Customers tend to engage multiple IT services providers instead of using an exclusive IT services provider, which could reduce our revenues to the extent that customers obtain services from competing companies. Customers may prefer services providers that have more locations or that are based in countries more cost-competitive or more stable than some of the emerging markets in which we operate.

Current or prospective customers may elect to perform certain services themselves or may be discouraged from transferring services from onshore to offshore service providers, which could seriously harm our ability to compete effectively with competitors that provide services from within the countries in which our customers operate.

Some of our present and potential competitors may have substantially greater financial, marketing or technical resources; therefore, we may be unable to retain our customers while competing against such competitors. Increased competition, our inability to compete successfully, pricing pressures or loss of market share could have a material adverse effect on our business. Customer buying patterns can change if customers become more price sensitive and accepting of low-cost suppliers with less emphasis on quality.

If we are unable to adapt to rapidly changing technologies, methodologies and evolving industry standards we may lose customers and our business could be materially adversely affected.

Rapidly changing technologies, methodologies and evolving industry standards are inherent in the market for our services. Our future success will depend in part upon our ability to anticipate developments in our industry, enhance our existing services and to develop and introduce new services to keep pace with such changes and developments and to meet changing customer needs. The process of developing our customer solutions is extremely complex and is expected to become increasingly complex and expensive in the future due to the introduction of new platforms, operating systems, technologies and methodologies. Our ability to keep pace with, anticipate or respond to these changes is subject to a number of risks, including that:

- we may find it difficult or costly to update our services, applications, tools and software and to develop new services quickly enough to meet our customers' needs;

- we may find it difficult or costly to make some features of our software work effectively and securely over the Internet or with new or changed operating systems;

- we may find it difficult or costly to update our software and services to keep pace with evolving industry standards, methodologies, regulatory and other developments in the industries where our customers operate; and

- we may find it difficult to maintain a high level of quality in implementing new technologies and methodologies.

We may not be successful in anticipating or responding to these developments in a timely manner, or if we do respond, the services, technologies or methodologies we develop or implement may not be successful in the marketplace. Further, services, technologies or methodologies that are developed by our competitors may render our services non-competitive or obsolete. Our failure to enhance our existing services and to develop and introduce new services to promptly address the needs of our customers could have a material adverse effect on our business.

Table of Contents

Undetected software design defects, errors or failures may result in loss of business or in liabilities that could materially adversely affect our business.

Our software development solutions involve a high degree of technological complexity, have unique specifications and could contain design defects or software errors that are difficult to detect or correct. Errors or defects may result in the loss of current customers and loss of, or delay in, revenues, loss of market share, loss of customer data, a failure to attract new customers or achieve market acceptance, diversion of development resources and increased support or service costs. We cannot provide assurance that, despite testing by our customers and us, errors will not be found in new software product development solutions. Any such errors could result in litigation, other claims for damages against us, as well as reputational harm and thus could materially adversely affect our business.

Security breaches and other disruptions to network security could compromise our information and expose us to liability, which would cause our business and reputation to suffer.

In the ordinary course of business, we have access to collect, store, process, and transmit sensitive or confidential data, including intellectual property, our proprietary business information and that of our customers, and personally identifiable information of our customers and employees, in our data centers and on our networks. Physical security and the secure processing, maintenance and transmission of this information is critical to our operations and business strategy. Despite our security measures, our information technology and infrastructure may be vulnerable to attacks by hackers or breached due to human error, malfeasance or other disruptions. Any such breach could compromise our networks and the information stored there could be accessed, publicly disclosed, misappropriated, lost or stolen. Such a breach or disruption could also disrupt our operations and the services we provide to customers, damage our reputation, and cause a loss of confidence in our products and services, as well as require us to expend significant resources to protect against further breaches and to rectify problems caused by these events. Any such access, disclosure or other loss of information could result in legal claims or proceedings, liability under applicable laws, and regulatory penalties and could adversely affect our business, revenues and competitive position.

We may be liable to our customers for damages caused by the disclosure of confidential information, system failures or errors.

If any person, including any of our personnel, misappropriates sensitive or confidential customer information, including personally identifiable information, we could be subject to significant liability from our customers or from our customers' customers for breaching contractual confidentiality provisions or privacy laws. Some of our customer agreements do not limit our potential liability for certain types of occurrences, including breaches of confidentiality and infringement indemnity. Furthermore, breaches of confidentiality may entitle the aggrieved party to equitable remedies, including injunctive relief. Any such breach or misappropriation resulting in unauthorized disclosure of sensitive or confidential customer information, or a violation of intellectual property rights, whether through employee misconduct, breach of our computer systems, systems failure or otherwise, may subject us to liabilities, damage our reputation and cause us to lose customers.

If we cause disruptions to our customers' businesses or provide inadequate service, our customers may have claims for substantial damages against us, which could cause us to lose customers, have a negative effect on our reputation and adversely affect our results of operations.

If our billable professionals make errors in the course of delivering services to our customers or fail to consistently meet the service requirements of a customer, these errors or failures could disrupt the customer's business, which could result in a reduction in our revenues or a claim for substantial damages against us, and could also result in a customer terminating our engagement. Any failure in a customer's system or breach of security relating to the services we provide to the customer could damage our reputation or result in a claim for substantial damages against us, regardless of our responsibility for such failure. The assertion of one or more large claims against us, whether or not successful, could materially adversely affect our reputation, business, financial condition and results of operations.

Table of Contents

A significant failure in our systems, telecommunications or IT infrastructure could harm our service model, which could result in a reduction of our revenues and otherwise disrupt our business.

Our service model relies on maintaining active voice and data communications, online resource management, financial and operational record management, customer service and data processing systems between our client sites, our delivery centers and our customer management locations. Our business activities may be materially disrupted in the event of a partial or complete failure of any of these technologies, which could be due to software malfunction, computer virus attacks, conversion errors due to system upgrades, damage from fire, earthquake, power loss, telecommunications failure, unauthorized entry, demands placed on internet infrastructure by growing numbers of users and time spent online, increased bandwidth requirements or other events beyond our control. Loss of all or part of the infrastructure or systems for a period of time could hinder our performance or our ability to complete customer projects on time which, in turn, could lead to a reduction of our revenues or otherwise materially adversely affect our business and business reputation.

Our ability to generate and retain business could depend on our reputation in the marketplace.

Our services are marketed to customers and prospective customers based on a number of factors. Since many of our specific customer engagements involve unique services and solutions, our corporate reputation is a significant factor in our customers' evaluation of whether to engage our services, and our customers' perception of our ability to add value through our services is critical to the profitability of our engagements. We believe the EPAM brand name and our reputation are important corporate assets that help distinguish our services from those of our competitors and contribute to our efforts to recruit and retain talented employees.

However, our corporate reputation is potentially susceptible to damage by actions or statements made by current or former customers and employees, competitors, vendors, adversaries in legal proceedings, government regulators, as well as members of the investment community and the media. There is a risk that negative information about our Company, even if untrue, could adversely affect our business. In particular, damage to our reputation could be challenging to repair, could make potential or existing customers reluctant to select us for new engagements, and could adversely affect our recruitment and retention efforts. Damage to our reputation could also reduce the value and effectiveness of the EPAM brand name and could reduce investor confidence in us.

We may invest substantial cash in new facilities and physical infrastructure, and our profitability could be reduced if our business does not grow proportionately.

To support the continued growth of our business, we may invest in new facilities and physical infrastructure. We may encounter cost overruns or project delays in connection with new facilities. These expansions will likely increase our fixed costs and if we are unable to grow our business and revenues proportionately, our profitability may be reduced. If we fail to integrate or manage acquired companies efficiently, or if the acquired companies do not perform to our expectations, our overall profitability and growth plans could be materially adversely affected.

Part of our expansion strategy includes strategic acquisitions. These transactions involve significant challenges, including the risk that an acquisition does not advance our business strategy, that we do not achieve a satisfactory return on our investment, that we are unable to successfully integrate an acquired company's employees, customer relationships and operations, and that the transactions divert significant management attention and financial resources from our ongoing business. These challenges could disrupt our ongoing business and increase our expenses, including causing us to incur significant one-time expenses and write-offs, and making it more difficult and complex for our management to effectively manage our operations. If we are not able to successfully integrate an acquired entity and its operations and to realize the benefits envisioned for such acquisition, our overall growth and profitability plans may be adversely affected.

Our effective tax rate could be materially adversely affected by several factors.

We conduct business globally and file income tax returns in multiple jurisdictions. Our effective tax rate could be materially adversely affected by several factors, including changes in the amount of income taxed by or allocated to the various jurisdictions in which we operate that have differing statutory tax rates; changing tax laws, regulations and interpretations of such tax laws in multiple jurisdictions; and the resolution of issues arising from tax audits or examinations and any related interest or penalties.

Table of Contents

The determination of our provision for income taxes and other tax liabilities requires estimation, judgment and calculations where the ultimate tax determination may not be certain. Our determination of tax liability is always subject to review or examination by authorities in various jurisdictions. If a tax authority in any jurisdiction reviews any of our tax returns and proposes an adjustment, including, but not limited to, a determination that the transfer prices and terms we have applied are not appropriate, such an adjustment could have a negative impact on our business. In addition, any significant changes to the Tax Cuts and Jobs Act (“U.S. Tax Act”) enacted in 2017, or to regulatory guidance associated with the U.S. Tax Act, could materially adversely affect our effective tax rate. Our operating results may be negatively impacted by the loss of certain tax benefits provided to companies in our industry by the governments of Belarus and other countries.

In Belarus, our local subsidiary along with other member technology companies of High-Technologies Park have a full exemption from Belarus income tax and value added tax until 2049 and are taxed at reduced rates on a variety of other taxes. In Russia, our local subsidiary along with other qualified IT companies, benefit from paying obligatory social contributions to the government at a significantly reduced rate as well as an exemption from value added tax in certain circumstances. If these tax benefits are changed, terminated, not extended or comparable new tax incentives are not introduced, we expect that our effective income tax rate and/or our operating expenses would increase significantly, which could materially adversely affect our financial condition and results of operations. See “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations — Provision for Income Taxes.” There may be adverse tax and employment law consequences if the independent contractor status of some of our personnel or the exempt status of our employees is successfully challenged.

In several countries, certain of our personnel are retained as independent contractors. The criteria to determine whether an individual is considered an independent contractor or an employee are typically fact sensitive and vary by jurisdiction, as can the interpretation of the applicable laws. If a government authority or court makes any adverse determination with respect to some or all of our independent contractors, we could incur significant costs, including for prior periods, in respect of tax withholding, social security taxes or payments, workers’ compensation and unemployment contributions, and recordkeeping, or we may be required to modify our business model, any of which could materially adversely affect our business, financial condition and results of operations.

Our insurance coverage may be inadequate to protect us against losses.

Although we maintain some insurance coverage, including professional liability insurance, property insurance coverage for certain of our facilities and equipment and business interruption insurance coverage for certain of our operations, we do not insure for all risks in our operations. If any claims for injury are brought against us, or if we experience any business disruption, litigation or natural disaster, we might incur substantial costs and diversion of resources.

Most of the agreements we have entered into with our customers require us to purchase and maintain specified insurance coverage during the terms of the agreements, including commercial general insurance or public liability insurance, umbrella insurance, product liability insurance, and workers’ compensation insurance. Some of these types of insurance are not available on reasonable terms or at all in some countries in which we operate.

The banking and financial systems in less developed markets where we hold funds remain less developed than those in some more developed markets, and a banking crisis could place liquidity constraints on our business and materially adversely affect our business and financial condition.

We have cash in banks in countries such as Belarus, Russia, Ukraine, Kazakhstan and Armenia, where the banking sector remains subject to periodic instability, banking and other financial systems generally do not meet the banking standards of more developed markets, and bank deposits made by corporate entities are not insured. A banking crisis, or the bankruptcy or insolvency of banks through which we receive or with which we hold funds, particularly in Belarus, may result in the loss of our deposits or adversely affect our ability to complete banking transactions in that region, which could materially adversely affect our business and financial condition.

Table of Contents

Our business could be negatively affected if we incur legal liability, including with respect to our indemnification obligations, in connection with providing our solutions and services.

If we fail to meet our contractual obligations or otherwise breach obligations to our customers, we could be subject to legal liability. If we cannot or do not perform our obligations, we could face legal liability and our contracts might not always protect us adequately through limitations on the scope and/or amount of our potential liability. As a result, we might face significant legal liability and payment obligations, and our financial condition and results of operations could be materially adversely affected. Furthermore, as we expand our business through strategic acquisitions and organically, our new and existing contracts with customers may contain terms that do not fully protect us against new risks, which may increase our potential exposure to losses.

We may not be able to prevent unauthorized use of our intellectual property, and our intellectual property rights may not be adequate to protect our business and competitive position.

We rely on a combination of copyright, trademark, unfair competition and trade secret laws, as well as intellectual property assignment and confidentiality agreements and other methods to protect our intellectual property rights. Protection of intellectual property rights and confidentiality in some countries in which we operate may not be as effective as in the United States or other countries with more mature legal systems.

When personnel start with EPAM, we require our employees and independent contractors to enter into written agreements, which assign to EPAM all intellectual property and work product made, developed or conceived by them in connection with their employment or engagement with us. These agreements also provide that any confidential or proprietary information disclosed or otherwise made available by us be kept confidential. These agreements may not be enforceable in certain jurisdictions in which we operate, and we cannot ensure that we would be successful in defending a challenge by our current or former employees or independent contractors to such agreements. We also enter into confidentiality and non-disclosure agreements with our customers and certain vendors; however, these agreements may not fully protect our trade secrets, know-how or other proprietary information in the event of any unauthorized use, misappropriation or disclosure. Reverse engineering, unauthorized copying or other misappropriation of our and our customers' proprietary technologies, tools and applications could enable third parties to benefit from our or our customers' technologies, tools and applications without paying them for doing so, and our customers may hold us liable for that act and seek damages and compensation from us, which could harm our business and competitive position.

We rely on our trademarks, trade names, service marks and brand names to distinguish our services and solutions from the services of our competitors, and have registered or applied to register many of these trademarks. Third parties may oppose our trademark applications, or otherwise challenge our use of our trademarks. In the event that our trademarks are successfully challenged, we could be forced to rebrand our services and solutions, which could result in loss of brand recognition, and could require us to devote resources to advertising and marketing new brands. Further, we cannot provide assurance that competitors will not infringe our trademarks, or that we will have adequate resources to enforce our trademarks.

We may need to enforce our intellectual property rights through litigation. Litigation relating to our intellectual property may not prove successful and might result in substantial costs and diversion of resources and management attention.

We may face intellectual property infringement claims that could be time-consuming and costly to defend. If we fail to defend ourselves against such claims, we may lose significant intellectual property rights and may be unable to continue providing our existing services.

Our success largely depends on our ability to use and develop our technology, tools, code, methodologies and services without infringing the intellectual property rights of third parties, including patents, copyrights, trade secrets and trademarks. We may be subject to litigation involving claims of patent infringement or violation of other intellectual property rights of third parties.

We typically indemnify customers who purchase our services and solutions against potential infringement of intellectual property rights, which subjects us to the risk of indemnification claims. These claims may require us to initiate or defend protracted and costly litigation on behalf of our customers, regardless of the merits of these claims and are often not subject to liability limits or exclusion of consequential, indirect or punitive damages. If any of these

claims succeed, we may be forced to pay damages on behalf of our customers, redesign or cease offering our allegedly infringing services or solutions, or obtain licenses for the intellectual property that such services or solutions allegedly infringe. If we cannot obtain all necessary licenses on commercially reasonable terms, our customers may be forced to stop using our services or solutions.

Table of Contents

The holders of patents and other intellectual property rights potentially relevant to our service offerings may make it difficult for us to acquire a license on commercially acceptable terms. In addition, we may be unaware of intellectual property registrations or applications relating to our services that may give rise to potential infringement claims against us. There may also be technologies licensed to and relied on by us that are subject to infringement or other corresponding allegations or claims by third parties, which may damage our ability to rely on such technologies. Parties making infringement claims may be able to obtain an injunction to prevent us from delivering our services or using technology involving the allegedly infringing intellectual property. Intellectual property litigation is expensive, time-consuming and could divert management's attention from our business. Protracted litigation could also result in existing or potential customers deferring or limiting their purchase or use of our software product development services or solutions until resolution of such litigation, or could require us to indemnify our customers against infringement claims in certain instances. Any of these actions, regardless of the outcome of litigation or merits of the claim, could damage our reputation and materially adversely affect our business, financial condition and results of operations.

We are subject to laws and regulations in the United States and other countries in which we operate, including export restrictions, economic sanctions and the Foreign Corrupt Practices Act, or FCPA, and similar anti-corruption laws. If we are not in compliance with applicable legal requirements, we may be subject to civil or criminal penalties and other remedial measures.

As a company with international operations, we are subject to many laws and regulations restricting our operations, including activities involving restricted countries, organizations, entities and persons that have been identified as unlawful actors or that are subject to U.S. sanctions imposed by the Office of Foreign Assets Control, or OFAC, or other international sanctions that prohibit us from engaging in trade or financial transactions with certain countries, businesses, organizations and individuals. We are subject to the FCPA, which prohibits U.S. companies and their intermediaries from bribing foreign officials for the purpose of obtaining or keeping business or otherwise obtaining favorable treatment, and anti-bribery and anti-corruption laws in other countries. We operate in many parts of the world that have experienced government corruption to some degree, and, in certain circumstances, strict compliance with anti-bribery laws may conflict with local customs and practices, although adherence to local customs and practices is generally not a defense under U.S. and other anti-bribery laws.

We have a compliance program with controls and procedures designed to ensure our compliance with the FCPA, OFAC sanctions, and other sanctions, laws and regulations. The continuing implementation and ongoing development and monitoring of the program may be time consuming and expensive, and could result in the discovery of issues or violations with respect to the foregoing by us or our employees, independent contractors, subcontractors or agents of which we were previously unaware.

Any violations of these or other laws, regulations and procedures by our employees, independent contractors, subcontractors and agents could expose us to administrative, civil or criminal penalties, fines or business restrictions, which could have a material adverse effect on our results of operations and financial condition and would adversely affect our reputation and the market for shares of our common stock and may require certain of our investors to disclose their investment in our Company under certain state laws.

Changes in the European regulatory environment regarding privacy and data protection regulations could expose us to risks of noncompliance and costs associated with compliance.

EPAM is subject to the European GDPR, which imposes significant restrictions and requirements relating to the processing of personal data that are more burdensome than current privacy standards in the United States. GDPR establishes complex legal obligations that organizations must follow with respect to the processing of personal data, including a prohibition on the transfer of personal information from the European Union to other countries whose laws do not protect personal data to an adequate level of privacy or security, and the imposition of additional notification, security and other control measures.

Our customers and we are at risk of enforcement actions taken by the European Union data protection authorities, and we may face audits or investigations by one or more foreign government agencies relating to our compliance with these regulations, which could result in penalties and fines for non-compliance. Moreover, individuals or organizations can make direct claims against us in the event of any loss or damage as a result of a breach of these

regulations.

Some customers are seeking additional assurances from us about our processing of personal data provided or made available by our customers to us in the course of our business. The burden of compliance with additional customer requirements may result in significant additional cost, complexity and risk in our services. We may experience changes in customer behaviors due to the potential risks resulting from the implementation of GDPR. We are required to establish processes and change certain operations in relation to the processing of personal data as a result of GDPR, which may involve substantial expense and distraction from other aspects of our business.

Table of Contents

Anti-outsourcing legislation and restrictions on immigration, if adopted, may affect our ability to compete for and provide services to customers in the United States or other countries, which could hamper our growth and cause our revenues to decline.

The majority of our professionals are offshore. Some of our projects require a portion of the work to be undertaken at our customers' facilities, which may require our personnel to obtain work authorizations to travel and work at client sites outside of our personnel's home countries. The ability of our employees to work in necessary locations around the world depends on their ability to obtain the required visas and work permits, and this process can be lengthy and difficult. Immigration laws are subject to legislative change, as well as to variations in standards of application and enforcement due to political forces and economic conditions. Moreover, delays in the process to obtain visas may result in delays in the ability of our personnel to travel to meet with our customers, provide services to our customers or to continue to provide services on a timely basis, which could have a material adverse effect on our business, results of operations, financial condition and cash flows.

In addition, the issue of companies outsourcing services to organizations operating in other countries is a topic of political discussion in many countries, including the United States, which is our largest source of revenues. It is possible that pending legislation in the United States regarding offshore outsourcing may impose restrictions on our ability to deploy employees holding U.S. work visas to customer locations, which could adversely impact our business. If enacted, such measures may broaden restrictions on outsourcing by federal and state government agencies and on government contracts with firms that outsource services directly or indirectly, impact private industry with measures such as tax disincentives or intellectual property transfer restrictions, and/or restrict the use of certain work visas.

Our reliance on visas for a number of employees makes us vulnerable to such changes and variations as it affects our ability to staff projects with employees who are not citizens of the country where the work is to be performed. We may not be able to obtain a sufficient number of visas for our employees or we may encounter delays or additional costs in obtaining or maintaining such visas, in which case we may not be able to provide services to our customers on a timely and cost-effective basis or manage our sales and delivery centers as efficiently as we otherwise could, any of which could hamper our growth and cause our revenues to decline.

Our subsidiaries in Belarus, Russia, and Ukraine can be forced into liquidation on the basis of formal noncompliance with certain legal requirements.

We operate in Belarus, Russia and Ukraine primarily through locally organized subsidiaries. Certain provisions of Russian law and the laws of the other countries may allow a court to order liquidation of a locally organized legal entity on the basis of its formal noncompliance with certain requirements during formation, reorganization or during its operations. If the company fails to comply with certain requirements including those relating to minimum net assets, governmental or local authorities can seek the involuntary liquidation of such company in court, and the company's creditors will have the right to accelerate their claims or demand early performance of the company's obligations as well as demand compensation for any damages. If involuntary liquidation of any of our subsidiaries were to occur, such liquidation could materially adversely affect our financial condition and results of operations.

We may need additional capital, and a failure by us to raise additional capital on terms favorable to us, or at all, could limit our ability to grow our business and develop or enhance our service offerings to respond to market demand or competitive challenges.

We believe that our current cash, cash flow from operations and revolving line of credit are sufficient to meet our anticipated cash needs for at least the next twelve months. We may, however, require additional cash resources due to changed business conditions or other future developments, including any investments or acquisitions we may decide to pursue. If these resources are insufficient to satisfy our cash requirements, we may seek to sell additional equity or debt securities or obtain another credit facility, and we cannot be certain that such additional financing would be available on terms acceptable to us or at all. The sale of additional equity securities could result in dilution to our stockholders, and additional indebtedness would result in increased debt service obligations and could impose operating and financial covenants that would restrict our operations.

Table of Contents

Our stock price is volatile.

Our common stock has at times experienced substantial price volatility as a result of variations between our actual and anticipated financial results, announcements by our competitors and us, projections or speculation about our business or that of our competitors by the media or investment analysts or uncertainty about current global economic conditions. The stock market, as a whole, also has experienced price and volume fluctuations that have affected the market price of many technology companies in ways that may have been unrelated to these companies' operating performance. Furthermore, we believe our stock price should reflect future growth and profitability expectations and, if we fail to meet these expectations, our stock price may significantly decline.

Our liability-classified restricted stock units, which are subject to mark-to-market accounting, and the calculation of weighted-average diluted shares outstanding in accordance with the treasury method are both affected by our stock price. Any fluctuations in the price of our stock will affect our future operating results.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our corporate headquarters are located in Newtown, Pennsylvania, where we lease approximately 19,487 square feet of office space under a lease ending in May 2029.

Our principal property consists of office buildings used as delivery centers, client management locations and space for administrative and support functions, which are leased under long-term leases with varying expiration dates into 2031. These facilities are located in numerous cities worldwide and strategically positioned in relation to our talent sources and key in-market locations to align with the needs of our operations. We own one office building in Minsk, Belarus with a capacity of 233,329 square feet, which is used by both administrative support and IT personnel.

During 2018, we continued expanding our locations as demanded by our business, including space gained through strategic business acquisitions. We believe that our existing properties are adequate to meet the current requirements of our business, and that suitable additional or substitute space will be available, if necessary. Our facilities are used interchangeably among all of our segments. See Note 15 "Segment Information" in the notes to our consolidated financial statements in this Annual Report on Form 10-K for information regarding the geographical location and values of our long-lived assets.

Item 3. Legal Proceedings

From time to time, we are involved in litigation and claims arising out of our operations in the normal course of business. We are not currently a party to any material legal proceeding, nor are we aware of any material legal or governmental proceedings pending or contemplated to be brought against us.

Item 4. Mine Safety Disclosures

None.

Table of Contents

PART II

Item 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

Our common stock is traded on the New York Stock Exchange (“NYSE”) under the symbol “EPAM.”

The price range per share of common stock presented below represents the highest and lowest intraday sales prices for the Company’s common stock on the NYSE during each quarter of the two most recent years.

2018

Quarter Ended	High	Low
December 31	\$139.31	\$104.77
September 30	\$144.19	\$115.95
June 30	\$131.75	\$110.20
March 31	\$125.88	\$102.03

2017

Quarter Ended	High	Low
December 31	\$109.07	\$86.53
September 30	\$88.18	\$77.96
June 30	\$86.98	\$73.49
March 31	\$76.16	\$63.32

As of February 12, 2019, we had approximately 16 stockholders of record of our common stock. The number of record holders does not include holders of shares in “street name” or persons, partnerships, associations, corporations or other entities identified in security position listings maintained by depositories.

Dividend Policy

We have not declared or paid any cash dividends on our common stock and currently do not anticipate paying any cash dividends in the foreseeable future. Instead, we intend to retain all available funds and any future earnings for use in the operation and expansion of our business. Any future determination relating to our dividend policy will be made at the discretion of our Board of Directors and will depend on our future earnings, capital requirements, financial condition, future prospects, applicable Delaware law, which provides that dividends are only payable out of surplus or current net profits, and other factors that our Board of Directors deems relevant. In addition, our revolving credit facility restricts our ability to make or pay dividends (other than certain intercompany dividends) unless no potential or actual event of default has occurred or would be triggered thereby.

Equity Compensation Plan Information

See “Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters” in Part III of this Annual Report for our equity compensation plan information.

Table of Contents

Performance Graph

The following graph compares the cumulative total stockholder return on our common stock with the cumulative total return on the S&P 500 Index and a Peer Group Index (capitalization weighted) for the period beginning December 31, 2013 and ending December 31, 2018. The stock performance shown on the graph below is not indicative of future price performance. The following performance graph and related information shall not be deemed “soliciting material” or to be “filed” with the SEC, nor shall information be incorporated by reference into any future filing under the Securities Act of 1933 or Securities Exchange Act of 1934, each as amended, except to the extent that we specifically incorporate it by reference into such filing.

COMPARISON OF CUMULATIVE TOTAL RETURN ⁽¹⁾⁽²⁾Among EPAM, the S&P 500 Index and a Peer Group ⁽³⁾

Company/Index	Base period 12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018
EPAM Systems, Inc.	\$ 100.00	\$ 136.66	\$ 225.01	\$ 184.06	\$ 307.47	\$ 332.03
Peer Group Index	\$ 100.00	\$ 107.81	\$ 133.69	\$ 125.16	\$ 169.91	\$ 146.00
S&P 500 Index	\$ 100.00	\$ 113.69	\$ 115.26	\$ 129.04	\$ 157.21	\$ 150.33

(1) Graph assumes \$100 invested on December 31, 2013, in our common stock, the S&P 500 Index, and the Peer Group.

(2) Cumulative total return assumes reinvestment of dividends.

The Peer Group includes Cognizant Technology Solutions Corp. (NASDAQ:CTSH), ExlService Holdings, Inc

(3) (NASDAQ:EXLS), Globant (NASDAQ:GLOB), Infosys Ltd (NYSE:INFY), Luxoft Holding, Inc

(NASDAQ:LXFT), Virtusa Corporation (NASDAQ:VRTU), and Wipro Limited (NYSE:WIT).

Unregistered Sales of Equity Securities

There were no unregistered sales of equity securities by the Company during the year ended December 31, 2018.

Table of Contents

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

Under our equity-based compensation plans, on the date of vesting of stock-based compensation awards to our personnel, the Company withholds a number of shares of vested stock to satisfy tax withholding obligations arising on that date. The number of shares of stock to be withheld is calculated based on the closing price of the Company's common stock on the vesting date. The following table provides information about shares withheld by the Company during the year ended December 31, 2018:

Period	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Dollar Amount of Shares That May Yet Be Purchased Under the Program
March 1, 2018 to March 31, 2018	61,950	\$ 112.78	—	—
April 1, 2018 to April 30, 2018	1,760	\$ 114.03	—	—
May 1, 2018 to May 31, 2018	50	\$ 129.72	—	—
June 1, 2018 to June 30, 2018	132	\$ 124.50	—	—
July 1, 2018 to July 30, 2018	2,579	\$ 129.82	—	—
August 1, 2018 to August 31, 2018	104	\$ 140.54	—	—
October 1, 2018 to October 30, 2018	439	\$ 122.17	—	—
November 1, 2018 to November 30, 2018	421	\$ 125.32	—	—
December 1, 2018 to December 30, 2018	3,899	\$ 119.25	—	—
Total	71,334	\$ 113.99	—	—

Table of Contents

Item 6. Selected Financial Data

The following table represents selected financial data for each of the last five years. Our historical results are not necessarily indicative of the results to be expected for any future period. The following selected financial data should be read in conjunction with “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our consolidated financial statements and related notes included elsewhere in this annual report.

	Year Ended December 31,				
	2018	2017	2016	2015	2014
	(in thousands, except per share data)				
Consolidated Statements of Income Data:					
Revenues	\$1,842,912	\$1,450,448	\$1,160,132	\$914,128	\$730,027
Operating expenses:					
Cost of revenues (exclusive of depreciation and amortization)	1,186,921	921,352	737,186	566,913	456,530
Selling, general and administrative expenses	373,587	327,588	265,863	223,853	167,590
Depreciation and amortization expense	36,640	28,562	23,387	17,395	17,483
Goodwill impairment loss	—	—	—	—	2,241
Income from operations	245,764	172,946	133,696	105,967	86,183
Interest and other income, net	3,522	4,601	4,848	4,731	2,845
Foreign exchange gain/(loss)	487	(3,242)	(12,078)	(4,628)	(2,075)
Income before provision for income taxes	249,773	174,305	126,466	106,070	86,953
Provision for income taxes	9,517	101,545	27,200	21,614	17,312
Net income	\$240,256	\$72,760	\$99,266	\$84,456	\$69,641
Net income per share of common stock:					
Basic	\$4.48	\$1.40	\$1.97	\$1.73	\$1.48
Diluted	\$4.24	\$1.32	\$1.87	\$1.62	\$1.40
Shares used in calculation of net income per share:					
Basic	53,623	52,077	50,309	48,721	47,189
Diluted	56,673	54,984	53,215	51,986	49,734

As of December 31,

	2018	2017	2016	2015	2014
	(in thousands)				

Consolidated Balance Sheets Data:

Cash and cash equivalents	\$770,560	\$582,585	\$362,025	\$199,449	\$220,534
Accounts receivable, net	\$297,685	\$265,639	\$199,982	\$174,617	\$124,483
Unbilled revenues	\$104,652	\$86,500	\$63,325	\$95,808	\$55,851
Property and equipment, net	\$102,646	\$86,419	\$73,616	\$60,499	\$55,134
Total assets	\$1,611,802	\$1,250,256	\$925,811	\$778,536	\$594,026
Long-term debt	\$25,031	\$25,033	\$25,048	\$35,000	\$—
Total liabilities	\$349,206	\$275,309	\$144,399	\$165,313	\$129,976
Total stockholders’ equity	\$1,262,596	\$974,947	\$781,412	\$613,223	\$464,050

Table of Contents

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations

You should read the following discussion and analysis of our financial condition and results of operations together with our audited consolidated financial statements and the related notes included elsewhere in this annual report. In addition to historical information, this discussion contains forward-looking statements that involve risks, uncertainties and assumptions that could cause actual results to differ materially from management’s expectations. Factors that could cause such differences are discussed in the sections entitled “Special Note Regarding Forward-Looking Statements” and “Item 1A. Risk Factors.” We assume no obligation to update any of these forward-looking statements.

Executive Summary

We are a leading global provider of digital platform engineering and software development services offering specialized technological solutions to many of the world’s leading organizations.

Our customers depend on us to solve their complex technical challenges and rely on our expertise in core engineering, advanced technology, digital design and intelligent enterprise development. We continuously explore opportunities in new industries to expand our core industry client base in software and technology, financial services, business information and media, travel and consumer, retail and distribution and life sciences and healthcare. Our teams of developers, architects, consultants, strategists, engineers, designers, and product experts have the capabilities and skill sets to deliver business results.

Our global delivery model and centralized support functions, combined with the benefits of scale from the shared use of fixed-cost resources, enhance our productivity levels and enable us to better manage the efficiency of our global operations. As a result, we have created a delivery base whereby our applications, tools, methodologies and infrastructure allow us to seamlessly deliver services and solutions from our delivery centers to global customers across all geographies, further strengthening our relationships with them.

Through increased specialization in focused verticals and a continued emphasis on strategic partnerships, we are leveraging our roots in software engineering to grow as a recognized brand in software development and end-to-end digital transformation services for our customers.

Table of Contents

Overview of 2018 and Financial Highlights

The following table presents a summary of our results of operations for the years ended December 31, 2018, 2017 and 2016:

	Year Ended December 31,		2017		2016			
	2018	% of	2017	% of	2016	% of		
		revenues		revenues		revenues		
	(in millions, except percentages and per share data)							
Revenues	\$1,842.9	100.0 %	\$1,450.4	100.0 %	\$1,160.1	100.0 %		
Income from operations	\$245.8	13.3 %	\$172.9	11.9 %	\$133.7	11.5 %		
Net income	\$240.3	13.0 %	\$72.8	5.0 %	\$99.3	8.6 %		
Effective tax rate	3.8 %		58.3 %		21.5 %			
Diluted earnings per share	\$4.24		\$1.32		\$1.87			

The key highlights of our consolidated results for 2018 were as follows:

We recorded revenues of \$1.8 billion, or a 27.1% increase from \$1.5 billion in the previous year, positively impacted by \$2.0 million or 0.2% due to changes in certain foreign currency exchange rates as compared to the corresponding period in the previous year.

Income from operations grew 42.1% to \$245.8 million from \$172.9 million in 2017. Expressed as a percentage of revenues, income from operations was 13.3% compared to 11.9% last year. The increase as a percentage of revenues was primarily driven by an improvement in selling, general and administrative expenses as a percentage of revenues partially offset by an increase in cost of revenues as a percentage of revenues as compared to the same period last year.

Our effective tax rate was 3.8% compared to 58.3% last year. The provision for income taxes for 2018 was favorably impacted by the recognition of \$26.0 million of net deferred tax assets resulting from the implementation of changes to our tax structure in response to U.S. tax reform. In 2017, our effective tax rate had increased principally due to the provisional \$74.6 million charge related to U.S. Tax Reform.

Net income increased 230.2% to \$240.3 million compared to \$72.8 million in 2017. Expressed as a percentage of revenues, net income increased 8.0% compared to last year, which was largely driven by the improved effective tax rate as well as the improvement in income from operations as a percentage of revenues.

Diluted earnings per share increased 221.2% to \$4.24 for the year ended December 31, 2018 from \$1.32 in 2017.

Cash provided by operations increased \$99.4 million, or 51.5%, to \$292.2 million during 2018 as compared to last year.

The operating results in any period are not necessarily indicative of the results that may be expected for any future period.

Table of Contents

Critical Accounting Policies

We prepare our consolidated financial statements in accordance with U.S. generally accepted accounting principles (“GAAP”), which require us to make judgments, estimates and assumptions that affect: (i) the reported amounts of assets and liabilities, (ii) the disclosure of contingent assets and liabilities at the end of each reporting period and (iii) the reported amounts of revenues and expenses during each reporting period. We evaluate these estimates and assumptions based on historical experience, knowledge and assessment of current business and other conditions, and expectations regarding the future based on available information and reasonable assumptions, which together form a basis for making judgments about matters not readily apparent from other sources. Since the use of estimates is an integral component of the financial reporting process, actual results could differ from those estimates. Some of our accounting policies require higher degrees of judgment than others in their application. When reviewing our audited consolidated financial statements, you should consider (i) our selection of critical accounting policies, (ii) the judgment and other uncertainties affecting the application of such policies and (iii) the sensitivity of reported results to changes in conditions and assumptions. We consider the policies discussed below to be critical to an understanding of our consolidated financial statements as their application places significant demands on the judgment of our management.

An accounting policy is considered critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time the estimate is made, and if different estimates that reasonably could have been used, or changes in the accounting estimates that are reasonably likely to occur periodically, could materially impact the consolidated financial statements. We believe that the following critical accounting policies are the most sensitive and require more significant estimates and assumptions used in the preparation of our consolidated financial statements. You should read the following descriptions of critical accounting policies, judgments and estimates in conjunction with our audited consolidated financial statements and other disclosures included elsewhere in this annual report.

Revenues — As discussed in Note 1 “Business and Summary of Significant Accounting Policies” in the notes to our consolidated financial statements in this Annual Report on Form 10-K, we adopted the new accounting standard ASU 2014-09, “Revenue from Contracts with Customers” (Topic 606) as amended using the modified retrospective method. This resulted in different revenue recognition accounting policies applied to the years presented in our consolidated financial statements.

For the year ended December 31, 2018

We recognize revenues when control of goods or services is passed to a customer in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services. Such control may be transferred over time or at a point in time depending on satisfaction of obligations stipulated by the contract. Consideration expected to be received may consist of both fixed and variable components and is allocated to each separately identifiable performance obligation based on the performance obligation’s relative standalone selling price. Variable consideration usually takes the form of volume-based discounts, service level credits, price concessions or incentives. Determining the estimated amount of such variable consideration involves assumptions and judgment that can have an impact on the amount of revenues reported.

We derive revenues from a variety of service arrangements, which have been evolving to provide more customized and integrated solutions to customers by combining software engineering with customer experience design, business consulting and technology innovation services. Fees for these contracts may be in the form of time-and-materials or fixed-price arrangements. We generate the majority of our revenues under time-and-material contracts, which are billed using hourly, daily or monthly rates to determine the amounts to be charged directly to the customer. We apply a practical expedient and revenues related to time-and-material contracts are recognized based on the right to invoice for services performed.

Fixed-price contracts include maintenance and support arrangements, which may exceed one year in duration. Maintenance and support arrangements generally relate to the provision of ongoing services and revenues for such contracts are recognized ratably over the expected service period. Fixed-price contracts also include application development arrangements, where progress towards satisfaction of the performance obligation is measured using input or output methods and input methods are used only when there is a direct correlation between hours incurred and the

end product delivered. Assumptions, risks and uncertainties inherent in the estimates used to measure progress could affect the amount of revenues, receivables and deferred revenues at each reporting period.

Revenues from licenses which have significant stand-alone functionality are recognized at a point in time when control of the license is transferred to the customer. Revenues from licenses which do not have stand-alone functionality are recognized over time.

Table of Contents

If there is an uncertainty about the receipt of payment for the services, revenue recognition is deferred until the uncertainty is sufficiently resolved. We apply a practical expedient and do not assess the existence of a significant financing component if the period between transfer of the service to a customer and when the customer pays for that service is one year or less.

We report gross reimbursable “out-of-pocket” expenses incurred as both revenues and cost of revenues in the consolidated statements of income and comprehensive income.

For the years ended December 31, 2017 and 2016

We recognized revenue when the following criteria were met: (1) persuasive evidence of an arrangement existed; (2) delivery had occurred; (3) the sales price was fixed or determinable; and (4) collectability was reasonably assured.

Determining whether and when some of these criteria had been satisfied often involved assumptions and judgments that could have had a significant impact on the timing and amount of revenues reported.

We derived our revenues from a variety of service offerings, which represent specific competencies of our IT professionals. Contracts for these services had different terms and conditions based on the scope, deliverables, and complexity of the engagement, which required management to make judgments and estimates in determining appropriate revenue recognition. Fees for these contracts may have been in the form of time-and-materials or fixed-price arrangements. If there was uncertainty about the project completion or receipt of payment for the services, revenue was deferred until the uncertainty was sufficiently resolved. At the time revenue was recognized, we provided for any contractual deductions and reduced revenue accordingly. The Company reported gross reimbursable “out-of-pocket” expenses incurred as both revenues and cost of revenues in the consolidated statements of income and comprehensive income.

We deferred amounts billed to our customers for revenues not yet earned. Such amounts were anticipated to be recorded as revenues when services were performed in subsequent periods. Unbilled revenues was recorded when services had been provided but billed subsequent to the period end in accordance with the contract terms.

The majority of our revenues (90.3% of revenues in 2017 and 88.2% in 2016) were generated under time-and-material contracts whereby revenues were recognized as services were performed with the corresponding cost of providing those services reflected as cost of revenues. The majority of such revenues were billed using hourly, daily or monthly rates as actual time was incurred on the project. Revenues from fixed-price contracts (8.3% of revenues in 2017 and 10.4% in 2016) included fixed-price maintenance and support arrangements, which may have exceeded one year in duration and revenues from maintenance and support arrangements were generally recognized ratably over the expected service period. Fixed-price contracts also included application development arrangements and revenues from these arrangements were primarily determined using the proportional performance method. In cases where final acceptance of the product, system, or solution was specified by the customer, and the acceptance criteria were not objectively determinable to have been met as the services were provided, revenues were deferred until all acceptance criteria had been met. In the absence of a sufficient basis to measure progress towards completion, revenue was recognized upon receipt of final acceptance from the customer. Assumptions, risks and uncertainties inherent in the estimates used in the application of the proportional performance method of accounting could have affected the amount of revenues, receivables and deferred revenues at each reporting period.

Business Combinations — We account for our business combinations using the acquisition accounting method, which requires us to determine the fair value of net assets acquired and the related goodwill and other intangible assets in accordance with the FASB ASC Topic 805, “Business Combinations.” We identify and attribute fair values and estimated lives to the intangible assets acquired and allocate the total cost of an acquisition to the underlying net assets based on their respective estimated fair values. Determining the fair value of assets acquired and liabilities assumed requires management’s judgment and involves the use of significant estimates, including projections of future cash inflows and outflows, discount rates, asset lives and market multiples. There are different valuation models for each component, the selection of which requires considerable judgment. These determinations will affect the amount of amortization expense recognized in future periods. We base our fair value estimates on assumptions we believe are reasonable, but recognize that the assumptions are inherently uncertain. The acquired assets typically include customer relationships, trade names, non-competition agreements, and assembled workforce and as a result, a substantial portion of the purchase price is allocated to goodwill and other intangible assets.

If the initial accounting for the business combination has not been completed by the end of the reporting period in which the business combination occurs, provisional amounts are reported to present information about facts and circumstances that existed as of the acquisition date. Once the measurement period ends, which in no case extends beyond one year from the acquisition date, revisions of the accounting for the business combination are recorded in earnings.

Table of Contents

Goodwill and Other Intangible Assets — We assess goodwill for impairment on an annual basis as of October 31, and more frequently if events or changes in circumstances indicate that the fair value of a reporting unit has been reduced below its carrying value. When conducting our annual goodwill impairment assessment, we use a two-step process. The first step is to perform an optional qualitative evaluation as to whether it is more likely than not that the fair value of a reporting unit is less than its carrying value using an assessment of relevant events and circumstances. In performing this assessment, we are required to make assumptions and judgments including, but not limited to, an evaluation of macroeconomic conditions as they relate to our business, industry and market trends, as well as the overall future financial performance of a reporting unit and future opportunities in the markets in which it operates. If we determine that it is not more likely than not that the fair value of our reporting unit is less than its carrying value, we are not required to perform any additional tests in assessing goodwill for impairment. However, if we conclude otherwise or elect not to perform the qualitative assessment, we perform a second step consisting of a quantitative assessment of goodwill impairment. This quantitative assessment requires us to estimate impairment by comparing the fair value of a reporting unit with its carrying amount. An impairment charge would be recognized for the amount by which the carrying amount exceeds the reporting unit's fair value; however, the loss recognized would not exceed the total amount of goodwill allocated to that reporting unit.

Historically, a significant portion of the purchase consideration related to our acquisitions was allocated to customer relationships. In valuing customer relationships, we typically utilize the multi-period excess earnings method, a form of the income approach. The principle behind this method is that the value of the intangible asset is equal to the present value of the after-tax cash flows attributable to the intangible asset only. We amortize our intangible assets that have finite lives on a straight-line basis or, if reliably determinable, the pattern in which the economic benefit of the asset is expected to be consumed utilizing expected discounted future cash flows. Amortization is recorded over the estimated useful lives that predominantly range from five to ten years. We do not have any intangible assets with indefinite useful lives.

We review our intangible assets subject to amortization to determine if any adverse conditions exist or a change in circumstances has occurred that would indicate impairment or a change in the remaining useful life. If the carrying value of an asset exceeds its undiscounted cash flows, we will write down the carrying value of the intangible asset to its fair value in the period identified. In assessing fair value, we must make assumptions regarding estimated future cash flows and discount rates. If these estimates or related assumptions change in the future, we may be required to record impairment charges. If the estimate of an intangible asset's remaining useful life is changed, we will amortize the remaining carrying value of the intangible asset prospectively over the revised remaining useful life.

Accounting for Income Taxes — We estimate our income taxes based on the various jurisdictions where we conduct business and we use estimates in determining our provision for income taxes. We estimate separately our deferred tax assets, related valuation allowances, current tax liabilities and deferred tax liabilities. The calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax rules and the potential for future adjustment of our uncertain tax positions by the U.S. Internal Revenue Service or other taxing jurisdictions.

The provision for income taxes includes federal, state, local and foreign taxes. Deferred tax assets and liabilities are recognized for the estimated future tax consequences of temporary differences between the financial statement carrying amounts and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the year in which the temporary differences are expected to be reversed. Changes to enacted tax rates would result in either increases or decreases in the provision for income taxes in the period of changes.

The realizability of deferred tax assets is primarily dependent on future earnings. We evaluate the realizability of deferred tax assets and recognize a valuation allowance when it is more likely than not that all, or a portion of, deferred tax assets will not be realized. A reduction in estimated forecasted results may require that we record valuation allowances against deferred tax assets. Once a valuation allowance has been established, it will be maintained until there is sufficient positive evidence to conclude that it is more likely than not that the deferred tax assets will be realized. A pattern of sustained profitability will generally be considered as sufficient positive evidence to reverse a valuation allowance. If the allowance is reversed in a future period, the income tax provision will be correspondingly reduced. Accordingly, the increase and decrease of valuation allowances could have a significant

negative or positive impact on future earnings.

On December 22, 2017, the United States enacted the U.S. Tax Act, which subjects a U.S. shareholder to taxes on Global Intangible Low-Taxed Income (“GILTI”) earned by certain foreign subsidiaries. The FASB Staff Q&A, Topic 740, No. 5, “Accounting for Global Intangible Low-Taxed Income”, states that an entity can make an accounting policy election to either recognize deferred taxes for temporary basis differences expected to reverse as GILTI in future years or provide for the tax expense related to GILTI in the year the tax is incurred. During the year ended December 31, 2018, we elected to provide for the tax expense related to GILTI in the year the tax is incurred. This election did not have a material impact on the financial statements for the year ended December 31, 2018.

30

Table of Contents

Stock-Based Compensation — We recognize the cost of equity-settled stock-based incentive awards based on the fair value of the award at the date of grant, net of estimated forfeitures. The cost is expensed evenly over the service period. The service period is the period over which the employee performs the related services, which is normally the same as the vesting period. Quarterly, the forfeiture assumption is adjusted and such adjustment may affect the timing of expense of the total amount recognized over the vesting period.

Adjusting stock-based compensation expense for estimated forfeitures requires judgment. If we change our assumptions, stock-based compensation expense may differ significantly from what we have recorded in the past. Stock-based compensation expense in a period could be impacted, favorably or unfavorably, by differences between forfeiture estimates and actual forfeitures. If there are any modifications or cancellations of the underlying unvested securities, we may be required to accelerate, increase or cancel any remaining unvested stock-based compensation expense.

Equity-based awards that do not meet the criteria for equity classification are recorded as liabilities and adjusted to fair value based on the closing price of our stock at the end of each reporting period. Future stock-based compensation expense related to our liability-classified awards may increase or decrease as a result of changes in the market price for our stock, adding to the volatility in our operating results.

Our adoption of ASU 2016-09, “Compensation — Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting,” effective January 1, 2017, increased income tax expense volatility. Our future operating results will be impacted by fluctuations in the stock price on the dates the awards vest or options are exercised and the magnitude of transactions occurring in each reporting period, among other factors.

Effective January 1, 2018, we changed the methodology for estimating the volatility input used in the Black-Scholes option valuation model. Prior to January 1, 2018, we estimated the volatility of our common stock by using the historical volatility of peer public companies including the Company’s historical volatility. In the first quarter of 2018, we began exclusively using our own historical volatility, as we believe this is a more accurate estimate of future volatility of the price of EPAM’s common stock. We did not change the methodology for estimating any other Black-Scholes option valuation model assumptions as disclosed in Note 12 “Stock-Based Compensation” in the notes to our consolidated financial statements in this Annual Report on Form 10-K.

Recent Accounting Pronouncements

See Note 1 “Business and Summary of Significant Accounting Policies” in the notes to our consolidated financial statements in this Annual Report on Form 10-K for information regarding recent accounting pronouncements.

Table of Contents

Results of Operations

The following table sets forth a summary of our consolidated results of operations for the periods indicated. This information should be read together with our consolidated financial statements and related notes included elsewhere in this annual report. The operating results in any period are not necessarily indicative of the results that may be expected for any future period.

	Year Ended December 31,					
	2018		2017		2016	
	(in thousands, except percentages and per share data)					
Revenues	\$1,842,912	100.0%	\$1,450,448	100.0%	\$1,160,132	100.0%
Operating expenses:						
Cost of revenues (exclusive of depreciation and amortization) ⁽¹⁾	1,186,921	64.4	921,352	63.5	737,186	63.6
Selling, general and administrative expenses ⁽²⁾	373,587	20.3	327,588	22.6	265,863	22.9
Depreciation and amortization expense	36,640	2.0	28,562	2.0	23,387	2.0
Income from operations	245,764	13.3	172,946	11.9	133,696	11.5
Interest and other income, net	3,522	0.3	4,601	0.3	4,848	0.4
Foreign exchange gain/(loss)	487	—	(3,242)	(0.2)	(12,078)	(1.0)
Income before provision for income taxes	249,773	13.6	174,305	12.0	126,466	10.9
Provision for income taxes	9,517	0.6	101,545	7.0	27,200	2.3
Net income	\$240,256	13.0%	\$72,760	5.0%	\$99,266	8.6%
Effective tax rate	3.8	%	58.3	%	21.5	%
Diluted earnings per share	\$4.24		\$1.32		\$1.87	

(1) Included \$27,245, \$20,868 and \$16,619 of stock-based compensation expense for the years ended December 31, 2018, 2017 and 2016, respectively.

(2) Included \$31,943, \$31,539 and \$32,625 of stock-based compensation expense for the years ended December 31, 2018, 2017 and 2016, respectively.

Revenues

We continue to expand our presence in multiple geographies and verticals, both organically and through strategic acquisitions. During the year ended December 31, 2018, our total revenues grew 27.1% over the previous year to \$1.8 billion. This growth resulted from our ability to retain existing customers and increase the level of services we provide to them and our ability to produce revenues from new customer relationships. Customer concentration continued to decrease with revenues from our top five, top ten and top twenty clients declining as a percentage of total revenues for the year ended December 31, 2018 as compared to the previous year. Revenue has been positively impacted from the acquisition of Continuum Innovation LLC and Think Limited, which contributed 1.8% and 0.1%, respectively to our revenue growth, and by the fluctuations in foreign currency that increased our revenue growth by 0.2% during the year ended December 31, 2018 as compared to the previous year.

We discuss below the breakdown of our revenues by vertical, customer location, service arrangement type, and customer concentration.

Table of Contents

Revenues by Vertical

Our customers operate in five main industry verticals as well as in a number of verticals in which we are increasing our presence and label them as emerging verticals. Emerging Verticals include customers in other industries such as energy, utilities, manufacturing, auto, telecommunications and several others.

The following table presents our revenues by vertical and each vertical's revenues as a percentage of total revenues for the periods indicated:

	Year Ended December 31,					
	2018		2017		2016	
	(in thousands, except percentages)					
Financial Services	\$423,977	23.0 %	\$338,899	23.4 %	\$295,419	25.5 %
Travel & Consumer	393,643	21.4	317,415	21.9	262,282	22.6
Software & Hi-Tech	350,815	19.0	287,633	19.8	239,316	20.6
Business Information & Media	324,033	17.6	256,267	17.7	176,325	15.2
Life Sciences & Healthcare	171,703	9.3	120,591	8.3	105,943	9.1
Emerging Verticals	178,741	9.7	129,643	8.9	80,847	7.0
Revenues	\$1,842,912	100.0%	\$1,450,448	100.0%	\$1,160,132	100.0%

Revenues by Customer Location

Our revenues are sourced from four geographic markets: North America, Europe, CIS and APAC. We present and discuss our revenues by customer location based on the location of the specific customer site that we serve, irrespective of the location of the headquarters of the customer or the location of the delivery center where the work is performed. Revenues by customer location is different from revenues by reportable segment in our consolidated financial statements included elsewhere in this annual report. Segments are not based on the geographic location of the customers, but instead they are based on the location of the Company's management responsible for a particular customer or market.

The following table sets forth revenues by customer location by amount and as a percentage of our revenues for the periods indicated:

	Year Ended December 31,					
	2018		2017		2016	
	(in thousands, except percentages)					
North America	\$1,099,167	59.6 %	\$840,692	58.0 %	\$670,581	57.8 %
Europe	612,472	33.2	511,319	35.2	417,813	36.0
CIS ⁽¹⁾	81,703	4.4	68,390	4.7	46,115	4.0
APAC ⁽²⁾	49,570	2.8	30,047	2.1	25,623	2.2
Revenues	\$1,842,912	100.0%	\$1,450,448	100.0%	\$1,160,132	100.0%

(1) CIS includes revenues from customers in Belarus, Kazakhstan, Russia and Ukraine.

(2) APAC, which stands for Asia Pacific, includes revenues from customers in Southeast Asia and Australia. 2018 compared to 2017

During the year ended December 31, 2018, revenues in our largest geography, North America, were \$1,099.2 million growing \$258.5 million, or 30.7%, from \$840.7 million reported for the year ended December 31, 2017. Revenues from this geography accounted for 59.6% of total revenues in 2018, an increase from 58.0% in the prior year. The United States continued to be our largest customer location contributing revenues of \$1,029.3 million in 2018 compared to \$783.6 million in 2017.

Table of Contents

Revenues in our Europe geography were \$612.5 million, an increase of \$101.2 million, or 19.8%, over \$511.3 million in the previous year. Revenues in this geography accounted for 33.2% of consolidated revenues in 2018 as compared to 35.2% in the previous year. The top three revenue contributing customer location countries in Europe were the United Kingdom, Switzerland and Germany generating revenues of \$200.9 million, \$144.4 million and \$80.8 million in 2018, respectively, compared to \$189.0 million, \$123.3 million and \$60.2 million in 2017, respectively. Revenues in the European geography were positively impacted by fluctuations in foreign currency exchange rates with the U.S. dollar, particularly the euro and the British pound, during 2018 compared to the same period in the prior year. During 2018, revenues in the CIS geography increased \$13.3 million, or 19.5%, from the previous year. The increase in CIS revenues came predominantly from customers in Russia, contributing \$10.0 million of revenue growth in 2018 compared to the previous year. The revenues in the CIS geography were negatively affected by currency fluctuations, primarily Russian rubles, decreasing year-over-year growth of reported revenues in this geography by 9.7% in 2018. Revenues from customers in locations in the APAC region comprised 2.8% of total revenues in 2018, a level consistent with the prior year.

2017 compared to 2016

During the year ended December 31, 2017, revenues in our largest geography, North America, were \$840.7 million growing \$170.1 million, or 25.4%, from \$670.6 million reported for the year ended December 31, 2016. Revenues from this geography accounted for 58.0% of total revenues in 2017, a level consistent with the prior year.

Within North America, we experienced strong growth across all verticals with the Business Information & Media vertical contributing 31.7% of total growth in the North America geography. In addition, our traditionally strong Software & Hi-Tech portfolio grew 19.6% year over year. We saw continued growth in Emerging Verticals with 44.2% growth in revenues with 29.7% of the growth coming from customers who have been with us less than one year.

Revenues in our Europe geography were \$511.3 million, an increase of \$93.5 million, or 22.4% over \$417.8 million in the prior year. Revenues in this geography accounted for 35.2% of consolidated revenues in 2017 as compared to 36.0% in the prior year. Europe experienced strong growth in the Business Information & Media, Life Sciences & Healthcare, and Emerging Verticals, each of which grew over 55% during 2017. Over 70% of the growth in our Europe geography in 2017 came from customers who have been with us less than two years. Financial Services remained our largest vertical in this geography accounting for 41.1% of the Europe geography's revenues in 2017 as compared to 47.7% in 2016.

Revenues in the CIS geography increased \$22.3 million, or 48.3%, from last year. The increase in CIS revenues came predominantly from customers within the Financial Services and Emerging Verticals. Revenues in this geography benefited by \$5.9 million from the appreciation of the Russian ruble relative to the U.S. dollar.

Revenues by Customer Concentration

We have long-standing relationships with many of our customers and we seek to grow revenues from our existing customers by continually expanding the scope and size of our engagements. Revenues derived from these customers may fluctuate as these accounts mature or upon completion of multi-year projects. While we believe there is a significant potential for future growth as we expand our capabilities and offerings within existing customers, we continue to focus on diversification of our customer concentration and building up a portfolio of new accounts that we believe have significant revenue potential. We anticipate the contribution of these new accounts to our total revenues to increase in the mid- to long-term and offset the potential slower growth rate of some of our largest customers as those accounts mature.

Table of Contents

We expect customer concentration from our top customers to continue to decrease over the long-term. The following table presents revenues contributed by our customers by amount and as a percentage of our revenues for the periods indicated:

	Year Ended December 31,					
	2018		2017		2016	
	(in thousands, except percentages)					
Top customer	See (1)	See (1)	See (1)	See (1)	\$ 137,599	11.9 %
Top five customers	\$ 410,987	22.3 %	\$ 348,219	24.0 %	\$ 329,324	28.4 %
Top ten customers	\$ 582,539	31.6 %	\$ 491,742	33.9 %	\$ 445,814	38.4 %
Top twenty customers	\$ 782,771	42.5 %	\$ 648,786	44.7 %	\$ 563,057	48.5 %
Customers below top twenty	\$ 1,060,141	57.5 %	\$ 801,662	55.3 %	\$ 597,075	51.5 %

(1) No single customer comprises more than 10% of the Company's revenues for the years ended December 31, 2018 and 2017.

The following table shows the number of customers from which we earned revenues for each year presented:

Revenues Greater Than or Equal To	Year Ended		
	2018	2017	2016
\$0.1 million	562	460	431
\$0.5 million	375	316	266
\$1 million	256	232	182
\$5 million	81	63	45
\$10 million	36	26	19
\$20 million	14	10	7

Revenues by Service Offering

Effective January 1, 2018, the Company adopted ASU No. 2014-09, Revenue from Contracts with Customers (Topic 606) as amended. The adoption of this standard required various disaggregated levels of revenue to be disclosed as presented in Note 9 "Revenues" in the notes to our consolidated financial statements in this Annual Report on Form 10-K. The standard also required us to consider how management views the business and provide the appropriate disclosures that would be relevant and informative under those views.

Our service arrangements have been evolving to provide more customized and integrated solutions to our customers where we combine software engineering with customer experience design, business consulting and technology innovation services. We are continually expanding our service capabilities, moving beyond traditional services into business consulting, design and physical product development. As more of our projects involve multiple competencies and different types of specialized professionals working collaboratively, it has been increasingly difficult to classify our projects into the specific service offerings that we historically presented. Given the market demand for integrated customer solutions and our management's view of the business, we changed our presentation of service offerings to better reflect our business model.

Our professional services engagement models vary based on the type of services provided to a customer, the mix and locations of professionals involved and pricing type, which is either time-and-material or fixed-price. Historically, the majority of our professional services revenues have been generated under time-and-material contracts and we expect time-and-material arrangements to continue to comprise the majority of our revenues in the future.

Table of Contents

The following table shows revenues by service offering as an amount and as a percentage of our revenues for the years indicated:

	Year Ended December 31,					
	2018		2017		2016	
	(in thousands, except percentages)					
Professional services	1,837,148	99.7 %	1,429,781	98.6 %	1,144,470	98.6 %
Licensing	4,097	0.2	3,529	0.2	3,141	0.3
Other	1,667	0.1	1,147	0.1	860	0.1
Reimbursable expenses	See (1)	See (1)	15,991	1.1	11,661	1.0
Revenues	\$1,842,912	100.0 %	\$1,450,448	100.0%	\$1,160,132	100.0%

Following the adoption of Topic 606 on January 1, 2018, the Company includes reimbursable expenses in total (1) contract consideration and is included in Professional services revenues. See Note 1 “Business and Summary of Significant Accounting Policies.”

See Note 9 “Revenues” in the notes to our consolidated financial statements in this Annual Report on Form 10-K for more information regarding our contract types and related revenue recognition policies.

Cost of Revenues (Exclusive of Depreciation and Amortization)

The principal components of our cost of revenues (exclusive of depreciation and amortization) are salaries, bonuses, fringe benefits, stock-based compensation expense, project-related travel costs and fees for subcontractors who are assigned to customer projects. Salaries and other compensation expenses of our revenue generating professionals are reported as cost of revenues regardless of whether the employees are actually performing customer services during a given period. Our employees are a critical asset, necessary for our continued success and therefore we expect to continue hiring talented employees and providing them with competitive compensation programs.

We manage the utilization levels of our professionals through strategic hiring and efficient staffing of projects. Some of our IT professionals are hired and trained to work for specific customers or on specific projects and some of our offshore development centers are dedicated to specific customers or projects. Our staff utilization also depends on the general economy and its effect on our customers and their business decisions regarding the use of our services.

2018 compared to 2017

During the year ended December 31, 2018, cost of revenues (exclusive of depreciation and amortization) was \$1,186.9 million, representing an increase of 28.8% from \$921.4 million reported last year. The increase was primarily due to an increase in compensation costs as a result of an 18.1% growth in the average number of production headcount for the year and a higher level of accrued variable compensation.

Expressed as a percentage of revenues, cost of revenues (exclusive of depreciation and amortization) was 64.4% and 63.5% during the years ended December 31, 2018 and 2017, respectively. The year-over-year increase reflects a higher level of accrued variable compensation based on the stronger relative performance in 2018, the impact from lower utilization rates and increased stock compensation expense.

2017 compared to 2016

During the year ended December 31, 2017, cost of revenues (exclusive of depreciation and amortization) was \$921.4 million, representing an increase of 25.0% from \$737.2 million reported last year. The increase was primarily due to an increase in compensation costs as a result of a 15.0% growth in the average number of production headcount for the year as well as a 2.3% impact from appreciation of foreign currencies.

Expressed as a percentage of revenues, cost of revenues (exclusive of depreciation and amortization) was 63.5% and 63.6% during the years ended December 31, 2017 and 2016, respectively. Our utilization in 2017 improved by 3.8% as compared to 2016 which was offset by higher compensation expense and the unfavorable impact of appreciation of the Russian ruble, Hungarian forint and Polish zloty as compared to the U.S. dollar.

Table of Contents

Selling, General and Administrative Expenses

Selling, general and administrative expenses represent expenses associated with promoting and selling our services and general and administrative functions of our business. These expenses include the costs of salaries, bonuses, fringe benefits, stock-based compensation expense, severance, travel, legal and audit services, insurance, operating leases, including lease exit costs, advertising and other promotional activities. In addition, we pay a membership fee of 1% of revenues generated in Belarus to the administrative organization of the Belarus High-Technologies Park. We expect our selling, general and administrative expenses to continue to increase in absolute terms as our business expands but generally to remain steady as a percentage of our revenues in the foreseeable future.

2018 compared to 2017

Our selling, general and administrative expenses have increased due to our continuously expanding operations, strategic business acquisitions, and the hiring of necessary personnel to support our growth. During the year ended December 31, 2018, selling, general and administrative expenses were \$373.6 million, representing an increase of 14.0% as compared to \$327.6 million reported last year. The increase in selling, general and administrative expenses in 2018 was primarily driven by a \$27.4 million increase in personnel-related costs including stock-based compensation expense and talent acquisition and development expenses, and a \$16.0 million increase in facilities and infrastructure related expenses to support our growth.

Expressed as a percentage of revenues, selling, general and administrative expenses decreased 2.3% to 20.3% for the year ended December 31, 2018. The decrease was primarily driven by the slower growth of 13.7% in personnel-related costs including stock-based compensation expense as compared to revenue growth of 27.1%.

2017 compared to 2016

As a result of our expanding operations, acquisitions, and the hiring of a number of senior managers to support our growth, our selling, general and administrative expenses have been increasing. During the year ended December 31, 2017, selling, general and administrative expenses were \$327.6 million, representing an increase of 23.2% as compared to \$265.9 million reported in the prior year. The increase in selling, general and administrative expenses in 2017 was driven by a \$34.6 million increase in personnel-related costs, including stock-based compensation expense and talent acquisition and development expenses, and a \$16.6 million increase in facility and infrastructure expenses to support the increased headcount.

Expressed as a percentage of revenue, selling, general and administrative expenses decreased 0.3% to 22.6% for the year ended December 31, 2017.

Depreciation and Amortization Expense

2018 compared to 2017

During the year ended December 31, 2018, depreciation and amortization expense was \$36.6 million, representing an increase of \$8.1 million from \$28.6 million reported last year. The increase in depreciation and amortization expense was primarily due to an increase in computer equipment to support headcount growth. Depreciation and amortization expense includes amortization of acquired finite-lived intangible assets. Expressed as a percentage of revenues, depreciation and amortization expense remained consistent during the year ended December 31, 2018 as compared to 2017.

2017 compared to 2016

During the year ended December 31, 2017, depreciation and amortization expense was \$28.6 million, representing an increase of \$5.2 million from \$23.4 million reported last year. The increase in depreciation and amortization expense was primarily due to an increase in computer equipment to support headcount growth. Depreciation and amortization expense includes amortization of acquired finite-lived intangible assets. Expressed as a percentage of revenues, depreciation and amortization expense remained consistent during the year ended December 31, 2017 as compared to 2016.

Interest and Other Income, Net

Interest and other income, net includes interest earned on cash and cash equivalents and employee housing loans, gains and losses from certain financial instruments, interest expense related to our revolving credit facility and changes in the fair value of contingent consideration. There were no material changes in interest and other income, net in 2018 as compared to 2017 and 2016.

Table of Contents

Provision for Income Taxes

Determining the consolidated provision for income tax expense, deferred income tax assets and liabilities and any potential related valuation allowances involves judgment. We consider factors that may contribute, favorably or unfavorably, to the overall annual effective tax rate in the current year as well as the future. These factors include statutory tax rates and tax law changes in the countries where we operate and excess tax benefits upon vesting or exercise of equity awards as well as consideration of any significant or unusual items.

As a global company, we are required to calculate and provide for income taxes in each of the jurisdictions in which we operate. During 2018, 2017 and 2016, we had \$205.2 million, \$180.9 million and \$135.8 million, respectively, in income before provision for income taxes attributed to our foreign jurisdictions. Changes in the geographic mix or level of annual pre-tax income can also affect our overall effective income tax rate.

Our provision for income taxes also includes the impact of provisions established for uncertain income tax positions, as well as the related net interest and penalty expense. Tax exposures can involve complex issues and may require an extended period to resolve. Although we believe we have adequately reserved for our uncertain tax positions, we cannot provide assurance that the final tax outcome of these matters will not be different from our current estimates. We adjust these reserves in light of changing facts and circumstances, such as the closing of a tax audit, statute of limitation lapse or the refinement of an estimate. To the extent that the final tax outcome of these matters differs from the amounts recorded, such differences will impact the provision for income taxes in the period in which such determination is made.

In Belarus, member technology companies of High-Technologies Park, including our subsidiary, have a full exemption from Belarus income tax through January 2049. However, beginning February 1, 2018, the earnings of the Company's Belarus local subsidiary are subject to U. S. income taxation due to the Company's decision to change the tax status of the subsidiary. Consequently, there was less income tax benefit from the Belarus tax exemption for the year ended December 31, 2018 compared to previous years. The aggregate dollar benefits derived from this tax holiday approximated \$1.4 million, \$15.5 million and \$13.6 million for the years ended December 31, 2018, 2017 and 2016, respectively. The benefit the tax holiday had on diluted net income per share approximated \$0.02, \$0.28 and \$0.26 for the years ended December 31, 2018, 2017 and 2016, respectively.

2018 compared to 2017

The provision for income taxes was \$9.5 million in 2018 and \$101.5 million in 2017. The decrease in the effective tax rate from 58.3% in 2017 to 3.8% in 2018 was primarily due to a provisional one-time \$74.6 million charge in 2017 as a result of the U.S. Tax Act and \$30.0 million in one-time benefits in 2018 primarily resulting from our decision to change the tax status and to classify most of our foreign subsidiaries as disregarded for U.S. income tax purposes as well as adjustments to the 2017 provisional charge.

The U.S. Tax Act significantly changed U.S. corporate income tax laws including a reduction of the U.S. corporate income tax rate from 35.0% to 21.0% effective January 1, 2018. This rate reduction yielded lower taxes on U.S. earnings in 2018, but was offset by U.S. tax imposed on foreign subsidiary earnings due to our decision to file entity classification elections with the Internal Revenue Service for the majority of our foreign subsidiaries to change the tax status and to classify most of our foreign subsidiaries as disregarded for U.S. income tax purposes. This change subjects the income of the disregarded foreign subsidiaries to U.S. income taxation and reduces the impact of new taxes under the U.S. Tax Act on certain foreign-sourced earnings and certain related party payments, which are referred to as GILTI and the base erosion and anti-abuse tax ("BEAT"), respectively. A one-time tax benefit of \$26.0 million was recorded to reflect the establishment of net deferred tax assets as a result of the entity classification elections.

The one-time \$74.6 million charge in 2017 was comprised of a \$64.3 million provisional charge due to a one-time transition tax on accumulated foreign subsidiary earnings not previously subject to U.S. income tax as well as a \$10.3 million provisional charge due to the impact of the change in the U.S. statutory tax rate from 35.0% to 21.0% in the periods in which the net deferred tax assets are expected to be realized as a result of the U.S. Tax Act. The provisional charge due to the one-time transition tax was reduced in 2018 to a final charge of \$59.4 million. This tax reduction resulted in a \$4.9 million tax benefit in 2018. The provisional charge due to the impact of the change in the U.S. statutory tax rate on the valuation of the net deferred tax assets was increased to a final charge of \$11.2 million, which

resulted in a \$0.9 million tax charge in 2018.

38

Table of Contents

In 2017, we reassessed our accumulated foreign earnings in light of the U.S. Tax Act and determined \$97.0 million of our accumulated earnings in Belarus were no longer indefinitely reinvested. As a result, we recorded a charge of \$4.9 million in the provision for income taxes during the year ended December 31, 2017 for the withholding tax payable to Belarus when the earnings are distributed. Based on proposed tax regulations issued by the U.S. Treasury Department during 2018, it was determined that a U.S. foreign tax credit could be claimed for the withholding tax paid to Belarus resulting in a net \$4.9 million tax benefit recognized in 2018. This \$4.9 million tax charge in 2017 and offsetting benefit in 2018 also contributed to the decrease in the effective tax rate from 2017 to 2018.

Excess tax benefits associated with equity award exercises and vesting were \$17.4 million in 2018 and \$9.3 million in 2017. Due to the entity classification elections for U.S. tax purposes, the benefit from the equity awards to employees outside the U.S. contributed to the increase in excess tax benefits for 2018 and also contributed to the decrease in the overall effective tax rate from 2017 to 2018.

2017 compared to 2016

The provision for income taxes was \$101.5 million in 2017 and \$27.2 million in 2016. The increase in the effective tax rate from 21.5% in 2016 to 58.3% in 2017 was primarily due to the provisional \$74.6 million charge as a result of the U.S. Tax Act. The U.S. Tax Act significantly changed U.S. corporate income tax laws including a reduction of the U.S. corporate income tax rate from 35.0% to 21.0% effective January 1, 2018 and the creation of a territorial tax system with a one-time transition tax on accumulated foreign subsidiary earnings not previously subject to U.S. income tax. In addition, the U.S. Tax Act created new taxes on certain foreign-sourced earnings and certain related party payments, which are referred to as the global intangible low-taxed income tax and the base erosion tax, respectively. The charge was comprised of a \$64.3 million provisional charge due to the one-time transition tax as well as a \$10.3 million provisional charge due to the impact of the change in the U.S. statutory tax rate from 35.0% to 21.0% in the periods in which the net deferred tax assets are expected to be realized as a result of the U.S. Tax Act. In 2017, we also reassessed our accumulated foreign earnings in light of the U.S. Tax Act and determined \$97.0 million of our accumulated earnings in Belarus are no longer indefinitely reinvested. As a result, we recorded a charge of \$4.9 million in the provision for income taxes during the year ended December 31, 2017 for the withholding tax payable to Belarus when the earnings are distributed.

These charges were partially offset by the adoption of a new accounting standard in the first quarter of 2017 whereby excess tax benefits of \$9.3 million were recognized for the year ended December 31, 2017 in the income tax provision rather than additional paid-in-capital.

Other factors impacting our effective tax rate include changes in the geographic mix of our earnings attributable to foreign operations toward jurisdictions with lower statutory income tax rates as well as small decreases in statutory tax rates in Hungary, Ukraine and the United Kingdom.

Foreign Exchange Gain / Loss

For discussion of the impact of foreign exchange fluctuations see “Item 7A. Quantitative and Qualitative Disclosures About Market Risk — Foreign Exchange Risk.”

Results by Business Segment

Our operations consist of three reportable segments: North America, Europe, and Russia. The segments represent components of EPAM for which separate financial information is available and used on a regular basis by our chief executive officer, who is also our chief operating decision maker (“CODM”), to determine how to allocate resources and evaluate performance. Our CODM makes business decisions based on segment revenues and operating profit. Segment operating profit is defined as income from operations before unallocated costs. Expenses included in segment operating profit consist principally of direct selling and delivery costs as well as an allocation of certain shared services expenses. Such expenses include certain types of professional fees, non-corporate taxes, compensation to non-employee directors and certain other general and administrative expenses, including compensation of specific groups of non-production employees. In addition, the Company does not allocate amortization of acquisition-related intangible assets, goodwill and other asset impairment charges, stock-based compensation expenses, acquisition-related costs and certain other one-time charges. These unallocated amounts are combined with total segment operating profit to arrive at consolidated income from operations.

Table of Contents

We manage our business primarily based on the managerial responsibility for its client base and market. As managerial responsibility for a particular customer relationship generally correlates with the customer's geographic location, there is a high degree of similarity between customer locations and the geographic boundaries of our reportable segments. In some cases, managerial responsibility for a particular customer is assigned to a management team in another region and is usually based on the strength of the relationship between customer executives and particular members of EPAM's senior management team. In such cases, the customer's activity would be reported through the management team's reportable segment.

Segment revenues from external customers and segment operating profit, before unallocated expenses, for the North America, Europe and Russia segments for the years ended December 31, 2018, 2017 and 2016 were as follows:

	Year Ended December 31,		
	2018	2017	2016
	(in thousands)		
Segment revenues:			
North America	\$1,077,094	\$796,126	\$642,216
Europe	693,867	593,167	474,988
Russia	73,148	62,994	43,611
Total segment revenues	\$1,844,109	\$1,452,287	\$1,160,815
Segment operating profit:			
North America	\$221,846	\$169,340	\$143,021
Europe	115,876	92,080	67,545
Russia	11,377	13,906	7,555
Total segment operating profit	\$349,099	\$275,326	\$218,121

During the year ended December 31, 2018, the Company began to allocate certain staff recruitment and development expenses into segment operating profit as these expenses became part of the evaluation of segment management's performance. These costs were previously not allocated to segments and were included in unallocated amounts in the reconciliation of segment operating profit to consolidated income before provision for income taxes. The effect of this reclassification was not material to segment operating profit and had no impact on total income from operations for the year ended December 31, 2018.

North America Segment 2018 compared to 2017

During 2018, North America segment revenues increased \$281.0 million, or 35.3%, over last year. Revenues from our North America segment represent 58.4% and 54.8% of total segment revenues during 2018 and 2017, respectively. The following table presents North America segment revenues by industry vertical for the periods indicated:

	Year Ended		Change	
	December 31,		Dollars	Percentage
	2018	2017		
	(in thousands, except percentages)			
Software & Hi-Tech	\$269,067	\$211,350	\$57,717	27.3 %
Business Information & Media	251,081	192,117	58,964	30.7 %
Travel & Consumer	177,913	148,190	29,723	20.1 %
Life Sciences & Healthcare	151,449	105,857	45,592	43.1 %
Financial Services	112,528	65,170	47,358	72.7 %
Emerging Verticals	115,056	73,442	41,614	56.7 %
Revenues	\$1,077,094	\$796,126	\$280,968	35.3 %

Software & Hi-Tech remained the largest industry vertical in the North America segment during the year ended December 31, 2018, growing 27.3% as compared to the prior year, which was a result of the continued focus on working with our technology customers. The revenues from the Financial Services and Emerging Verticals grew in excess of 50% during the year ended December 31, 2018 compared to 2017 substantially driven by customers we began serving in the past 24 months.

Table of Contents

During 2018 as compared to 2017, the North America segment's operating profits increased \$52.5 million, or 31.0%, to \$221.8 million. North America's operating profit represented 20.6% of North America segment revenues as compared to 21.3% in 2017.

2017 compared to 2016

North America segment revenues increased \$153.9 million, or 24.0%, over 2016 and remained consistent at 54.8% and 55.3% of total revenues for 2017 and 2016, respectively. The North America segment's operating profits increased \$26.3 million, or 18.4%, as compared to 2016, to \$169.3 million. North America's operating profit represented 21.3% of North America segment revenues as compared to 22.3% in 2016. The Media & Entertainment, Financial Services and Emerging Verticals each grew over 30% as compared to 2016 and in total represented 60.8% of the growth in North America segment revenues from 2016.

Europe Segment

Our Europe segment includes the business in the APAC region, which is managed by the same management team.

2018 compared to 2017

During 2018, Europe segment revenues were \$693.9 million, reflecting an increase of \$100.7 million, or 17.0%, from last year. Revenues from our Europe segment represent 37.6% and 40.8% of total segment revenues during 2018 and 2017, respectively.

The following table presents Europe segment revenues by industry vertical for the periods indicated:

Industry Vertical	Year Ended		Change		
	December 31,		Dollars	Percentage	
	2018	2017			
	(in thousands, except percentages)				
Financial Services	\$253,089	\$233,496	\$19,593	8.4	%
Travel & Consumer	208,445	160,580	47,865	29.8	%
Software & Hi-Tech	79,121	70,621	8,500	12.0	%
Business Information & Media	72,898	64,110	8,788	13.7	%
Life Sciences & Healthcare	20,272	14,726	5,546	37.7	%
Emerging Verticals	60,042	49,634	10,408	21.0	%
Revenues	\$693,867	\$593,167	\$100,700	17.0	%

The Europe segment benefited from strong growth in the Travel & Consumer vertical of 29.8% for the year ended December 31, 2018 as compared to 2017. Financial Services remained the largest industry vertical in the Europe segment. Revenues in Financial Services grew less than 10% as compared to 2017 primarily due to decreasing revenues from certain customers outside of our top 5 customers.

During 2018, this segment's operating profits increased \$23.8 million, or 25.8% as compared to last year, to \$115.9 million. Europe's operating profit represented 16.7% of Europe segment revenues as compared to 15.5% in 2017.

2017 compared to 2016

Europe segment revenues were \$593.2 million, representing an increase of \$118.2 million, or 24.9%, from the preceding year. During the years ended December 31, 2017 and 2016, revenues from our Europe segment were 40.8% and 40.9% of total segment revenues, respectively. During 2017, this segment's operating profits increased \$24.5 million, or 36.3% as compared to 2016, to \$92.1 million. The Financial Services vertical remained our largest vertical in this segment and grew 5.8% in 2017 as compared to 2016. Over half of the growth in the Europe segment was attributable to the Travel & Consumer and Business Information & Media verticals.

Russia Segment

2018 compared to 2017

During 2018, revenues from our Russia segment increased \$10.2 million relative to 2017 and represent 4.0% and 4.3% of total segment revenues during 2018 and 2017, respectively.

Table of Contents

The following table presents Russia segment revenues by industry vertical for the periods indicated:

Industry Vertical	Year Ended		Change	
	2018	2017	Dollars	Percentage
	(in thousands, except percentages)			
Financial Services	\$59,337	\$41,466	\$17,871	43.1 %
Travel & Consumer	7,467	9,114	(1,647)	(18.1)%
Software & Hi-Tech	2,627	5,725	(3,098)	(54.1)%
Business Information & Media	54	69	(15)	(21.7)%
Life Sciences & Healthcare	13	26	(13)	(50.0)%
Emerging Verticals	3,650	6,594	(2,944)	(44.6)%
Revenues	\$73,148	\$62,994	\$10,154	16.1 %

Operating profits of our Russia segment decreased \$2.5 million when compared to 2017. Expressed as a percentage of Russia segment revenues, the segment's operating profits were 15.6% and 22.1% in 2018 and 2017, respectively. The depreciation of the Russian ruble against the U.S. dollar during 2018 as compared to 2017 significantly impacted the revenues in this segment, which were not similarly offset with the costs due to realized losses on our foreign currency hedges. Currency fluctuations of the Russian ruble typically impact the results in the Russia segment. Ongoing economic and geopolitical uncertainty in the region and the volatility of the Russian ruble can significantly impact reported revenues in this geography. We continue to monitor geopolitical forces, economic and trade sanctions, and other issues involving this region.

2017 compared to 2016

Revenues from our Russia segment increased \$19.4 million relative to 2016. Operating profits of our Russia segment increased \$6.4 million when compared to 2016. Expressed as a percentage of revenues, the Russia segment's operating profits were 22.1% and 17.3% in 2017 and 2016, respectively. This growth is partially attributable to the strengthening of the Russian ruble against the U.S. dollar during 2017 as compared to 2016. Ongoing economic and geopolitical uncertainty in this region as well as significant volatility of the Russian ruble impact this segment.

Effects of Inflation

Economies in some countries where we operate, particularly Belarus, Russia, Kazakhstan, Ukraine and India have periodically experienced high rates of inflation. Periods of higher inflation may affect various economic sectors in those countries and increase our cost of doing business there. Inflation may increase some of our expenses such as wages. While inflation may impact our results of operations and financial condition and it is difficult to accurately measure the impact of inflation, we believe the effects of inflation on our results of operations and financial condition are not significant.

Table of Contents

Liquidity and Capital Resources

Capital Resources

Our cash generated from operations has been our primary source of liquidity to fund operations and investments to support the growth of our business. As of December 31, 2018, our principal sources of liquidity were cash and cash equivalents totaling \$770.6 million and \$274.6 million of available borrowings under our revolving credit facility. Many of our operations are conducted outside the United States and as of December 31, 2018, all cash and cash equivalents held at locations outside of the United States are for future operating needs and we have no intention of repatriating those funds. As part of our ongoing liquidity assessments, we regularly monitor our mix of domestic and international cash flows and cash balances and we may decide to repatriate some or all of our funds to the United States in the future. During the year ended December 31, 2018, we repatriated \$167.5 million of cash held in our foreign subsidiaries to the United States. If we decide to remit funds to the United States in the form of dividends in the future, \$242.8 million would be subject to foreign withholding taxes. We believe that our available cash and cash equivalents held in the United States and cash flow to be generated from domestic operations will be sufficient to fund our domestic operations and obligations for the foreseeable future.

We have cash in banks in Belarus, Russia, Ukraine, Kazakhstan and Armenia, where the banking sector remains subject to periodic instability, banking and other financial systems generally do not meet the banking standards of more developed markets, and bank deposits made by corporate entities are not insured. As of December 31, 2018, the total amount of cash held in these countries was \$179.5 million and of this amount, \$119.7 million was located in Belarus.

As of December 31, 2018, we had \$274.6 million available for borrowing under our revolving credit facility and our outstanding debt of \$25.0 million represents the minimal required borrowing to keep the credit facility active. As of December 31, 2018, we were in compliance with all covenants specified under the credit facility and anticipate being in compliance for the foreseeable future. See Note 8 “Long-Term Debt” in the notes to our consolidated financial statements in this Annual Report on Form 10-K for information regarding our long-term debt.

Our ability to expand and grow our business in accordance with current plans and to meet our long-term capital requirements will depend on many factors, including the rate at which our cash flows increase or decrease and the availability of public and private debt and equity financing. We may require additional cash resources due to changed business conditions or other future developments, including any investments or acquisitions we may decide to pursue. If our resources are insufficient to satisfy our cash requirements, we may seek to sell additional equity or debt securities or obtain another credit facility.

Cash Flows

The following table summarizes our cash flows for the periods indicated:

	For the Years Ended December		
	2018	2017	2016
	(in thousands)		
Consolidated Statements of Cash Flow Data:			
Net cash provided by operating activities	\$292,218	\$192,820	\$167,217
Net cash used in investing activities	(112,123)	(36,151)	(9,320)
Net cash provided by financing activities	23,001	49,746	10,467
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(14,240)	11,776	(3,387)
Net increase in cash, cash equivalents and restricted cash	\$188,856	\$218,191	\$164,977
Cash, cash equivalents and restricted cash, beginning of period	582,855	364,664	199,687
Cash, cash equivalents and restricted cash, end of period	\$771,711	\$582,855	\$364,664

Table of Contents

Operating Activities

2018 Compared to 2017

Net cash provided by operating activities during the year ended December 31, 2018 increased \$99.4 million, or 51.5%, to \$292.2 million, as compared to 2017 primarily driven by the \$167.5 million increase in net income and 8 day improvement in days sales outstanding partially offset by the payout of a higher level of variable compensation related to 2017 performance and a non-cash increase in net deferred tax assets of \$26.0 million as a result of our decision to change the tax status and to classify most of our foreign subsidiaries as disregarded for U.S. income tax purposes.

2017 Compared to 2016

Net cash provided by operating activities during the year ended December 31, 2017 increased \$25.6 million, or 15.3%, to \$192.8 million, as compared to 2016 primarily driven by the \$39.3 million increase in income from operations. The \$74.3 million increase in the provision for income taxes had minimal impact on cash flow as it was offset by a \$70.5 million increase in Taxes payable primarily attributable to the U.S. Tax Act, which are expected to be paid over the next 8 years.

Investing Activities

2018 Compared to 2017

Net cash used in investing activities during the year ended December 31, 2018 was \$112.1 million compared to \$36.2 million used in the same period in 2017. During 2018, the increase in cash used in investing activities was primarily attributable to the net \$74.3 million cash used to acquire Continuum Innovation LLC and Think Limited and an increase in capital expenditures of \$7.8 million compared to the same period last year.

2017 Compared to 2016

Net cash used in investing activities during the year ended December 31, 2017 was \$36.2 million compared to \$9.3 million used in the same period in 2016. During 2017, the investing cash outflow was primarily attributed to capital expenditures of \$29.8 million and was consistent with capital expenditures of \$29.3 million in 2016. Our capital expenditures during 2017 were driven by our continuous investment in facilities and computer equipment to support our increased headcount. Cash inflows during 2016 included a \$30.0 million increase in cash upon maturity of certain time deposits, while there were no material time deposit maturities during 2017.

Financing Activities

2018 Compared to 2017

During the year ended December 31, 2018, net cash provided by financing activities was \$23.0 million, representing a \$26.7 million decrease from \$49.7 million cash provided by financing activities in 2017. During 2018, net cash received from the exercises of stock options issued under our long-term incentive plans was \$34.8 million, a decrease of \$19.1 million from the \$54.0 million during 2017.

2017 Compared to 2016

During the year ended December 31, 2017, net cash provided by financing activities was \$49.7 million, representing a \$39.3 million increase from \$10.5 million cash provided by financing activities in 2016. The increase was primarily attributable to higher proceeds from increased exercises of stock options issued under our long-term incentive plans. During 2017, stock option exercises contributed \$54.0 million of cash compared to \$18.0 million during 2016.

Table of Contents

Contractual Obligations and Future Capital Requirements

Contractual Obligations

Set forth below is information concerning our significant fixed and determinable contractual obligations as of December 31, 2018.

	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years
	(in thousands)				
Operating lease obligations	\$238,866	\$46,082	\$70,841	\$44,459	\$77,484
U.S. Tax Act transition tax ⁽¹⁾	42,253	—	2,492	13,449	26,312
Long-term incentive plan payouts ⁽²⁾	35,148	12,861	19,916	2,371	—
Long-term debt obligations ⁽³⁾	29,404	1,309	2,579	25,516	—
Total contractual obligations	\$345,671	\$60,252	\$95,828	\$85,795	\$103,796

(1) The U.S. Tax Act transition tax on undistributed foreign earnings is payable over eight years. See Note 7 “Income Taxes” to our consolidated financial statements.

We estimate our future obligations for long-term incentive plan payouts by assuming the closing price per share of our common stock at

December 31, 2018 remains constant into the future. This is an estimate as actual prices will vary over time.

Our future obligations related to the 2017 Credit Facility consist of principal, interest and fees for the unused balance. We assume the floating interest rate in effect at December 31, 2018 will remain constant into the future.

(3) This is an estimate, as actual rates will vary over time. In addition, for the 2017 Credit Facility, we assume that the balance outstanding and the unused balance as of December 31, 2018 remain the same through the remaining term of the agreement. The actual respective balances under our 2017 Credit Facility may fluctuate significantly in future periods depending on the business decisions of management.

As of December 31, 2018, we had \$1.4 million of unrecognized tax benefits for which we are unable to make a reliable estimate of the eventual cash flows by period that may be required to settle these matters. In addition, we had recorded \$7.5 million of contingent consideration liabilities as of December 31, 2018 related to the acquisitions of businesses that are not included in the table above due to the uncertainty involved with the potential payments.

Letters of Credit

At December 31, 2018, we had one irrevocable standby letter of credit totaling \$0.4 million under the 2017 Credit Facility, which is required to secure commitments for office rent. The letter of credit expires on August 2, 2019 with a possibility of extension for an additional period of one year from the present or any future expiration date.

Future Capital Requirements

We believe that our existing cash and cash equivalents combined with our expected cash flow from operations will be sufficient to meet our projected operating and capital expenditure requirements for at least the next twelve months and that we possess the financial flexibility to execute our strategic objectives, including the ability to make acquisitions and strategic investments in the foreseeable future. However, our ability to generate cash is subject to our performance, general economic conditions, industry trends and other factors. To the extent that existing cash and cash equivalents and operating cash flow are insufficient to fund our future activities and requirements, we may need to raise additional funds through public or private equity or debt financing. If we issue equity securities in order to raise additional funds, substantial dilution to existing stockholders may occur. If we raise cash through the issuance of additional indebtedness, we may be subject to additional contractual restrictions on our business. There is no assurance that we would be able to raise additional funds on favorable terms or at all.

Off-Balance Sheet Commitments and Arrangements

We do not have any material obligations under guarantee contracts or other contractual arrangements other than as disclosed in Note 14 “Commitments and Contingencies” in the notes to our consolidated financial statements in this Annual Report on Form 10-K. We have not entered into any transactions with unconsolidated entities where we have financial guarantees, subordinated retained interests, derivative instruments, or other contingent arrangements that

expose us to material continuing risks, contingent liabilities, or any other obligation under a variable interest in an unconsolidated entity that provides financing, liquidity, market risk, or credit risk support to us, or engages in leasing, hedging, or research and development services with us.

45

Table of Contents

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to certain market risks in the ordinary course of our business. These risks result primarily from concentrations of credit, changes in foreign currency exchange rates and interest rates. In addition, our international operations are subject to risks related to differing economic conditions, changes in political climate, differing tax structures, and other regulations and restrictions.

Concentration of Credit and Other Credit Risks

Financial instruments that potentially subject us to significant concentrations of credit risk consist primarily of cash and cash equivalents, trade accounts receivable and unbilled revenues.

We maintain our cash and cash equivalents and short-term investments with financial institutions. We believe that our credit policies reflect normal industry terms and business risk. We do not anticipate non-performance by the counterparties.

We have cash in banks in countries such as Belarus, Russia, Ukraine, Kazakhstan and Armenia, where the banking sector remains subject to periodic instability, banking and other financial systems generally do not meet the banking standards of more developed markets, and bank deposits made by corporate entities are not insured. As of December 31, 2018, \$179.5 million of total cash was kept in banks in these countries, of which \$119.7 million was held in Belarus. In this region, and particularly in Belarus, a banking crisis, bankruptcy or insolvency of banks that process or hold our funds, may result in the loss of our deposits or adversely affect our ability to complete banking transactions in the region, which could adversely affect our business and financial condition. Cash in this region is used for short-term operational needs and cash balances in those banks move with the needs of those entities.

Accounts receivable and unbilled revenues are generally dispersed across many customers operating in different industries; therefore, concentration of credit risk is limited. There were no customers individually exceeding 10% of our accounts receivable or unbilled revenues as of December 31, 2018. There were no customers individually exceeding 10% of our total revenues for the years ended December 31, 2018 and 2017. During the year ended December 31, 2016, the Company had one customer, UBS AG, which contributed revenues of \$137.6 million and accounted for more than 10% of total revenues in the period indicated.

During the year ended December 31, 2018, our top five customers accounted for 22.3% of our total revenues, and our top ten customers accounted for 31.6% of our total revenues. During the year ended December 31, 2017, our top five customers accounted for 24.0% of our total revenues, and our top ten customers accounted for 33.9% of our total revenues.

Though our results of operations depend on our ability to successfully collect payment from our customers for work performed, historically, credit losses and write-offs of accounts receivable balances have not been material to our consolidated financial statements.

Interest Rate Risk

Our exposure to market risk is influenced by the changes in interest rates on our cash and cash equivalent deposits and paid on any outstanding balance on our borrowings, mainly under our 2017 Credit Facility, which is subject to a variety of rates depending on the type and timing of funds borrowed. We do not believe we are exposed to material direct risks associated with changes in interest rates related to these deposits and borrowings.

Foreign Exchange Risk

Our global operations are conducted predominantly in U.S. dollars. Other than U.S. dollars, we generate revenues principally in euros, British pounds, Swiss francs, Canadian dollars and Russian rubles. Other than U.S. dollars, we incur expenditures principally in Russian rubles, Hungarian forints, Polish zlotys, British pounds, Swiss francs, euros, Indian rupees and Chinese yuan renminbi associated with the location of our delivery centers. As a result, currency fluctuations, specifically the depreciation of the euro, British pound, and Canadian dollar and the appreciation of Russian rubles, Hungarian forints, Polish zlotys, Chinese yuan renminbi and Indian rupees relative to the U.S. dollar, could negatively impact our results of operations.

During the year ended December 31, 2018, our foreign exchange gain was \$0.5 million compared to a \$3.2 million loss reported last year.

During the year ended December 31, 2018, approximately 35.5% of consolidated revenues and 41.5% of operating expenses were denominated in currencies other than the U.S. dollar.

Table of Contents

During 2018, we implemented a hedging program through which we entered into a series of foreign exchange forward contracts that are designated as cash flow hedges of forecasted Russian ruble, Indian rupee and Polish zloty transactions. We entered into these foreign exchange contracts to hedge a portion of our forecasted foreign currency denominated operating expenses in the normal course of business and accordingly, they are not speculative in nature. As of December 31, 2018, the net unrealized loss from these hedges was \$3.3 million.

Management supplements results reported in accordance with United States generally accepted accounting principles, referred to as GAAP, with non-GAAP financial measures. Management believes these measures help illustrate underlying trends in our business and uses the measures to establish budgets and operational goals, communicated internally and externally, for managing our business and evaluating its performance. When important to management's analysis, operating results are compared on the basis of "constant currency", which is a non-GAAP financial measure. This measure excludes the effect of foreign currency exchange rate fluctuations by translating the current period revenues and expenses into U.S. dollars at the weighted average exchange rates of the prior period of comparison. During the year ended December 31, 2018, we reported revenue growth of 27.1%. Had our consolidated revenues been expressed in constant currency terms using the exchange rates in effect during 2017, we would have reported revenue growth of 26.9%. During 2018, revenues have benefited from the appreciation of the euro and the British pound relative to the U.S. dollar, which was partially offset by the depreciation of the Russian ruble relative to the U.S. dollar. During the year ended December 31, 2018, we reported net income growth of 230.2% over the previous year. Had our consolidated results been expressed in constant currency terms using the exchange rates in effect during 2017, we would have reported net income growth of 226.3%. Net income has been positively impacted by appreciation of the euro and the depreciation of the Russian ruble partially offset by the appreciation of the Polish zloty relative to the U.S. dollar.

Item 8. Financial Statements and Supplementary Data

The information required is included in this Annual Report on Form 10-K beginning on page F-1.

Item 9. Changes In and Disagreements with Accountants on Accounting and Financial Disclosure
None.

Item 9A. Controls and Procedures

Conclusion Regarding the Effectiveness of Disclosure Controls and Procedures

Based on management's evaluation, with the participation of our Chief Executive Officer and Chief Financial Officer, as of the end of the period covered by this report, these officers have concluded that our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), are effective to provide reasonable assurance that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, and is accumulated and communicated to management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure.

Table of Contents

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting during the quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting, except as described below.

During the year ended December 31, 2018, the Company acquired Continuum Innovation LLC together with its subsidiaries and Think Limited, as described more fully in Note 2 to the consolidated financial statements. As permitted by the Securities and Exchange Commission, management has elected to exclude these entities from its assessment of the effectiveness of its internal controls over financial reporting as of December 31, 2018. The Company began to integrate these acquired companies into its internal control over financial reporting structure subsequent to their respective acquisition dates and expects to complete this integration in 2019.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles.

Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Based on this assessment, management concluded that our internal control over financial reporting was effective as of December 31, 2018 to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles.

Management has excluded Continuum Innovation LLC together with its subsidiaries and Think Limited from our assessment of the effectiveness of our internal control over financial reporting as of December 31, 2018 since these entities were acquired in business combinations in 2018. These businesses are included in our 2018 consolidated financial statements and constituted 6.0% of total assets as of December 31, 2018 and 2.0% of revenues for the year then ended.

The effectiveness of our internal control over financial reporting as of December 31, 2018 has been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report, which appears in "Part IV. Item 15 Exhibits, Financial Statement Schedule" of this Annual Report on Form 10-K.

Inherent Limitations on Effectiveness of Controls

Our management, including the CEO and CFO, does not expect that our disclosure controls or our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. The design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Further, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, have been detected. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Projections of any evaluation of the effectiveness of controls to future periods are subject to risks. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures.

Item 9B. Other Information

None.

Table of Contents

PART III

Item 10. Directors, Executive Officers and Corporate Governance

We incorporate by reference the information required by this Item from the information set forth under the captions “Board of Directors”, “Corporate Governance”, “Our Executive Officers”, and “Section 16(a) Beneficial Ownership Reporting Compliance” in our definitive proxy statement for our 2019 annual meeting of stockholders, to be filed within 120 days after the end of the year covered by this Annual Report on Form 10-K, pursuant to Regulation 14A under the Exchange Act (our “2019 Proxy Statement”).

Item 11. Executive Compensation

We incorporate by reference the information required by this Item from the information set forth under the captions “Executive Compensation” and “Compensation Committee Interlocks and Insider Participation” in our 2019 Proxy Statement.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

We incorporate by reference the information required by this Item from the information set forth under the caption “Security Ownership of Certain Beneficial Owners and Management” in our 2019 Proxy Statement.

Equity Compensation Plan Information

The following table sets forth information about awards outstanding as of December 31, 2018 and securities remaining available for issuance under our 2015 Long-Term Incentive Plan (the “2015 Plan”), our 2012 Long-Term Incentive Plan (the “2012 Plan”), the Amended and Restated 2006 Stock Option Plan (the “2006 Plan”) and the 2012 Non-Employee Directors Compensation Plan (the “2012 Directors Plan”) as of December 31, 2018.

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted average price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))
Equity compensation plans approved by security holders: ⁽¹⁾			5,865,980 ⁽²⁾
Stock options	4,082,944 ⁽³⁾	\$44.54 ⁽⁴⁾	—
Restricted stock unit and restricted stock awards	828,288 ⁽⁵⁾	\$—	—
Equity compensation plans not approved by security holders	—	\$—	—
Total	4,911,232	\$44.54	—

⁽¹⁾ This table includes the following stockholder approved plans: the 2015 Plan, 2012 Plan, the 2006 Plan and the 2012 Directors Plan.

Represents the number of shares available for future issuances under our stockholder approved equity

⁽²⁾ compensation plans and is comprised of 5,332,128 shares available for future issuance under the 2015 Plan and 533,852 shares available for future issuances under the 2012 Directors Plan.

Represents the number of underlying shares of common stock associated with outstanding options under our

⁽³⁾ stockholder approved plans and is comprised of 658,192 shares underlying options granted under our 2015 Plan; 3,148,937 shares underlying options granted under our 2012 Plan; and 275,815 shares underlying options granted under our 2006 Plan.

(4) Represents the weighted-average exercise price of stock options outstanding under the 2015 Plan, the 2012 Plan and the 2006 Plan.

(5) Represents the number of underlying shares of common stock associated with outstanding restricted stock units and restricted stock awards under our stockholder approved plans and is comprised of 811,700 shares underlying restricted stock units granted under our 2015 Plan; 9,875 shares underlying restricted stock units granted under our 2012 Plan; and 6,713 shares underlying restricted stock units granted under our 2012 Directors Plan.

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

We incorporate by reference the information required by this Item from the information set forth under the caption “Certain Relationships and Related Transactions and Director Independence” in our 2019 Proxy Statement.

Item 14. Principal Accountant Fees and Services

We incorporate by reference the information required by this Item from the information set forth under the caption “Independent Registered Public Accounting Firm” in our 2019 Proxy Statement.

Table of Contents

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a) We have filed the following documents as part of this annual report:

1. Audited Consolidated Financial Statements

	Page
Index to Consolidated Financial Statements	F-1
Report of Independent Registered Public Accounting Firm	F-2
Consolidated Balance Sheets as of December 31, 2018 and 2017	F-4
Consolidated Statements of Income and Comprehensive Income for the Years Ended December 31, 2018, 2017 and 2016	F-5
Consolidated Statements of Changes in Stockholders' Equity for the Years Ended December 31, 2018, 2017 and 2016	F-6
Consolidated Statements of Cash Flows for the Years Ended December 31, 2018, 2017 and 2016	F-8
Notes to Consolidated Financial Statements for the Years Ended December 31, 2018, 2017 and 2016	F-10
2. Financial Statement Schedules	
Schedule II Valuation and Qualifying Accounts is filed as part of this Annual Report on Form 10-K and should be read in conjunction with our audited consolidated financial statements and the related notes.	
3. Exhibits	
A list of exhibits required to be filed as part of this Annual Report is set forth in the Exhibit Index.	

Table of Contents

EXHIBIT INDEX

Exhibit Number	Description
3.1	<u>Certificate of incorporation (incorporated herein by reference to Exhibit 3.1 to the Company’s Form 10-K for the fiscal year ended December 31, 2011, SEC File No. 001-35418, filed March 30, 2012 (the “2011 Form 10-K”))</u>
3.2	<u>Amended and Restated Bylaws (incorporated by reference to Exhibit 3.2 to the Company’s Current Report on Form 8-K filed September 15, 2017, SEC file No. 001-35418)</u>
4.1	<u>Form of Common Stock Certificate (incorporated herein by reference to Exhibit 4.1 to Amendment No. 6 to Form S-1, SEC File No. 333-174827, filed January 23, 2012 (“Amendment No. 6”))</u>
10.1†	<u>EPAM Systems, Inc. Amended and Restated 2006 Stock Option Plan (incorporated herein by reference to Exhibit 10.6 to Amendment No. 6)</u>
10.2†	<u>Form of EPAM Systems, Inc. 2006 Stock Option Plan Award Agreement (under the EPAM Systems, Inc. Amended and Restated 2006 Stock Option Plan) (incorporated herein by reference to Exhibit 10.7 to Amendment No. 6)</u>
10.3†	<u>EPAM Systems, Inc. 2012 Long-Term Incentive Plan (incorporated herein by reference to Exhibit 10.12 to Amendment No. 6)</u>
10.4†	<u>Form of Senior Management Non-Qualified Stock Option Award Agreement (under the EPAM Systems, Inc. 2012 Long-Term Incentive Plan) (incorporated herein by reference to Exhibit 10.13 to Amendment No. 6)</u>
10.5†	<u>Restricted Stock Award Agreement by and between Karl Robb and EPAM Systems, Inc. dated January 16, 2012 (incorporated herein by reference to Exhibit 10.14 to Amendment No. 6)</u>
10.6†	<u>Form of Chief Executive Officer Restricted Stock Unit Award Agreement (under the EPAM Systems, Inc. 2012 Long-Term Incentive Plan) (incorporated by reference to Exhibit 10.1 to the Company’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2014, SEC File No. 001-35418, filed May 7, 2014 (the “Q1 2014 Form 10-Q”))</u>
10.7†	<u>Form of Senior Management Restricted Stock Unit Award Agreement (under the EPAM Systems, Inc. 2012 Long-Term Incentive Plan) (incorporated by reference to Exhibit 10.2 to the Q1 2014 Form 10-Q)</u>
10.8†	<u>Form of Chief Executive Officer Non-Qualified Stock Option Award Agreement (under the EPAM Systems, Inc. 2012 Long-Term Incentive Plan) (incorporated by reference to Exhibit 10.3 to the Q1 2014 Form 10-Q)</u>
10.9†	<u>Form of Chief Executive Officer Restricted Stock Unit Award Agreement (under the EPAM Systems, Inc. 2012 Long-Term Incentive Plan) (incorporated by reference to Exhibit 10.1 to the Company’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2015, SEC File No. 001-35418, filed May 7, 2015 (the “Q1 2015 Form 10-Q”))</u>
10.10†	<u>Form of Senior Management Restricted Stock Unit Award Agreement (under the EPAM Systems, Inc. 2012 Long-Term Incentive Plan) (incorporated by reference to Exhibit 10.2 to the Q1 2015 Form 10-Q)</u>
10.11†	<u>EPAM Systems, Inc. 2015 Long-Term Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K, SEC File No. 001-35418, filed June 15, 2015)</u>
10.12†	<u>Form of Chief Executive Officer Non-Qualified Stock Option Award Agreement (incorporated by reference to Exhibit 10.12 to the Company’s Form 10-K for the fiscal year ended December 31, 2015, SEC File No. 001-35418, filed February 23, 2016 (the “2015 Form 10-K”))</u>
10.13†	<u>Form of Chief Executive Officer Restricted Stock Unit Award Agreement (incorporated by reference to Exhibit 10.13 of the 2015 Form 10-K)</u>
10.14†	<u>Form of Senior Management Non-Qualified Stock Option Award Agreement (incorporated by reference to Exhibit 10.14 of the 2015 Form 10-K)</u>
10.15†	<u>Form of Senior Management Restricted Stock Unit Award Agreement (incorporated by reference to Exhibit 10.15 of the 2015 Form 10-K)</u>
10.16†	<u>Amended and Restated EPAM Systems, Inc. Non-Employee Directors Compensation Plan (incorporated herein by reference to Exhibit 10.3 to the Q1 2015 Form 10-Q)</u>

- 10.17† Form of Non-Employee Director Restricted Stock Award Agreement (under the EPAM Systems, Inc. 2012 Non-Employee Directors Compensation Plan) (incorporated herein by reference to Exhibit 10.16 to Amendment No. 6)
- 10.18† Form of Director Offer Letter (incorporated herein by reference to Exhibit 10.18 to Amendment No. 6)
- 10.19† Executive Employment Agreement by and between Arkadiy Dobkin and EPAM Systems, Inc. dated January 20, 2006 (expired except with respect to Section 8) (incorporated herein by reference to Exhibit 10.19 to Amendment No. 6)
- 10.20† Employment Contract by and between Balazs Fejes and EPAM Systems (Switzerland) GmbH. dated June 15, 2009 (incorporated herein by reference to Exhibit 10.21 to Amendment No. 6)
- 10.21† Consultancy Agreement by and between Landmark Business Development Limited, Balazs Fejes and EPAM Systems, Inc. dated January 20, 2006 (expired except with respect to Section 8) (incorporated herein by reference to Exhibit 10.22 to Amendment No. 6)

Table of Contents

10.22†	<u>Form of nondisclosure, noncompete and nonsolicitation agreement (incorporated herein by reference to Exhibit 10.24 to Amendment No. 6)</u>
10.23†	<u>Form of Indemnification Agreement (incorporated herein by reference to Exhibit 10.25 to Amendment No. 6)</u>
10.24†	<u>Offer Letter by and between Boris Shnayder and EPAM Systems, Inc. dated June 20, 2015 (incorporated by reference to Exhibit 10.28 to the Company’s Form 10-K for the year ended December 31, 2016 (the “2016 10-K”))</u>
10.25†	<u>Transition Agreement by and between Anthony Conte and EPAM Systems, Inc. dated February 23, 2017 (incorporated by reference to Exhibit 10.30 to the 2016 10-K)</u>
10.26†	<u>Offer Letter by and between Jason Peterson and EPAM Systems, Inc. dated March 16, 2017 (incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K filed March 29, 2017, SEC file No. 001-35418)</u>
10.27†	<u>EPAM Systems, Inc. Amended Non-Employee Directors Compensation Policy (incorporated by reference to Exhibit 10.1 to the Company’s Quarterly Report for the quarter ended March 31, 2017, SEC File No., 001-35418, filed May 8, 2017 (the “Q1 2017 Form 10-Q”))</u>
10.28*†	<u>Amended Non-Employee Director Compensation Policy (effective January 1, 2019)</u>
10.29†	<u>EPAM Systems, Inc. 2017 Non-Employee Directors Deferral Plan (incorporated by reference to Exhibit 10.2 to the Q1 2017 Form 10-Q)</u>
10.30†	<u>Form of Non-Employee Director Restricted Stock Unit Award Agreement (incorporated by reference to Exhibit 10.3 to the Q1 2017 Form 10-Q)</u>
10.31†	<u>Form of Director Deferral Election Form (incorporated by reference to Exhibit 10.4 to the Q1 2017 Form 10-Q)</u>
10.32	<u>Credit Agreement dated as of May 24, 2017 by and among EPAM Systems, Inc. (as borrower), the lenders and guarantors party thereto, and PNC Bank, National Association, as Administrative Agent (incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K filed on May 26, 2017, SEC File No. 001-35418)</u>
10.33*	<u>First Amendment to Credit Agreement</u>
21.1*	<u>Subsidiaries of the Registrant</u>
23.1*	<u>Consent of Independent Registered Public Accounting Firm</u>
31.1*	<u>Certification of the Chief Executive Officer pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934</u>
31.2*	<u>Certification of the Chief Financial Officer pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934</u>
32.1*	<u>Certification of the Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>
32.2*	<u>Certification of the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>
101.INS**	XBRL Instance Document
101.SCH**	XBRL Taxonomy Extension Schema Document
101.CAL**	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF**	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB**	XBRL Taxonomy Extension Label Linkbase Document
101.PRE**	XBRL Taxonomy Extension Presentation Linkbase Document

† Indicates management contracts or compensatory plans or arrangements

* Exhibits filed herewith

** As provided in Rule 406T of Regulation S-T, this information is furnished and not filed for purposes of Section 11 and 12 of the Securities Act of 1933, as amended, and Section 18 of the Securities Exchange Act of 1934, as amended.

Table of Contents

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Date: February 25, 2019
EPAM SYSTEMS, INC.

By: /s/ Arkadiy Dobkin
Name: Arkadiy Dobkin
Title: Chairman, Chief Executive Officer and President
(principal executive officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Arkadiy Dobkin Arkadiy Dobkin	Chairman, Chief Executive Officer and President (principal executive officer)	February 25, 2019
/s/ Jason Peterson Jason Peterson	Senior Vice President, Chief Financial Officer and Treasurer (principal financial officer)	February 25, 2019
/s/ Gary Abrahams Gary Abrahams	Vice President, Corporate Controller, Chief Accounting Officer (principal accounting officer)	February 25, 2019
/s/ Helen Shan Helen Shan	Director	February 25, 2019
/s/ Jill B. Smart Jill B. Smart	Director	February 25, 2019
/s/ Karl Robb Karl Robb	Director	February 25, 2019
/s/ Peter Kuerpick Peter Kuerpick	Director	February 25, 2019
/s/ Richard Michael Mayoras Richard Michael Mayoras	Director	February 25, 2019
/s/ Robert E. Segert Robert E. Segert	Director	February 25, 2019
/s/ Ronald P. Vargo Ronald P. Vargo	Director	February 25, 2019

Table of Contents

EPAM SYSTEMS, INC.
FORM 10-K
FOR THE YEAR ENDED DECEMBER 31, 2018
TABLE OF CONTENTS

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

	Page
Audited Consolidated Financial Statements	
<u>Reports of Independent Registered Public Accounting Firm</u>	<u>F-2</u>
<u>Consolidated Balance Sheets as of December 31, 2018 and 2017</u>	<u>F-4</u>
<u>Consolidated Statements of Income and Comprehensive Income for the Years Ended December 31, 2018, 2017 and 2016</u>	<u>F-5</u>
<u>Consolidated Statements of Changes in Stockholders' Equity for the Years Ended December 31, 2018, 2017 and 2016</u>	<u>F-6</u>
<u>Consolidated Statements of Cash Flows for the Years Ended December 31, 2018, 2017 and 2016</u>	<u>F-8</u>
<u>Notes to Consolidated Financial Statements for the Years Ended December 31, 2018, 2017 and 2016</u>	<u>F-10</u>
Financial Statement Schedule:	
<u>Schedule II - Valuation and Qualifying Accounts</u>	<u>F-41</u>

F-1

Table of Contents

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of EPAM Systems, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of EPAM Systems, Inc. and subsidiaries (the “Company”) as of December 31, 2018 and 2017, the related consolidated statements of income and comprehensive income, changes in stockholders’ equity, and cash flows, for each of the three years in the period ended December 31, 2018, and the related notes and the schedule listed in the Index at Item 15 (collectively referred to as the “financial statements”). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company’s internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 25, 2019, expressed an unqualified opinion on the Company’s internal control over financial reporting.

Basis for Opinion

These financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ DELOITTE & TOUCHE LLP

Philadelphia, Pennsylvania

February 25, 2019

We have served as the Company’s auditor since 2006.

Table of Contents

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors of EPAM Systems, Inc.

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of EPAM Systems, Inc. and subsidiaries (the “Company”) as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements and financial statement schedule as of and for the year ended December 31, 2018, of the Company and our report dated February 25, 2019, expressed an unqualified opinion on those financial statements and financial statement schedule.

As described in Management’s Report on Internal Control Over Financial Reporting, management excluded from its assessment the internal control over financial reporting at Continuum Innovation LLC, together with its subsidiaries, and Think Limited which were acquired on March 15, 2018 and November 1, 2018, respectively, and whose financial statements constitute 6.0% of total assets and 2.0% of revenues of the consolidated financial statement amounts as of and for the year ended December 31, 2018. Accordingly, our audit did not include the internal control over financial reporting at Continuum Innovation LLC, together with its subsidiaries, and Think Limited.

Basis for Opinion

The Company’s management is responsible 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 the Company’s internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB. We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ DELOITTE & TOUCHE LLP
Philadelphia, Pennsylvania

February 25, 2019

F-3

Table of Contents

EPAM SYSTEMS, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

(In thousands, except share and per share data)

	As of December 31, 2018	As of December 31, 2017
Assets		
Current assets		
Cash and cash equivalents	\$770,560	\$582,585
Accounts receivable, net of allowance of \$1,557 and \$1,186, respectively	297,685	265,639
Unbilled revenues	104,652	86,500
Prepaid and other current assets	26,171	25,309
Total current assets	1,199,068	960,033
Property and equipment, net	102,646	86,419
Intangible assets, net	57,065	44,511
Goodwill	166,832	119,531
Deferred tax assets	69,983	24,974
Other noncurrent assets	16,208	14,788
Total assets	\$1,611,802	\$1,250,256
Liabilities		
Current liabilities		
Accounts payable	\$7,444	\$5,574
Accrued expenses and other current liabilities	127,937	89,812
Due to employees	49,683	38,757
Deferred compensation due to employees	9,920	5,964
Taxes payable, current	67,845	40,860
Total current liabilities	262,829	180,967
Long-term debt	25,031	25,033
Taxes payable, noncurrent	43,685	59,874
Other noncurrent liabilities	17,661	9,435
Total liabilities	349,206	275,309
Commitments and contingencies (Note 14)		
Stockholders' equity		
Common stock, \$0.001 par value; 160,000,000 authorized; 54,099,927 and 53,003,420 shares issued, 54,080,192 and 52,983,685 shares outstanding at December 31, 2018 and December 31, 2017, respectively	54	53
Additional paid-in capital	544,700	473,874
Retained earnings	759,533	518,820
Treasury stock	(177)	(177)
Accumulated other comprehensive loss	(41,514)	(17,623)
Total stockholders' equity	1,262,596	974,947
Total liabilities and stockholders' equity	\$1,611,802	\$1,250,256
The accompanying notes are an integral part of the consolidated financial statements.		

Table of Contents

EPAM SYSTEMS, INC. AND SUBSIDIARIES
 CONSOLIDATED STATEMENTS OF INCOME AND COMPREHENSIVE INCOME
 (In thousands, except per share data)

	For the Years Ended December 31,		
	2018	2017	2016
Revenues	\$1,842,912	\$1,450,448	\$1,160,132
Operating expenses:			
Cost of revenues (exclusive of depreciation and amortization)	1,186,921	921,352	737,186
Selling, general and administrative expenses	373,587	327,588	265,863
Depreciation and amortization expense	36,640	28,562	23,387
Income from operations	245,764	172,946	133,696
Interest and other income, net	3,522	4,601	4,848
Foreign exchange gain/(loss)	487	(3,242)	(12,078)
Income before provision for income taxes	249,773	174,305	126,466
Provision for income taxes	9,517	101,545	27,200
Net income	\$240,256	\$72,760	\$99,266
Foreign currency translation adjustments, net of tax	(21,338)) 20,065	(2,538)
Unrealized loss on cash-flow hedging instruments, net of tax	(2,553)) —	—
Comprehensive income	\$216,365	\$92,825	\$96,728
Net income per share:			
Basic	\$4.48	\$1.40	\$1.97
Diluted	\$4.24	\$1.32	\$1.87
Shares used in calculation of net income per share:			
Basic	53,623	52,077	50,309
Diluted	56,673	54,984	53,215

The accompanying notes are an integral part of the consolidated financial statements.

Table of Contents

EPAM SYSTEMS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN
STOCKHOLDERS' EQUITY

(In thousands, except share data)

	Common Stock		Additional Paid-in Capital	Retained Earnings	Treasury Stock		Accumulated Other Comprehensive (Loss)/ Income	Total Stockholders' Equity
	Shares	Amount			Shares	Amount		
Balance, January 1, 2016	50,166,537	\$ 49	\$303,363	\$345,054	10,507	\$(93)	\$(35,150)	\$ 613,223
Forfeiture of stock issued in connection with acquisitions	(9,228)	—	84	—	9,228	(84)	—	—
Stock issued under the 2012 Non-Employee Directors Compensation Plan	6,510	—	—	—	—	—	—	—
Restricted stock units vested, net of shares withheld for employee taxes	38,064	—	2,069	—	—	—	—	2,069
Stock-based compensation expense	—	—	46,100	—	—	—	—	46,100
Proceeds from stock option exercises	895,804	1	18,027	—	—	—	—	18,028
Excess tax benefits	—	—	5,264	—	—	—	—	5,264
Foreign currency translation adjustments	—	—	—	—	—	—	(2,538)	(2,538)
Net income	—	—	—	99,266	—	—	—	99,266
Balance, December 31, 2016	51,097,687	\$ 50	\$374,907	\$444,320	19,735	\$(177)	\$(37,688)	\$ 781,412
Restricted stock units vested	140,043	—	—	—	—	—	—	—
Restricted stock units withheld for employee taxes	(43,479)	—	(3,300)	—	—	—	—	(3,300)
Stock-based compensation expense	—	—	48,173	—	—	—	—	48,173
Proceeds from stock option exercises	1,789,434	3	54,094	—	—	—	—	54,097
Foreign currency translation adjustments	—	—	—	—	—	—	20,065	20,065
Cumulative effect of the adoption of ASU 2016-09	—	—	—	1,740	—	—	—	1,740
Net income	—	—	—	72,760	—	—	—	72,760
Balance, December 31, 2017	52,983,685	\$ 53	\$473,874	\$518,820	19,735	\$(177)	\$(17,623)	\$ 974,947

Table of Contents

EPAM SYSTEMS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN
STOCKHOLDERS' EQUITY

(Continued)

(In thousands, except share data)

	Common Stock		Additional Paid-in Capital	Retained Earnings	Treasury Stock		Accumulated Other Comprehensive (Loss)/ Income	Total Stockholders' Equity
	Shares	Amount			Shares	Amount		
Balance, December 31, 2017	52,983,685	\$ 53	\$473,874	\$518,820	19,735	\$(177)	\$(17,623)	\$974,947
Restricted stock units vested	222,675	—	—	—	—	—	—	—
Restricted stock units withheld for employee taxes	(71,334)	—	(8,131)	—	—	—	—	(8,131)
Stock-based compensation expense	—	—	44,279	—	—	—	—	44,279
Proceeds from stock option exercises	945,166	1	34,678	—	—	—	—	34,679
Foreign currency translation adjustments, net of tax	—	—	—	—	—	—	(21,338)	(21,338)
Change in unrealized gains and losses on cash flow hedges, net of tax	—	—	—	—	—	—	(2,553)	(2,553)
Cumulative effect of the adoption of ASU 2014-09	—	—	—	457	—	—	—	457
Net income	—	—	—	240,256	—	—	—	240,256
Balance, December 31, 2018	54,080,192	\$ 54	\$544,700	\$759,533	19,735	\$(177)	\$(41,514)	\$1,262,596

The accompanying notes are an integral part of the consolidated financial statements.

Table of Contents

EPAM SYSTEMS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	For the Years Ended December		
	31,	2017	2016
	2018		
Cash flows from operating activities:			
Net income	\$240,256	\$72,760	\$99,266
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization expense	36,640	28,562	23,387
Bad debt expense	848	51	1,539
Deferred taxes	(48,000)	12,561	(3,304)
Stock-based compensation expense	59,188	52,407	49,244
Excess tax benefit on stock-based compensation plans	—	—	(5,264)
Other	(1,712)	(4,010)	6,228
Changes in operating assets and liabilities:			
(Increase)/decrease in operating assets:			
Accounts receivable	(31,005)	(58,745)	(30,612)
Unbilled revenues	(15,897)	(22,743)	34,777
Prepaid expenses and other assets	(8,432)	1,061	(2,391)
Increase/(decrease) in operating liabilities:			
Accounts payable	(772)	1,221	741
Accrued expenses and other liabilities	41,929	37,282	(13,926)
Due to employees	1,535	1,933	5,261
Taxes payable	17,640	70,480	2,271
Net cash provided by operating activities	292,218	192,820	167,217
Cash flows from investing activities:			
Purchases of property and equipment	(37,574)	(29,806)	(29,317)
Decrease in time deposits, net	418	—	29,597
Acquisition of businesses, net of cash acquired (Note 2)	(74,268)	(6,810)	(5,500)
Other investing activities, net	(699)	465	(4,100)
Net cash used in investing activities	(112,123)	(36,151)	(9,320)
Cash flows from financing activities:			
Proceeds from stock option exercises	34,845	53,984	17,996
Excess tax benefit on stock-based compensation plans	—	—	5,264
Payments of withholding taxes related to net share settlements of restricted stock units	(7,747)	(3,194)	(539)
Proceeds from debt (Note 8)	—	25,000	20,000
Repayment of debt (Note 8)	(3,494)	(25,103)	(30,129)
Acquisition of businesses, deferred consideration (Note 2)	—	—	(2,260)
Other financing activities, net	(603)	(941)	135
Net cash provided by financing activities	23,001	49,746	10,467
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(14,240)	11,776	(3,387)
Net increase in cash, cash equivalents and restricted cash	188,856	218,191	164,977
Cash, cash equivalents and restricted cash, beginning of period	582,855	364,664	199,687
Cash, cash equivalents and restricted cash, end of period	\$771,711	\$582,855	\$364,664

F-8

Table of ContentsEPAM SYSTEMS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)

(Continued)

	For the Years Ended December 31,		
	2018	2017	2016
Supplemental disclosures of cash flow information:			
Cash paid during the year for:			
Income taxes	\$40,437	\$26,669	\$37,488
Bank interest	\$777	\$548	\$566
Supplemental disclosure of non-cash investing and financing activities			
Acquisition-date fair value of contingent consideration issued for acquisition of businesses	\$8,390	\$—	\$—

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the consolidated balance sheets:

	As of December 31, 2018	As of December 31, 2017	As of December 31, 2016
Balance sheet classification			
Cash and cash equivalents	\$ 770,560	\$ 582,585	\$ 362,025
Restricted cash in Prepaid and other current assets	14	91	2,400
Restricted cash in Other noncurrent assets	1,137	179	239
Total restricted cash	1,151	270	2,639
Total cash, cash equivalents and restricted cash	\$ 771,711	\$ 582,855	\$ 364,664

The accompanying notes are an integral part of the consolidated financial statements.

Table of Contents

EPAM SYSTEMS, INC. AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(In thousands, except share and per share data)

1. BUSINESS AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

EPAM Systems, Inc. (the “Company” or “EPAM”) is a leading global provider of digital platform engineering and software development services to customers located around the world, primarily in North America, Europe, Asia and Australia. Our industry expertise includes financial services, travel and consumer, software and hi-tech, business information and media, life sciences and healthcare, as well as other industries in which we are continuously growing. The Company is incorporated in Delaware with headquarters in Newtown, PA.

Principles of Consolidation — The consolidated financial statements include the financial statements of EPAM and its subsidiaries. All intercompany balances and transactions have been eliminated.

Use of Estimates — The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions. These estimates and assumptions affect reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as revenues and expenses during the reporting period. The Company bases its estimates and judgments on historical experience, knowledge of current conditions and its beliefs of what could occur in the future, given available information. Actual results could differ from those estimates, and such differences may be material to the financial statements.

Cash and Cash Equivalents — Cash equivalents are short-term, highly liquid investments that are readily convertible into cash, with maturities of three months or less at the date acquired.

Accounts Receivable — Accounts receivable are stated net of allowance for doubtful accounts. Outstanding accounts receivable are reviewed periodically and allowances are provided when management believes it is probable that such balances will not be collected within a reasonable time. The allowance for doubtful accounts is determined by evaluating the relative creditworthiness of each customer, historical collections experience and other information, including the aging of the receivables. Accounts receivable are generally written off when they are deemed uncollectible. Bad debts are recorded based on historical experience and management’s evaluation of accounts receivable.

Property and Equipment — Property and equipment acquired in the ordinary course of the Company’s operations are stated at cost, net of accumulated depreciation. Depreciation is calculated on a straight-line basis over the estimated useful lives of the assets generally ranging from two to fifty years. Leasehold improvements are amortized on a straight-line basis over the shorter of the term of the lease or the estimated useful life of the improvement.

Maintenance and repairs are expensed as incurred.

Business Combinations — The Company accounts for its business combinations using the acquisition accounting method, which requires it to determine the fair value of net assets acquired and the related goodwill and other intangible assets in accordance with the FASB ASC Topic 805, Business Combinations. The Company identifies and attributes fair values and estimated lives to the intangible assets acquired and allocates the total cost of an acquisition to the underlying net assets based on their respective estimated fair values. Determining the fair value of assets acquired and liabilities assumed requires management’s judgment and involves the use of significant estimates, including projections of future cash inflows and outflows, discount rates, asset lives and market multiples. There are different valuation models for each component, the selection of which requires considerable judgment. These determinations will affect the amount of amortization expense recognized in future periods. The Company bases its fair value estimates on assumptions it believes are reasonable, but recognizes that the assumptions are inherently uncertain.

All acquisition-related costs, other than the costs to issue debt or equity securities, are accounted for as expenses in the period in which they are incurred. Changes in the fair value of contingent consideration arrangements that are not measurement period adjustments are recognized in earnings.

The acquired assets typically include customer relationships, trade names, non-competition agreements, and assembled workforce and, as a result, a substantial portion of the purchase price is allocated to goodwill and other intangible assets.

Long-Lived Assets — Long-lived assets, such as property and equipment and finite-lived intangible assets, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. When the carrying value of an asset is more than the sum of the undiscounted expected future cash flows, an impairment is recognized. An impairment loss is measured as the excess of the asset's carrying amount over its fair value. Intangible assets that have finite useful lives are amortized over their estimated useful lives on a straight-line basis.

F-10

Table of Contents

Goodwill and Other Indefinite-Lived Intangible Assets — Goodwill and other intangible assets that have indefinite useful lives are accounted for in accordance with the FASB ASC 350, Intangibles — Goodwill and Other. The Company conducts its evaluation of goodwill impairment at the reporting unit level on an annual basis as of October 31st, and more frequently if events or circumstances indicate that the carrying value of a reporting unit exceeds its fair value. A reporting unit is an operating segment or one level below. The Company does not have intangible assets other than goodwill that have indefinite useful lives.

Derivative Financial Instruments — The Company enters into derivative financial instruments to manage exposure to fluctuations in certain foreign currencies. During 2018, for accounting purposes, these foreign currency forward contracts became designated as hedges, as defined under FASB ASC Topic 815, Derivatives and Hedging. The Company measures these foreign currency derivative contracts at fair value on a recurring basis utilizing Level 2 inputs. The Company records changes in the fair value of these hedges in accumulated other comprehensive income/(loss) until the forecasted transaction occurs. When the forecasted transaction occurs, the Company reclassifies the related gain or loss on the cash flow hedge to cost of revenues (exclusive of depreciation and amortization). In the event the underlying forecasted transaction does not occur, or it becomes probable that it will not occur, the Company reclassifies the gain or loss on the underlying hedge from accumulated other comprehensive income/(loss) into income. If the Company does not elect hedge accounting, or the contract does not qualify for hedge accounting treatment, the changes in fair value from period to period are recorded in income. The cash flow impact of derivatives identified as hedging instruments is reflected as cash flows from operating activities. The cash flow impact of derivatives not identified as hedging instruments is reflected as cash flows from investing activities.

Fair Value of Financial Instruments — The Company makes assumptions about fair values of its financial assets and liabilities in accordance with the Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) Topic 820, Fair Value Measurement, and utilizes the following fair value hierarchy in determining inputs used for valuation:

Level 1 — Quoted prices for identical assets or liabilities in active markets.

Level 2 — Inputs other than quoted prices within Level 1 that are observable either directly or indirectly, including quoted prices in markets that are not active, quoted prices in active markets for similar assets or liabilities, and observable inputs other than quoted prices such as interest rates or yield curves.

Level 3 — Unobservable inputs reflecting management’s view about the assumptions that market participants would use in pricing the asset or liability.

Where the fair values of financial assets and liabilities recorded in the consolidated balance sheets cannot be derived from an active market, they are determined using a variety of valuation techniques. These valuation techniques include a net present value technique, comparison to similar instruments with market observable inputs, option pricing models and other relevant valuation models. To the extent possible, observable market data is used as inputs into these models but when it is not feasible, a degree of judgment is required to establish fair values.

Changes in the fair value of liabilities could cause a material impact to, and volatility in the Company’s operating results. See Note 11 “Fair Value Measurements.”

Revenue Recognition — Effective January 1, 2018, the Company adopted the new Accounting Standard Update (“ASU”) No. 2014-09, Revenue from Contracts with Customers (Topic 606) as amended using the modified retrospective method. The standard effectively replaced previously existing revenue recognition guidance (Topic 605) and requires entities to recognize revenue to depict the transfer of promised goods or services in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services as well as requires additional disclosure about the nature, amount, timing and uncertainty of revenues and cash flows arising from customer contracts, including significant judgments and changes in judgments.

Table of Contents

The Company applied a practical expedient to aggregate the effect of all contract modifications that occurred before the adoption date. The following table summarizes the cumulative effect of adopting Topic 606 using the modified retrospective method of adoption as of January 1, 2018:

	Balance as of December 31, 2017	Adjustments Due to Topic 606	Balance as of January 1, 2018
Balance Sheet			
Assets			
Unbilled revenues	\$ 86,500	\$ (78)	\$ 86,422
Deferred tax assets	\$ 24,974	\$ (173)	\$ 24,801
Liabilities			
Accrued expenses and other current liabilities	\$ 89,812	\$ (708)	\$ 89,104
Stockholders' equity			
Retained earnings	\$ 518,820	\$ 457	\$ 519,277

The following tables summarize the impacts of changes in accounting policies after adoption of Topic 606 on the Company's consolidated financial statements for the year ended December 31, 2018, which primarily resulted from deferring the timing of revenue recognition for contracts that were previously recognized on a cash basis and recognizing revenues from certain license agreements at a point-in-time rather than over time:

As of December 31, 2018

	As Reported	Balances Without Adoption of Topic 606	Effect of Change Higher/(Lower)
Balance Sheet			
Liabilities			
Accrued expenses and other current liabilities	\$ 127,937	\$ 127,690	\$ 247
Other noncurrent liabilities	\$ 17,661	\$ 17,716	\$ (55)
Stockholders' equity			
Retained earnings	\$ 759,533	\$ 759,725	\$ (192)

Year Ended December 31, 2018

	As Reported	Balances Without Adoption of Topic 606	Effect of Change Higher/(Lower)
Income Statement			
Revenues	\$ 1,842,912	\$ 1,843,159	\$ (247)
Income from operations	\$ 245,764	\$ 246,011	\$ (247)
Provision for income taxes	\$ 9,517	\$ 9,572	\$ (55)
Net income	\$ 240,256	\$ 240,448	\$ (192)

For the year ended December 31, 2018

The Company recognizes revenues when control of goods or services is passed to a customer in an amount that reflects the consideration the Company expects to be entitled to in exchange for those goods or services. Such control may be transferred over time or at a point in time depending on satisfaction of obligations stipulated by the contract. Consideration expected to be received may consist of both fixed and variable components and is allocated to each separately identifiable performance obligation based on the performance obligation's relative standalone selling price.

Variable consideration usually takes the form of volume-based discounts, service level credits, price concessions or incentives. Determining the estimated amount of such variable consideration involves assumptions and judgment that can have an impact on the amount of revenues reported.

F-12

Table of Contents

The Company derives revenues from a variety of service arrangements, which have been evolving to provide more customized and integrated solutions to customers by combining software engineering with customer experience design, business consulting and technology innovation services. Fees for these contracts may be in the form of time-and-materials or fixed-price arrangements. The Company generates the majority of its revenues under time-and-material contracts, which are billed using hourly, daily or monthly rates to determine the amounts to be charged directly to the customer. EPAM applies a practical expedient and revenues related to time-and-material contracts are recognized based on the right to invoice for services performed.

Fixed-price contracts include maintenance and support arrangements which may exceed one year in duration. Maintenance and support arrangements generally relate to the provision of ongoing services and revenues for such contracts are recognized ratably over the expected service period. Fixed-price contracts also include application development arrangements, where progress towards satisfaction of the performance obligation is measured using input or output methods and input methods are used only when there is a direct correlation between hours incurred and the end product delivered. Assumptions, risks and uncertainties inherent in the estimates used to measure progress could affect the amount of revenues, receivables and deferred revenues at each reporting period.

Revenues from licenses which have significant stand-alone functionality are recognized at a point in time when control of the license is transferred to the customer. Revenues from licenses which do not have stand-alone functionality are recognized over time.

If there is an uncertainty about the receipt of payment for the services, revenue recognition is deferred until the uncertainty is sufficiently resolved. The Company applies a practical expedient and does not assess the existence of a significant financing component if the period between transfer of the service to a customer and when the customer pays for that service is one year or less.

The Company reports gross reimbursable “out-of-pocket” expenses incurred as both revenues and cost of revenues in the consolidated statements of income and comprehensive income.

For the years ended December 31, 2017 and 2016

The Company recognized revenue when the following criteria were met: (1) persuasive evidence of an arrangement existed; (2) delivery had occurred; (3) the sales price was fixed or determinable; and (4) collectability was reasonably assured. Determining whether and when some of these criteria had been satisfied often involved assumptions and judgments that could have had a significant impact on the timing and amount of revenue reported.

The Company derived its revenues from a variety of service offerings, which represent specific competencies of its IT professionals. Contracts for these services have different terms and conditions based on the scope, deliverables, and complexity of the engagement, which require management to make judgments and estimates in determining the appropriate revenue recognition. Fees for these contracts may have been in the form of time-and-materials or fixed-price arrangements. If there was uncertainty about the project completion or receipt of payment for the services, revenue was deferred until the uncertainty was sufficiently resolved. At the time revenue was recognized, the Company provided for any contractual deductions and reduced revenue accordingly. The Company reported gross reimbursable “out-of-pocket” expenses incurred as both revenues and cost of revenues in the consolidated statements of income and comprehensive income.

The Company deferred amounts billed to its customers for revenues not yet earned. Such amounts were anticipated to be recorded as revenues when services were performed in subsequent periods. Unbilled revenue was recorded when services have been provided but billed subsequent to the period end in accordance with the contract terms.

The majority of the Company’s revenues (90.3% of revenues in 2017 and 88.2% in 2016) were generated under time-and-material contracts whereby revenues were recognized as services were performed with the corresponding cost of providing those services reflected as cost of revenues. The majority of such revenues were billed using hourly, daily or monthly rates as actual time was incurred on the project. Revenues from fixed-price contracts (8.3% of revenues in 2017 and 10.4% in 2016) included fixed-price maintenance and support arrangements, which may have exceeded one year in duration and revenues from maintenance and support arrangements were generally recognized ratably over the expected service period. Fixed-price contracts also included application development arrangements and revenues from these arrangements were primarily determined using the proportional performance method. In cases where final acceptance of the product, system, or solution was specified by the customer, and the acceptance

criteria were not objectively determinable to have been met as the services were provided, revenues were deferred until all acceptance criteria had been met. In the absence of a sufficient basis to measure progress towards completion, revenue was recognized upon receipt of final acceptance from the customer. Assumptions, risks and uncertainties inherent in the estimates used in the application of the proportional performance method of accounting could have affected the amount of revenues, receivables and deferred revenues at each reporting period.

F-13

Table of Contents

Cost of Revenues (Exclusive of Depreciation and Amortization) — Consists principally of salaries, bonuses, fringe benefits, stock-based compensation expense, project related travel costs and fees for subcontractors that are assigned to customer projects. Salaries and other compensation expenses of our revenue generating professionals are reported as cost of revenues regardless of whether the employees are actually performing client services during a given period.

Selling, General and Administrative Expenses — Consists of expenses associated with promoting and selling our services and general and administrative functions of the business. These expenses include the costs of salaries, bonuses, fringe benefits, stock-based compensation expense, severance, travel, legal and audit services, insurance, operating leases and lease exit costs, advertising and other promotional activities. In addition, we pay a membership fee of 1% of revenues generated in Belarus to the administrative organization of the Belarus High-Technologies Park.

Stock-Based Compensation — The Company recognizes the cost of its equity settled stock-based incentive awards based on the fair value of the award at the date of grant, net of estimated forfeitures. The cost is expensed evenly over the service period. The service period is the period over which the employee performs the related services, which is normally the same as the vesting period. Quarterly, the forfeiture assumption is adjusted and such adjustment may affect the timing of recognition of the total amount of expense recognized over the vesting period. Equity-based awards that do not require future service are expensed immediately. Stock-based awards that do not meet the criteria for equity classification are recorded as liabilities and adjusted to fair value at the end of each reporting period.

Income Taxes — The provision for income taxes includes federal, state, local and foreign taxes. Deferred tax assets and liabilities are recognized for the estimated future tax consequences of temporary differences between the financial statement carrying amounts and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the year in which the temporary differences are expected to be reversed. Changes to enacted tax rates would result in either increases or decreases in the provision for income taxes in the period of changes.

The realizability of deferred tax assets is primarily dependent on future earnings. The Company evaluates the realizability of deferred tax assets and recognizes a valuation allowance when it is more likely than not that all, or a portion of, deferred tax assets will not be realized. A reduction in estimated forecasted results may require that we record valuation allowances against deferred tax assets. Once a valuation allowance has been established, it will be maintained until there is sufficient positive evidence to conclude that it is more likely than not that the deferred tax assets will be realized. A pattern of sustained profitability will generally be considered as sufficient positive evidence to reverse a valuation allowance. If the allowance is reversed in a future period, the income tax provision will be correspondingly reduced. Accordingly, the increase and decrease of valuation allowances could have a significant negative or positive impact on future earnings.

On December 22, 2017, the United States enacted the Tax Cuts and Jobs Act (“U.S. Tax Act”), which subjects a U.S. shareholder to taxes on Global Intangible Low-Taxed Income (“GILTI”) earned by certain foreign subsidiaries. The FASB Staff Q&A, Topic 740, No. 5, Accounting for Global Intangible Low-Taxed Income, states that an entity can make an accounting policy election to either recognize deferred taxes for temporary basis differences expected to reverse as GILTI in future years or provide for the tax expense related to GILTI in the year the tax is incurred. During the year ended December 31, 2018, the Company elected to provide for the tax expense related to GILTI in the year the tax is incurred. This election did not have a material impact on the financial statements for the year ended December 31, 2018.

Earnings per Share (“EPS”) — Basic EPS is computed by dividing income available to common shareholders by the weighted-average number of shares of common stock outstanding during the period. Diluted earnings per share is computed by dividing income available to common shareholders by the weighted-average number of shares of common stock outstanding during the period, increased by the number of additional shares of common stock that would have been outstanding if the potentially dilutive securities had been issued. Potentially dilutive securities include outstanding stock options, unvested restricted stock and unvested restricted stock units (“RSUs”). The dilutive effect of potentially dilutive securities is reflected in diluted earnings per share by application of the treasury stock method.

Foreign Currency Translation — Assets and liabilities of consolidated foreign subsidiaries whose functional currency is not the U.S. dollar are translated into U.S. dollars at period-end exchange rates and revenues and expenses are

translated into U.S. dollars at daily exchange rates. The adjustment resulting from translating the financial statements of such foreign subsidiaries into U.S. dollars is reflected as a cumulative translation adjustment and reported as a component of accumulated other comprehensive income/(loss).

For consolidated foreign subsidiaries whose functional currency is the U.S. dollar, transactions and balances denominated in the local currency are foreign currency transactions. Foreign currency transactions and balances related to non-monetary assets and liabilities are remeasured to the functional currency of the subsidiary at historical exchange rates while monetary assets and liabilities are remeasured to the functional currency of the subsidiary at period-end exchange rates. Foreign currency exchange gains or losses from remeasurement are included in income in the period in which they occur.

F-14

Table of Contents

Risks and Uncertainties — As a result of its global operations, the Company may be subject to certain inherent risks. **Concentration of Credit** — Financial instruments that potentially subject the Company to concentration of credit risk consist primarily of cash and cash equivalents, accounts receivable and unbilled revenues. The Company maintains cash and cash equivalents and short-term deposits with financial institutions. The Company determined that the Company's credit policies reflect normal industry terms and business risk and there is no expectation of non-performance by the counterparties.

We have cash in banks in countries such as Belarus, Russia, Ukraine, Kazakhstan and Armenia, where banking and other financial systems are less developed and regulated than in some more developed markets, and bank deposits made by corporate entities there are not insured. As of December 31, 2018, \$179,478 of total cash was kept in banks in these countries, of which \$119,726 was held in Belarus. In this region, and particularly in Belarus, a banking crisis, bankruptcy or insolvency of banks that process or hold our funds, may result in the loss of our deposits or adversely affect our ability to complete banking transactions in these countries, which could adversely affect our business and financial condition.

Unbilled revenues and accounts receivable are generally dispersed across the Company's customers in proportion to their revenues. There were no customers individually exceeding 10% of our unbilled revenues as of December 31, 2018. As of December 31, 2017, unbilled revenues from one customer exceeded 10% and accounted for 13.0% of our total unbilled revenues. There were no customers individually exceeding 10% of our accounts receivable as of December 31, 2018 and 2017.

Foreign currency risk — The Company's global operations are conducted predominantly in U.S. dollars. Other than U.S. dollars, the Company generates a significant portion of revenues in various currencies, principally, euros, British pounds, Canadian dollars, Swiss francs and Russian rubles and incurs expenditures principally in Hungarian forints, Russian rubles, Polish zlotys, Swiss francs, British pounds, Indian rupees and China yuan renminbi associated with the locations of its delivery centers.

The Company's international operations expose it to foreign currency exchange rate changes that could impact translations of foreign denominated assets and liabilities into U.S. dollars and future earnings and cash flows from transactions denominated in different currencies. The Company is exposed to fluctuations in foreign currency exchange rates primarily related to accounts receivable and unbilled revenues from sales in foreign currencies and cash outflows for expenditures in foreign currencies. The Company's results of operations, primarily revenues and expenses denominated in foreign currencies, can be affected if any of the currencies, which we use materially in our business, appreciate or depreciate against the U.S. dollar. The Company has a hedging program whereby it entered into a series of foreign exchange forward contracts that are designated as cash flow hedges of forecasted Russian ruble, Polish zloty and Indian rupee transactions.

Interest rate risk — The Company's exposure to market risk is influenced primarily by changes in interest rates received on cash and cash equivalents and paid on any outstanding balance on the Company's revolving line of credit, which is subject to various rates depending on the type and timing of funds borrowed (See Note 8 "Long-Term Debt"). The Company does not use derivative financial instruments to hedge the risk of interest rate volatility.

Adoption of New Accounting Standards

Unless otherwise discussed below, the adoption of new accounting standards did not have a material impact on the Company's consolidated financial position, results of operations, and cash flows.

Revenue Recognition — As discussed above, effective January 1, 2018, the Company adopted the new accounting standard ASU 2014-09, Revenue from Contracts with Customers (Topic 606) as amended using the modified retrospective method.

Table of Contents

Restricted cash and restricted cash equivalents — Effective January 1, 2018, the Company adopted ASU 2016-18, Statement of Cash Flows (Topic 230): Restricted Cash which requires the Company to include in its cash and cash equivalents balances presented in the statements of cash flows amounts that are deemed to be restricted in nature. As a result of the adoption, the Company restated its consolidated statements of cash flows for all of the prior periods presented. The impact of adoption on the Company's consolidated statements of cash flows was as follows for the year ended December 31, 2017 and 2016:

	Year Ended December 31, 2017		
	As		
	Originally Reported	Restated	Effect
Cash flows from operating activities:			
Changes in operating assets and liabilities:			
Prepaid expenses and other assets	\$3,605	\$1,061	\$(2,544)
Net cash provided by operating activities	\$195,364	\$192,820	\$(2,544)
Cash flows from investing activities:			
Decrease in restricted cash and time deposits, net	\$8	\$—	\$(8)
Acquisition of businesses, net of cash acquired	\$(6,840)	\$(6,810)	\$30
Net cash used in investing activities	\$(36,173)	\$(36,151)	\$22
Effect of exchange rate changes on cash, cash equivalents, and restricted cash	\$11,623	\$11,776	\$153
Net increase in cash, cash equivalents and restricted cash	\$220,560	\$218,191	\$(2,369)
Cash, cash equivalents and restricted cash, beginning of period	362,025	364,664	2,639
Cash, cash equivalents and restricted cash, end of period	\$582,585	\$582,855	\$270

	Year Ended December 31, 2016		
	As		
	Originally Reported	Restated	Effect
Cash flows from operating activities:			
Changes in operating assets and liabilities:			
Prepaid expenses and other assets	\$(4,791)	\$(2,391)	\$2,400
Net cash provided by operating activities	\$164,817	\$167,217	\$2,400
Cash flows from investing activities:			
Decrease in restricted cash and time deposits, net	\$29,595	\$29,597	\$2
Net cash used in investing activities	\$(9,322)	\$(9,320)	\$2
Effect of exchange rate changes on cash, cash equivalents, and restricted cash	\$(3,386)	\$(3,387)	\$(1)
Net increase in cash, cash equivalents and restricted cash	\$162,576	\$164,977	\$2,401
Cash, cash equivalents and restricted cash, beginning of period	199,449	199,687	238
Cash, cash equivalents and restricted cash, end of period	\$362,025	\$364,664	\$2,639

Derivatives and Hedging — Effective April 1, 2018, the Company early-adopted ASU 2017-12, Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities. The new guidance is intended to simplify and amend hedge accounting and reporting to better align and disclose the economic results of an entity's risk management activities in its financial statements. The ASU makes more financial and non-financial hedging strategies eligible for hedge accounting. It also changes how companies assess hedge effectiveness and amends the presentation and disclosure requirements by eliminating the requirement to separately measure and report hedge ineffectiveness and generally requires companies, for qualifying hedges, to present the entire change in the fair value of a hedging instrument in the same income statement line as the hedged item. The guidance also eases documentation and assessment requirements and modifies the accounting for components excluded from the assessment of hedge effectiveness. The guidance requires entities to apply the amended presentation and disclosure guidance prospectively as of the period of adoption. The adoption of this guidance did not have any effect on the consolidated financial

results.

F-16

Table of Contents

Pending Accounting Standards

From time to time, new accounting pronouncements are issued by the FASB or other standards-setting bodies that the Company will adopt according to the various timetables the FASB specifies. Unless otherwise discussed below, the Company believes the impact of recently issued standards that are not yet effective will not have a material impact on its consolidated financial position, results of operations and cash flows upon adoption.

Leases — Effective January 1, 2019, the Company will be required to adopt the new guidance of FASB ASC Topic 842, Leases (Topic 842) (with early adoption permitted effective January 1, 2018). This amendment supersedes previous accounting guidance (Topic 840) and requires all leases, with the exception of leases with a term of twelve months or less, to be recorded on the balance sheet as lease assets and lease liabilities. The standard allows for two methods of adoption to recognize and measure leases: retrospectively to each prior period presented in the financial statements with the cumulative effect of initially applying the guidance recognized at the beginning of the earliest comparative period presented or retrospectively at the beginning of the period of adoption with the cumulative effect of initially applying the guidance recognized at the beginning of the period in which the guidance is first applied. Both adoption methods include a number of optional practical expedients that entities may elect to apply. These practical expedients relate to the identification and classification of leases that commenced before the effective date, initial direct costs for leases that commenced before the effective date, and the ability to use hindsight in evaluating lessee options to extend or terminate a lease or to purchase the underlying asset. An entity that elects to apply the practical expedients will, in effect, continue to account for leases that commence before the effective date in accordance with previous GAAP unless the lease is modified, except that lessees are required to recognize a right-of-use asset and a lease liability for all operating leases based on the present value of the remaining minimum rental payments that were tracked and disclosed under previous GAAP. The transition guidance in Topic 842 also provides specific guidance for the amounts previously recognized in accordance with the business combinations guidance for leases.

The Company is near completion of implementing its transition plan, which includes making necessary changes to policies and processes, conducting detailed contract reviews, developing incremental borrowing rates, implementing a global lease accounting system, and assessing internal control impacts to comply with the new standard. The Company will adopt this standard effective January 1, 2019 using the method of adoption whereby the cumulative effect of adoption is recognized at the beginning of the period of adoption. The Company has elected to use the package of practical expedients permitted under the transition guidance within the new standard. The Company has also elected the practical expedient that permits it to not separate lease and non-lease components. While the Company is currently finalizing its assessment of the quantitative impact, the Company expects to recognize right-of-use assets ranging from \$175,000 to \$195,000 and lease liabilities ranging from \$170,000 to \$190,000 in its consolidated balance sheet upon adoption, principally related to its office space leases. EPAM does not expect the new guidance to have a material impact on its consolidated statement of income and comprehensive income or its consolidated statement of cash flows.

Measurement of Credit Losses on Financial Instruments — Effective January 1, 2020, the Company will be required to adopt the amended guidance of FASB ASC Topic 326, Financial Instruments - Credit Losses (Topic 326):

Measurement of Credit Losses on Financial Instruments, (with early adoption permitted effective January 1, 2019.)

The amendments in this update change how companies measure and recognize credit impairment for many financial assets. The new expected credit loss model will require companies to immediately recognize an estimate of credit losses expected to occur over the remaining life of the financial assets (including trade receivables) that are in the scope of the update. The update also made amendments to the current impairment model for held-to-maturity and available-for-sale debt securities and certain guarantees. Entities are required to adopt the standard using a modified-retrospective approach through a cumulative effect adjustment to retained earnings as of the beginning of the period of adoption. The Company has not yet completed its assessment of the impact of the new guidance on its consolidated financial statements or concluded on when it will adopt the standard.

2. ACQUISITIONS

Continuum — On March 15, 2018, the Company acquired all of the outstanding equity of Continuum Innovation LLC together with its subsidiaries (“Continuum”) to enhance the Company’s consulting capabilities as well as its digital and service design practices. Continuum, headquartered in Boston with offices located in Milan, Seoul, and Shanghai,

focuses on four practices including strategy, physical and digital design, technology and its Made Real Lab. The acquisition of Continuum added approximately 125 design consultants to the Company's headcount.

F-17

Table of Contents

In connection with the Continuum acquisition, the Company paid \$52,515 as cash consideration, of which \$5,410 was placed in escrow for a period of 9 to 15 months as security for the indemnification obligations of the sellers under the terms of the equity purchase agreement. Furthermore, subject to attainment of specified performance targets in the 12 months after the acquisition, the Company will make a cash earnout payment with a maximum amount payable of \$3,135. The Company recorded \$2,400 related to this earnout payment as contingent consideration as of the acquisition date. During the third quarter of 2018, the Company recorded a \$900 reduction to the fair value of the contingent consideration, which is included in Interest and other income, net in the consolidated statement of income and comprehensive income (Note 11 “Fair Value Measurements”).

Think — On November 1, 2018, the Company acquired all of the equity interests of Think Limited (“Think”), a digital transformation agency headquartered in London, UK. This acquisition is intended to strengthen EPAM’s digital and organizational consulting capabilities in the UK and Western European markets and enhance the Company’s global product and design offerings.

In connection with the Think acquisition, the Company paid \$26,254 of cash, of which \$3,237 was placed in escrow for a period of 12 months as security for the indemnification obligations of the sellers under the terms of the equity purchase agreement. Furthermore, subject to attainment of specified performance targets in the 12 months after the acquisition, the Company will make a cash earnout payment with a maximum amount payable of \$8,156. The Company recorded \$5,990 related to this earnout payment as contingent consideration as of the acquisition date. The following table summarizes the preliminary estimated fair values of the assets acquired and liabilities assumed at the dates of acquisition as updated for any changes as of December 31, 2018:

	Continuum As of March 15, 2018	Think As of November 1, 2018
Cash and cash equivalents	\$ 2,251	\$ 2,344
Accounts receivable	6,676	2,259
Unbilled revenues	2,463	284
Prepaid and other current assets	936	609
Goodwill	26,617	22,482
Intangible assets	14,450	6,882
Property and equipment and other noncurrent assets	8,902	642
Total assets acquired	\$ 62,295	\$ 35,502
Accounts payable, accrued expenses and other current liabilities	\$ 2,745	\$ 2,205
Due to employees	1,001	13
Long-term debt (Note 8)	3,220	—
Other noncurrent liabilities	490	1,040
Total liabilities assumed	\$ 7,456	\$ 3,258
Net assets acquired	\$ 54,839	\$ 32,244

The above estimated fair values of the assets acquired and liabilities assumed are provisional and based on the information that was available as of the acquisition date and updated for any changes as of December 31, 2018. The Company expects to complete the purchase price allocations as soon as practicable but no later than one year from the respective acquisition dates.

As of December 31, 2018, the Company finalized the valuation of intangible assets acquired in connection with the acquisition of Continuum which resulted in an adjustment of initially recognized intangible assets and their useful lives as well as in recognition of an additional intangible asset in the form of a favorable lease. The Company removed a liability associated with an initially recognized unfavorable lease, which was classified as other noncurrent liabilities. The Company also finalized a working capital adjustment that resulted in a partial release of escrow cash in the amount of \$76 to the Company. These adjustments as well as the revaluation of contingent consideration resulted in a corresponding decrease in the value of acquired goodwill.

Table of Contents

The following table presents the estimated fair values and useful lives of intangible assets acquired during the year ended December 31, 2018:

	Continuum Weighted Average Useful Life (in years)	Amount	Think Weighted Average Useful Life (in years)	Amount
Customer relationships	6.5	\$5,800	7	\$6,117
Favorable lease	11.2	5,500	—	—
Contract royalties	8	1,900	—	—
Trade names	5	1,250	5	765
Total		\$14,450		\$6,882

The goodwill recognized as a result of the acquisitions is attributable primarily to strategic and synergistic opportunities related to the consulting and design businesses, the assembled workforces acquired and other factors. The goodwill acquired as a result of the Continuum acquisition is expected to be deductible for income tax purposes while the goodwill acquired as a result of the Think acquisition is not expected to be deductible for income tax purposes.

Revenues generated by Continuum and Think totaled \$26,300 and \$1,908, respectively for the year ended December 31, 2018. Pro forma results of operations have not been presented because the effect of the Continuum and Think acquisitions on the Company's consolidated financial statements was not material individually or in the aggregate.

During the years ended December 31, 2017 and 2016, the Company completed acquisitions with aggregated purchase prices of \$6,980 and \$5,580, respectively. These acquisitions individually and in the aggregate are not material to the Company's consolidated financial statements.

3. GOODWILL AND INTANGIBLE ASSETS, NET

Goodwill by reportable segment was as follows:

	North America	Europe	Total
Balance as of January 1, 2017	\$76,812	\$32,477	\$109,289
Other acquisitions	199	4,533	4,732
Other acquisitions purchase accounting adjustments	(285)	2,100	1,815
Effect of currency translation	564	3,131	3,695
Balance as of December 31, 2017	77,290	42,241	119,531
Continuum acquisition (Note 2)	26,617	—	26,617
Think acquisition (Note 2)	—	22,482	22,482
Effect of currency translation	(365)	(1,433)	(1,798)
Balance as of December 31, 2018	\$103,542	\$63,290	\$166,832

Excluded from the table above is the Russia segment for which the allocated goodwill was fully impaired for the periods presented. The Russia segment had accumulated goodwill impairment losses of \$2,241 as of December 31, 2018, 2017 and 2016. There were no accumulated goodwill impairment losses in the North America or Europe reportable segments as of December 31, 2018, 2017 or 2016.

Table of Contents

Intangible assets other than goodwill as of December 31, 2018 and 2017 were as follows:

As of December 31, 2018

	Weighted average life at acquisition (in years)	Gross carrying amount	Accumulated amortization	Net carrying amount
Customer relationships	9.5	\$ 78,042	\$ (29,580)	\$ 48,462
Favorable lease	11.2	5,500	(410)	5,090
Trade names	5.3	6,111	(4,300)	1,811
Contract royalties	8	1,900	(198)	1,702
Total		\$ 91,553	\$ (34,488)	\$ 57,065

As of December 31, 2017

	Weighted average life at acquisition (in years)	Gross carrying amount	Accumulated amortization	Net carrying amount
Customer relationships	10	\$ 66,646	\$ (22,200)	\$ 44,446
Trade names	5	4,099	(4,034)	65
Total		\$ 70,745	\$ (26,234)	\$ 44,511

All of the intangible assets other than goodwill have finite lives and as such are subject to amortization. Amortization of the favorable lease asset is recognized as rent expense and included in selling, general and administrative expenses and amortization of the other intangible assets is recognized in depreciation and amortization expense in the consolidated statements of income and comprehensive income.

The following table presents amortization expense recognized for the periods indicated:

	For the Years Ended		
	December 31,		
	2018	2017	2016
Customer relationships	\$ 7,637	\$ 6,643	\$ 6,858
Favorable lease	410	—	—
Trade names	266	896	1,139
Contract royalties	198	—	—
Non-competition agreements	—	23	173
Total	\$ 8,511	\$ 7,562	\$ 8,170

The following table presents estimated amortization expense related to the Company's existing intangible assets for the years ended December 31:

	Amount
2019	\$ 9,520
2020	9,520
2021	9,520
2022	9,379
2023	8,153
Thereafter	10,973
Total	\$ 57,065

Table of Contents

4. PROPERTY AND EQUIPMENT, NET

Property and equipment, net consisted of the following:

	Weighted Average Useful Life (in years)	As of December 31, 2018	As of December 31, 2017
Computer hardware	3	\$74,884	\$62,132
Building	49	34,458	34,058
Leasehold improvements	9	25,036	13,186
Furniture and fixtures	7	21,544	18,071
Office equipment	7	13,203	10,825
Purchased computer software	4	10,406	8,379
Land improvements	20	1,474	1,474
		181,005	148,125
Less accumulated depreciation and amortization		(78,359)	(61,706)
Total		\$102,646	\$86,419

Depreciation and amortization expense related to property and equipment was \$28,539, \$21,000 and \$15,217 during the years ended December 31, 2018, 2017 and 2016, respectively.

5. ACCRUED EXPENSES AND OTHER CURRENT LIABILITIES

Accrued expenses and other current liabilities consisted of the following:

	As of December 31, 2018	As of December 31, 2017
Accrued compensation expense and related costs	\$97,877	\$67,034
Deferred revenue	4,558	4,498
Other current liabilities and accrued expenses	25,502	18,280
Total	\$127,937	\$89,812

6. TAXES PAYABLE

Current taxes payable consisted of the following:

	As of December 31, 2018	As of December 31, 2017
Income taxes payable	\$27,538	\$9,488
Payroll, social security, and other taxes payable	20,322	16,696
Value added taxes payable	19,985	14,676
Total	\$67,845	\$40,860

As a result of the U.S. Tax Act enacted on December 22, 2017, during the year ended December 31, 2017, the Company provisionally recorded income taxes payable of \$64,321 to be paid over the next 8 years as a one-time transition tax on accumulated foreign subsidiary earnings not previously subject to U.S. income tax. Of this amount, \$59,175 was classified as Taxes payable, noncurrent as of December 31, 2017. During the year ended December 31, 2018, the Company completed its assessment and adjusted the provisionally recorded amount to \$59,386. Of this amount, \$42,253 is classified as Taxes payable, noncurrent as of December 31, 2018. See Note 7 "Income Taxes" for additional discussion.

Table of Contents

7. INCOME TAXES

Income/(Loss) Before Provision for Income Taxes

Income/(loss) before provision for income taxes based on geographic location is disclosed in the table below:

	For the Years Ended December 31,		
	2018	2017	2016
Income/(loss) before provision for income taxes:			
United States	\$44,527	\$(6,595)	\$(9,300)
Foreign	205,246	180,900	135,766
Total	\$249,773	\$174,305	\$126,466

Provision for Income Taxes

The provision for income taxes consists of the following:

	For the Years Ended December 31,		
	2018	2017	2016
Current			
Federal	\$10,814	\$65,571	\$13,324
State	4,123	(204)	(63)
Foreign	42,580	23,617	17,243
Deferred			
Federal	(37,785)	7,235	(3,581)
State	(3,548)	(90)	312
Foreign	(6,667)	5,416	(35)
Total	\$9,517	\$101,545	\$27,200

The U.S. Tax Act significantly changed U.S. corporate income tax laws including a reduction of the U.S. corporate income tax rate from 35.0% to 21.0% effective January 1, 2018 and the creation of a territorial tax system with a one-time transition tax on accumulated foreign subsidiary earnings not previously subject to U.S. income tax. In addition, the U.S. Tax Act created new taxes on certain foreign-sourced earnings and certain related party payments, which are referred to as GILTI and the base erosion and anti-abuse tax (“BEAT”), respectively.

Due to the timing of the enactment and the complexity involved in applying the provisions of the U.S. Tax Act, the Company made reasonable estimates of the effects and recorded provisional amounts in its financial statements as of December 31, 2017. During the year ended December 31, 2018, the Company completed its analysis of the impact of the U.S. Tax Act and recorded the following adjustments to the recorded provisional amounts:

The one-time transition tax on accumulated foreign subsidiary earnings not previously subject to U.S. income tax requires the Company to pay U.S. income tax at a rate of 15.5% to the extent of foreign cash and certain other net current assets and 8.0% on the remaining earnings. During the year ended December 31, 2017, the Company recorded a provisional income tax expense and corresponding income taxes payable of \$64,321 to be paid over the next 8 years associated with the one-time transition tax. During the year ended December 31, 2018, the Company completed its assessment and refined its estimate reducing the provisional charge by \$4,935. The total charge for the one-time transition tax now totals \$59,386.

In 2017, the Company provisionally reduced its net deferred tax assets by \$10,311 reflecting the impact of the change in the U.S. statutory tax rate from 35.0% to 21.0% in the periods in which the net deferred tax assets are expected to be realized as a result of the U.S. Tax Act. In 2018, the Company completed its analysis, and consequently recorded an additional charge of \$926 to further reduce its net deferred tax assets for a total charge of \$11,237.

Table of Contents

In 2017, the Company reassessed its accumulated foreign earnings in light of the U.S. Tax Act and determined \$97,000 of its accumulated earnings in Belarus were no longer indefinitely reinvested. As a result, the Company recorded a charge of \$4,850 in the provision for income taxes during the year ended December 31, 2017 for the withholding tax payable to Belarus when the earnings are distributed. In 2018, the Company remitted this full amount of accumulated earnings as dividends and also remitted as dividends certain earnings of its foreign subsidiaries in Canada, Cyprus, Ireland and Russia and additional earnings in Belarus. Based on proposed tax regulations issued by the U.S. Treasury Department during 2018, it was determined that an offsetting U.S. foreign tax credit could be claimed for the withholding tax paid to Belarus resulting in a net \$4,850 income tax benefit recognized during the year ended December 31, 2018.

As of December 31, 2018, the Company has determined that all accumulated undistributed foreign earnings of \$700,327 are expected to be indefinitely reinvested. Due to the enactment of the U.S. Tax Act and the one-time transition tax on accumulated foreign subsidiary earnings, these accumulated foreign earnings are no longer expected to be subject to U.S. federal income tax if repatriated but could be subject to state and foreign income and withholding taxes.

Effective Tax Rate Reconciliation

The reconciliation of the provision for income taxes at the federal statutory income tax rate to our effective income tax rate is as follows:

	For the Years Ended December		
	31,		
	2018	2017	2016
Provision for income taxes at federal statutory rate	\$52,452	\$61,007	\$44,263
Increase/(decrease) in taxes resulting from:			
Impact from U.S. Tax Act	(4,009)	74,632	—
Entity classification election deferred tax asset impact	(25,962)	—	—
GILTI and BEAT U.S. taxes	1,526	—	—
Excess tax benefits relating to stock-based compensation	(17,370)	(9,307)	—
Subsidiary withholding tax liability and related foreign tax credit	(4,850)	4,850	—
Foreign tax expense and tax rate differential	(88)	(39,997)	(33,477)
Effect of permanent differences	2,724	3,205	5,042
State taxes, net of federal benefit	3,452	(116)	1,192
Change in valuation allowance	151	783	—
Stock-based compensation expense	652	6,908	9,535
Other	839	(420)	645
Provision for income taxes	\$9,517	\$101,545	\$27,200

The Company's worldwide effective tax rate for years ended December 31, 2018, 2017 and 2016 was 3.8%, 58.3% and 21.5%, respectively. The provision for income taxes in the year ended December 31, 2018 was favorably impacted by the recognition of \$25,962 of net deferred tax assets resulting from the Company's decision to change the tax status and to classify most of its foreign subsidiaries as disregarded for U.S. income tax purposes. This change subjects the income of the disregarded foreign subsidiaries to U.S. income taxation, resulting in a reduced foreign tax rate differential benefit in 2018 as compared to 2017 and 2016. In addition, following the adoption of ASU No. 2016-09, Compensation — Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting on January 1, 2017, the Company recorded excess tax benefits upon vesting or exercise of stock-based awards of \$17,370 and \$9,307 during the years ended December 31, 2018 and 2017, respectively.

In Belarus, member technology companies of High-Technologies Park, including our subsidiary, have a full exemption from Belarus income tax through January 2049. However, beginning February 1, 2018, the earnings of the Company's Belarus local subsidiary are subject to U. S. income taxation due to the Company's decision to change the tax status of the subsidiary. Consequently, there was less income tax benefit from the Belarus tax exemption for the year ended December 31, 2018 compared to previous years. The aggregate dollar benefits derived from this tax holiday approximated \$1,352, \$15,503 and \$13,605 for the years ended December 31, 2018, 2017 and 2016,

respectively. The benefit the tax holiday had on diluted net income per share approximated \$0.02, \$0.28 and \$0.26 for the years ended December 31, 2018, 2017 and 2016, respectively.

F-23

Table of Contents

Deferred Income Taxes

Deferred income taxes reflect the net effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company's deferred tax assets and liabilities are as follows:

	As of December 31, 2018	As of December 31, 2017
Deferred tax assets:		
Property and equipment	\$ 4,531	\$ 170
Intangible assets	1,262	1,456
Accrued expenses	32,067	4,392
Net operating loss carryforward	4,983	5,069
Deferred revenue	5,802	1,280
Stock-based compensation	27,558	16,197
Foreign currency exchange	5,772	—
Other assets	782	1,415
Deferred tax assets	\$ 82,757	\$ 29,979
Less: valuation allowance	(3,189)	(924)
Total deferred tax assets	\$ 79,568	\$ 29,055

Deferred tax liabilities:

Property and equipment	\$ 1,480	\$ 1,868
Intangible assets	5,582	3,077
Accrued revenue and expenses	1,540	1,352
U.S. taxation of foreign subsidiaries	3,000	—
Subsidiary withholding tax liability	—	4,850
Stock-based compensation	—	1,498
Other liabilities	933	239
Total deferred tax liabilities	\$ 12,535	\$ 12,884
Net deferred tax assets	\$ 67,033	\$ 16,171

As of December 31, 2018 and 2017, the Company classified \$2,950 and \$8,803, respectively, of deferred tax liabilities as Other noncurrent liabilities in the consolidated balance sheets.

Included in the stock-based compensation expense deferred tax asset at December 31, 2018 and 2017 is \$7,561 and \$8,512, respectively, that is related to acquisitions and is amortized for tax purposes over a 10 to 15-year period.

As of December 31, 2018, the Company's domestic and foreign net operating loss ("NOL") carryforwards for income tax purposes were approximately \$4,183 and \$22,808, respectively. If not utilized, the domestic NOL carryforwards will begin to expire in 2021. The foreign NOL carryforwards include \$7,031 from jurisdictions with no expiration date, with the remainder expiring as follows: \$2,309 in 2019, \$404 in 2020, \$5,098 in 2021, \$5,678 in 2022, \$1,501 in 2023, and \$787 beyond 2023. The valuation allowance maintained by the Company as of December 31, 2018 relates primarily to net operating loss carryforwards of \$18,123 in certain foreign jurisdictions that it believes are not likely to be realized.

Unrecognized Tax Benefits

As of December 31, 2018 and 2017, unrecognized tax benefits of \$1,432 and \$699, respectively, are included in Taxes payable, noncurrent within the consolidated balance sheets. These amounts are net of available foreign tax credit benefits and represent the amount of unrecognized tax benefits that, if recognized, would favorably affect the effective tax rate in future periods. There were no significant new tax positions that resulted in unrecognized tax benefits or reversal of prior year tax positions during the years ended December 31, 2018, 2017 and 2016. There were no tax

positions for which it was reasonably possible that unrecognized tax benefits will significantly increase or decrease within twelve months of the reporting date.

F-24

Table of Contents

The Company files income tax returns in the United States and in various state, local and foreign jurisdictions. The Company's significant tax jurisdictions are the United States, Russia, Germany, Ukraine, the United Kingdom, Hungary, Switzerland, Netherlands, Poland and India. The tax years subsequent to 2014 remain open to examination by the United States Internal Revenue Service and generally, the tax years subsequent to 2014 remain open to examination by various state and local taxing authorities and various foreign taxing authorities.

8. LONG-TERM DEBT

Revolving Line of Credit — On September 12, 2014, the Company entered into a revolving loan agreement (the "2014 Credit Facility") with PNC Bank, National Association; Santander Bank, N.A; and Silicon Valley Bank (collectively the "2014 Lenders"). Under the 2014 Credit Facility, the Company's borrowing capacity was set at \$100,000, with potential to increase it to \$200,000 if certain conditions were met.

Borrowings under the 2014 Credit Facility were denominated in U.S. dollars or, up to a maximum of \$50,000 in British pounds, Canadian dollars, euros and Swiss francs and other currencies as may be approved by the administrative agent and the 2014 Lenders. Borrowings under the 2014 Credit Facility bore interest at either a base rate or Euro-rate plus a margin based on the Company's leverage ratio. The base rate was equal to the highest of (a) the Federal Funds Open Rate, plus 0.5%, (b) the Prime Rate, and (c) the Daily LIBOR Rate, plus 1.0%.

On May 24, 2017, the Company terminated the 2014 Credit Facility and entered into a new unsecured credit facility (the "2017 Credit Facility"), as may be amended from time to time, with PNC Bank, National Association; PNC Capital Markets LLC; Citibank N.A.; Wells Fargo Bank, National Association; Fifth Third Bank and Santander Bank, N.A. (collectively the "Lenders"). The 2017 Credit Facility provides for a borrowing capacity of \$300,000, with potential to increase the credit facility up to \$400,000 if certain conditions are met. The 2017 Credit Facility matures on May 24, 2022.

Borrowings under the 2017 Credit Facility may be denominated in U.S. dollars or up to a maximum of \$100,000 in British pounds, Canadian dollars, euros and Swiss francs and other currencies as may be approved by the administrative agent and the Lenders. Borrowings under the 2017 Credit Facility bear interest at either a base rate or Euro-rate plus a margin based on the Company's leverage ratio. The base rate is equal to the highest of (a) the Overnight Bank Funding Rate, plus 0.5%, (b) the Prime Rate, or (c) the Daily LIBOR Rate, plus 1.0%. As of December 31, 2018, the Company's outstanding borrowings are subject to a LIBOR-based interest rate, which resets regularly at issuance, based on lending terms.

The 2017 Credit Facility includes customary business and financial covenants that may restrict the Company's ability to make or pay dividends (other than certain intercompany dividends) if a potential or an actual event of default has occurred or would be triggered. As of December 31, 2018, the Company was in compliance with all covenants contained in the 2017 Credit Facility.

The following table presents the outstanding debt and borrowing capacity of the Company under the 2017 Credit Facility:

	As of December 31, 2018	As of December 31, 2017	
Outstanding debt	\$25,000	\$25,000	
Interest rate	3.5	2.6	%
Irrevocable standby letters of credit	\$382	\$1,294	
Available borrowing capacity	\$274,618	\$273,706	
Current maximum borrowing capacity	\$300,000	\$300,000	

As part of the acquisition of Continuum, the Company assumed \$3,448 of long-term debt associated with a leased facility and payable to Continuum's landlord. The debt was payable in monthly installments through March, 2029 and bore interest at a rate of 8% per annum. In March 2018, the Company paid \$3,448 to settle this assumed long-term debt.

Table of Contents

9. REVENUES

Disaggregation of Revenues

The following tables show the disaggregation of the Company's revenues by major customer location, including a reconciliation of the disaggregated revenues with the Company's reportable segments (Note 15 "Segment Information") for the year ended December 31, 2018:

Year Ended December 31, 2018

Reportable Segments	North America	Europe	Russia	Total Segment Revenues	Other Income Included in Segment Revenues	Consolidated Revenues
Customer Locations						
North America	\$1,046,333	\$52,859	\$75	\$1,099,267	\$(100)	-\$1,099,167
Europe	16,693	596,559	52	613,304	(832)	-612,472
CIS	8,437	336	72,930	81,703	—	-81,703
APAC	5,631	44,113	91	49,835	(265)	-49,570
Revenues	\$1,077,094	\$693,867	\$73,148	\$1,844,109	\$(1,197)	\$1,842,912

The following tables show the disaggregation of the Company's revenues by industry vertical, including a reconciliation of the disaggregated revenues with the Company's reportable segments (Note 15 "Segment Information") for the year ended December 31, 2018:

Year Ended December 31, 2018

Reportable Segments	North America	Europe	Russia	Total Segment Revenues	Other Income Included in Segment Revenues	Consolidated Revenues
Industry Verticals						
Financial Services	\$112,528	\$253,089	\$59,337	\$424,954	\$(977)	\$423,977
Travel & Consumer	177,913	208,445	7,467	393,825	(182)	393,643
Software & Hi-Tech	269,067	79,121	2,627	350,815	—	350,815
Business Information & Media	251,081	72,898	54	324,033	—	324,033
Life Sciences & Healthcare	151,449	20,272	13	171,734	(31)	171,703
Emerging Verticals	115,056	60,042	3,650	178,748	(7)	178,741
Revenues	\$1,077,094	\$693,867	\$73,148	\$1,844,109	\$(1,197)	\$1,842,912

The following tables show the disaggregation of the Company's revenues by contract type, including a reconciliation of the disaggregated revenues with the Company's reportable segments (Note 15 "Segment Information") for the year ended December 31, 2018:

Year Ended December 31, 2018

Reportable Segments	North America	Europe	Russia	Total Segment Revenues	Other Income Included in Segment Revenues	Consolidated Revenues
Contract Types						
Time-and-material	\$983,433	\$628,710	\$40,754	\$1,652,897	\$—	\$1,652,897
Fixed-price	89,831	62,078	32,342	184,251	—	184,251

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Licensing	2,748	1,332	17	4,097	—	4,097
Other revenues	1,082	1,747	35	2,864	(1,197)	1,667
Revenues	\$1,077,094	\$693,867	\$73,148	\$1,844,109	\$(1,197)	\$1,842,912

F-26

Table of Contents

Timing of Revenue Recognition

The following tables show the timing of revenue recognition:

Year Ended December 31, 2018

Reportable Segments	North America	Europe	Russia	Total Segment Revenues	Other Income Included in Segment Revenues	Consolidated Revenues
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Timing of Revenue Recognition

Transferred over time	\$ 1,076,083	\$ 692,024	\$ 73,135	\$ 1,841,242	\$ —	\$ 1,841,242
Transferred at a point of time	1,011	1,843	13	2,867	(1,197)	1,670
Revenues	\$ 1,077,094	\$ 693,867	\$ 73,148	\$ 1,844,109	\$ (1,197)	\$ 1,842,912

During the year ended December 31, 2018, the Company recognized \$5,736 of revenues from performance obligations satisfied in previous periods.

The following table includes the estimated revenues expected to be recognized in the future related to performance obligations that are partially or fully unsatisfied as of December 31, 2018. The Company applies a practical expedient and does not disclose the value of unsatisfied performance obligations for contracts that (i) have an original expected duration of one year or less and (ii) contracts for which it recognizes revenues at the amount to which it has the right to invoice for services provided:

Contract Type	Less than 1 year	1 Year	2 Years	3 Years	Total
Fixed-price	\$ 7,202	\$ 402	\$ 56	\$ —	—\$ 7,660

The Company applies a practical expedient and does not disclose the amount of the transaction price allocated to the remaining performance obligations nor provide an explanation of when the Company expects to recognize that amount as revenue for certain variable consideration.

Contract Balances

The following table provides information on the classification of contract assets and liabilities in the consolidated balance sheets:

	As of December 31, 2018	As of January 1, 2018
Contract assets included in Unbilled revenues	\$ 13,522	\$ 7,901
Contract liabilities included in Accrued expenses and other current liabilities	\$ 4,558	\$ 4,498
Contract liabilities included in Other noncurrent liabilities	\$ 224	\$ —

Contract assets included in unbilled revenues are recorded when services have been provided but the Company does not have an unconditional right to receive consideration. The Company recognizes an impairment loss when the contract carrying amount is greater than the remaining consideration receivable, less directly related costs to be incurred. Contract assets have increased from January 1, 2018 primarily due to new contracts entered into in 2018 where the Company's right to bill is contingent upon achievement of contractual milestones.

Contract liabilities comprise amounts collected from the Company's customers for revenues not yet earned. Such amounts are anticipated to be recorded as revenues when services are performed in subsequent periods. During the year ended December 31, 2018, the Company recognized \$3,810 of revenues that were included in Accrued expenses and other current liabilities at January 1, 2018.

Table of Contents

10. DERIVATIVE FINANCIAL INSTRUMENTS

The Company conducts a large portion of its operations in international markets that subject it to foreign currency fluctuations. To manage the risk of fluctuations in foreign currency exchange rates, during the year ended December 31, 2018, the Company implemented a hedging program whereby it entered into a series of foreign exchange forward contracts with durations of twelve months or less that are designated as cash flow hedges of forecasted Russian ruble, Polish zloty and Indian rupee transactions.

The Company measures derivative instruments and hedging activities at fair value and recognizes them as either assets or liabilities in its consolidated balance sheets. Accounting for the gains and losses resulting from changes in fair value depends on the use of the derivative and whether it is designated and qualifies for hedge accounting. To receive hedge accounting treatment, all hedging relationships are formally documented at the inception of the hedge, and the hedges must be highly effective in offsetting changes to future cash flows on hedged transactions. As of December 31, 2018, all of the Company's foreign exchange forward contracts were designated as hedges.

Derivatives may give rise to credit risks from the possible non-performance by counterparties. The Company has limited its credit risk by entering into derivative transactions only with highly-rated financial institutions and by conducting an ongoing evaluation of the creditworthiness of the financial institutions with which the Company does business. There is no financial collateral (including cash collateral) required to be posted by the Company related to the foreign exchange forward contracts.

The fair value of derivative instruments on the Company's consolidated balance sheets as of December 31, 2018 and December 31, 2017 were as follows:

	Balance Sheet Classification	As of December	As of December
		31, 2018	31, 2017
		Asset	Liability
		Derivatives	Derivatives
Foreign exchange forward contracts - Designated as hedging instruments	Prepaid and other current assets	\$ 181	\$ —
	Accrued expenses and other current liabilities	\$ 3,475	\$ —
Foreign exchange forward contracts - Not designated as hedging instruments	Prepaid and other current assets	\$—	\$ 114

The changes in the fair value of foreign currency derivative instruments in our consolidated statements of income and comprehensive income for the years ended December 31, 2018, 2017 and 2016 were as follows:

	Year Ended		
	December 31,		
	2018	2017	2016
Foreign exchange forward contracts - Designated as hedging instruments:			
Change in fair value recognized in Accumulated other comprehensive loss	\$(3,294)	\$—	\$—
Net loss reclassified from Accumulated other comprehensive loss into Cost of revenues (exclusive of depreciation and amortization)	\$(4,161)	\$—	\$—
Foreign exchange forward contracts - Not designated as hedging instruments:			
Net gain recognized in Foreign exchange gain/(loss)	\$44	\$425	\$92

Table of Contents

11. FAIR VALUE MEASUREMENTS

The Company carries certain assets and liabilities at fair value on a recurring basis on its consolidated balance sheets. The following table shows the fair values of the Company's financial assets and liabilities measured at fair value on a recurring basis as of December 31, 2018:

	As of December 31, 2018			
	Balance	Level 1	Level 2	Level 3
Foreign exchange derivative assets	\$ 181	\$ —	—\$181	\$—
Total assets measured at fair value on a recurring basis	\$ 181	\$ —	—\$181	\$—
Foreign exchange derivative liabilities	\$3,475	\$ —	—\$3,475	\$—
Contingent consideration	7,468	—	—	7,468
Total liabilities measured at fair value on a recurring basis	\$ 10,943	\$ —	—\$3,475	\$7,468

The Company had no material financial assets or liabilities measured at fair value on a recurring basis as of December 31, 2017.

Our Level 2 foreign exchange derivatives are valued using pricing models and discounted cash flow methodologies based on observable foreign exchange data at the measurement date. See Note 10 "Derivative Financial Instruments" for further information regarding the Company's derivative financial instruments.

As of December 31, 2018, contingent consideration included amounts payable in cash in connection with the acquisitions of Continuum and Think (Note 2 "Acquisitions"). The fair value of the contingent consideration is based on the expected future payments to be made to the sellers of the acquired businesses in accordance with the provisions outlined in the respective purchase agreements. In determining fair value, the Company considered a variety of factors, including future performance of the acquired businesses using financial projections developed by the Company and market risk assumptions that were derived for revenue growth and earnings before interest and taxes. The Company estimated future payments using the earnout formulas and performance targets specified in the purchase agreements and adjusted those estimates to reflect the probability of their achievement. Those estimated future payments were then discounted to present value using a rate based on the weighted-average cost of capital of guideline companies. Although there is significant judgment involved, the Company believes its estimates and assumptions are reasonable. Changes in financial projections, market risk assumptions, discount rates or probability assumptions related to achieving the various earnout criteria would result in a change in the fair value of the recorded contingent liabilities. Such changes, if any, are recorded within Interest and other income, net in the Company's consolidated statement of income and comprehensive income.

A reconciliation of the beginning and ending balances of acquisition-related contractual contingent liabilities using significant unobservable inputs (Level 3) for the year ended December 31, 2016 is as follows:

	Amount
Contractual contingent liabilities as of January 1, 2016	\$5,364
Acquisition date fair value of contractual contingent liabilities — other acquisitions	800
Liability-classified stock-based awards	5,148
Changes in fair value of contractual contingent liabilities included in Selling, general and administrative expenses	1,232
Changes in fair value of contractual contingent liabilities recorded against goodwill	200
Settlements of contractual contingent liabilities	(8,955)
Reclassification of contractual contingent liabilities out of Level 3	(3,789)
Contractual contingent liabilities as of December 31, 2016	\$—

Table of Contents

The Company had no activity related to contractual contingent liabilities during the year ended December 31, 2017. A reconciliation of the beginning and ending balances of acquisition-related contractual contingent liabilities using significant unobservable inputs (Level 3) for the year ended December 31, 2018 is as follows:

	Amount
Contractual contingent liabilities as of December 31, 2017	\$—
Acquisition date fair value of contingent consideration — Continuum acquisition (Note 2)	2,400
Acquisition date fair value of contingent consideration — Think acquisition (Note 2)	5,990
Changes in fair value of contingent consideration included in Interest and other income, net (Note 2)	(900)
Effect of net foreign currency exchange rate changes	(22)
Contractual contingent liabilities as of December 31, 2018	\$7,468

Estimates of fair value of financial instruments not carried at fair value on a recurring basis on the Company's consolidated balance sheets are generally subjective in nature, and are determined as of a specific point in time based on the characteristics of the financial instruments and relevant market information. The Company uses the following methods to estimate the fair values of its financial instruments:

- for financial instruments that have quoted market prices, those quoted prices are used to estimate fair value;
- for financial instruments for which no quoted market prices are available, fair value is estimated using information obtained from independent third parties, or by discounting the expected cash flows using an estimated current market interest rate for the financial instrument;
- for financial instruments for which no quoted market prices are available and that have no defined maturity, have a remaining maturity of 360 days or less, or reprice frequently to a market rate, the Company assumes that the fair value of these instruments approximates their reported value, after taking into consideration any applicable credit risk.

The generally short duration of certain of the Company's assets and liabilities results in a significant number of assets and liabilities for which fair value equals or closely approximates the amount recorded on the Company's consolidated balance sheets. The Company's financial assets and liabilities that are not carried at fair value on a recurring basis on the Company's consolidated balance sheets are as follows:

- cash and cash equivalents;
- restricted cash and time deposits;
- employee loans;
- long-term debt (Note 8 "Long-Term Debt")

Since 2012, the Company has offered a loan program, which provides employees with loans to purchase housing in Belarus through independent third parties. This program is designed as a retention mechanism for the Company's employees in Belarus and is available to full-time qualified employees. The aggregate maximum lending limit of the program is \$10,000, with no individual outstanding loans exceeding \$50 and the Company intends to hold all employee loans until their maturity. In addition to the housing loans, the Company issues relocation loans in connection with intra-company transfers, as well as certain other individual loans. There were no loans issued to principal officers, directors, and their affiliates. Loans under these programs were not material as of December 31, 2018 and 2017 and were included in Prepaid and other current assets and Other noncurrent assets in the Company's consolidated balance sheets.

The housing loans are measured using the Level 3 inputs within the fair value hierarchy under FASB ASC Topic 820, Fair Value Measurement because they are valued using significant unobservable inputs. The fair value of employee housing loans is estimated using information on the rates of return that market participants in Belarus would require when investing in unsecured U.S. dollar-denominated government bonds with similar maturities (a "risk-free rate"), after taking into consideration any applicable credit and liquidity risk. They are subsequently carried at amortized cost less allowance for loan losses, which have been minimal since the commencement of the program as participants go through a rigorous approval and screening process. Any difference between the carrying value and the fair value of a loan upon initial recognition is charged to expense.

Table of Contents

The following tables present the reported amounts and estimated fair values of the financial assets and liabilities for which disclosure of fair value is required, as they would be categorized within the fair value hierarchy, as of the dates indicated:

	Balance	Estimated Fair Value	Fair Value Hierarchy		
			Level 1	Level 2	Level 3
December 31, 2018					
Financial Assets:					
Cash and cash equivalents	\$770,560	\$770,560	\$770,560	\$—	\$—
Restricted cash	\$1,151	\$1,151	\$1,151	\$—	\$—
Employee loans	\$3,525	\$3,525	\$—	\$—	\$3,525
Financial Liabilities:					
Borrowings under 2017 Credit Facility	\$25,020	\$25,020	\$—	\$25,020	\$—

	Balance	Estimated Fair Value	Fair Value Hierarchy		
			Level 1	Level 2	Level 3
December 31, 2017					
Financial Assets:					
Cash and cash equivalents	\$582,585	\$582,585	\$582,585	\$—	\$—
Time deposits and restricted cash	\$673	\$673	\$—	\$673	\$—
Employee loans	\$4,210	\$4,210	\$—	\$—	\$4,210
Financial Liabilities:					
Borrowings under 2017 Credit Facility	\$25,009	\$25,009	\$—	\$25,009	\$—

12. STOCK-BASED COMPENSATION

The following costs related to the Company's stock compensation plans were included in the consolidated statements of income and comprehensive income:

	For the Years Ended		
	December 31, 2018	2017	2016
Cost of revenues (exclusive of depreciation and amortization)	\$27,245	\$20,868	\$16,619
Selling, general and administrative expenses	31,943	31,539	32,625
Total	\$59,188	\$52,407	\$49,244

Equity Plans

2015 Long-Term Incentive Plan — On June 11, 2015, the Company's stockholders approved the 2015 Long-Term Incentive Plan ("2015 Plan") to be used to issue equity awards to company personnel. As of December 31, 2018, 5,332,128 shares of common stock remained available for issuance under the 2015 Plan. All of the awards issued pursuant to the 2015 Plan expire 10 years from the date of grant.

2012 Non-Employee Directors Compensation Plan — On January 11, 2012, the Company approved the 2012 Non-Employee Directors Compensation Plan ("2012 Directors Plan") to be used to issue equity grants to its non-employee directors. The Company authorized 600,000 shares of common stock to be reserved for issuance under the plan. As of December 31, 2018, 533,852 shares of common stock remained available for issuance under the 2012 Directors Plan. The 2012 Directors Plan will expire after 10 years and is administered by the Company's Board of Directors.

2012 Long-Term Incentive Plan — On January 11, 2012, the Company approved the 2012 Long-Term Incentive Plan ("2012 Plan") to be used to issue equity grants to Company personnel. In June 2015, the 2012 Plan was discontinued; however, outstanding awards remain subject to the terms of the 2012 Plan and any shares that are subject to an award that was previously granted under the 2012 Plan and that expire or terminate for any reason prior to exercise will

become available for issuance under the 2015 Plan. All of the awards issued pursuant to the 2012 Plan expire 10 years from the date of grant.

F-31

Table of Contents

2006 Stock Option Plan — Effective May 31, 2006, the Board of Directors of the Company adopted the 2006 Stock Option Plan (the “2006 Plan”) to grant stock options to directors, employees, and certain independent contractors. In January 2012, the 2006 Plan was discontinued; however, outstanding awards remain subject to the terms of the 2006 Plan and any shares that are subject to an option award that was previously granted under the 2006 Plan and that expire or terminate for any reason prior to exercise will become available for issuance under the 2015 Plan. All of the awards issued pursuant to the 2006 Plan expire 10 years from the date of grant.

Stock Options

Stock option activity under the Company’s plans is set forth below:

	Number of Options	Weighted Average Exercise Price	Aggregate Intrinsic Value	Weighted Average Remaining Contractual Term (in years)
Options outstanding as of January 1, 2016	7,450,914	\$ 34.07	\$ 331,938	
Options granted	313,088	\$ 70.27		
Options exercised	(895,804)	\$ 20.13		
Options forfeited/cancelled	(227,759)	\$ 47.89		
Options expired	(3,200)	\$ 1.52		
Options outstanding as of December 31, 2016	6,637,239	\$ 37.20	\$ 179,936	
Options granted	261,373	\$ 73.40		
Options exercised	(1,789,434)	\$ 30.23		
Options forfeited/cancelled	(200,210)	\$ 57.09		
Options expired	(7,220)	\$ 4.63		
Options outstanding as of December 31, 2017	4,901,748	\$ 40.91	\$ 326,064	
Options granted	160,181	\$ 112.81		
Options exercised	(945,166)	\$ 36.69		
Options forfeited/cancelled	(32,569)	\$ 63.28		
Options expired	(1,250)	\$ 25.72		
Options outstanding as of December 31, 2018	4,082,944	\$ 44.54	\$ 291,846	5.5
Options vested and exercisable as of December 31, 2018	3,183,103	\$ 36.10	\$ 254,360	4.9
Options expected to vest as of December 31, 2018	867,711	\$ 73.93	\$ 36,539	7.3

The fair value of each option award is estimated on the date of grant using the Black-Scholes option valuation model. The grant-date fair value for stock options granted was determined using a Black-Scholes model incorporating the following average assumptions:

	For the Years Ended December 31,		
	2018	2017	2016
Expected volatility	33.8%	30.5%	31.9%
Expected term (in years)	6.25	6.25	6.24
Risk-free interest rate	2.7 %	2.1 %	1.5 %
Expected dividends	— %	— %	— %

Effective January 1, 2018, the Company changed its methodology for estimating volatility used in the Black-Scholes option valuation model. Prior to January 1, 2018, the Company estimated the volatility of its common stock by using the historical volatility of peer public companies including the Company’s historical volatility. In the first quarter of 2018, the Company began exclusively using its own historical volatility as it believes this is a more accurate estimate of future volatility of the price of the Company’s common stock. The Company did not change the methodology for estimating any other Black-Scholes option valuation model assumptions.

Table of Contents

The risk-free rate is based on the U.S. Treasury yield curve for periods equal to the expected term of the options in effect at the time of grant. The Company has not declared or paid any dividends on its common stock. The Company intends to retain any earnings to fund operations and future growth of its business and, therefore, does not anticipate paying any cash dividends in the foreseeable future.

The weighted-average grant-date fair value of stock options granted during the years ended December 31, 2018, 2017 and 2016 was \$43.42, \$25.29 and \$24.26, respectively. The total intrinsic value of options exercised during the years ended December 31, 2018, 2017 and 2016 was \$83,250, \$91,148 and \$39,577, respectively.

The Company recognizes the fair value of each option as compensation expense on a straight-line basis over the requisite service period, which is generally the vesting period. The options are typically scheduled to vest over four years from the time of grant, subject to the terms of the applicable plan and stock option agreement. In general, in the event of a participant's termination of service for any reason, unvested options are forfeited as of the date of such termination without any payment to the participant. The Company records share-based compensation expense only for those awards that are expected to vest and as such, the Company applies an estimated forfeiture rate at the time of grant and adjusts the forfeiture rate to reflect actual forfeitures quarterly.

As of December 31, 2018, \$12,553 of total remaining unrecognized compensation cost related to unvested stock options, net of estimated forfeitures, is expected to be recognized over a weighted-average period of 2.1 years. As of December 31, 2018, a total of 50 shares underlying options exercised through December 31, 2018, were in transfer with the Company's transfer agent.

Restricted Stock and Restricted Stock Units

The Company grants restricted stock units ("RSUs") to Company personnel and non-employee directors under the Company's 2015 Plan (and prior to its approval, under the 2012 Plan) and 2012 Directors Plan, respectively. Prior to 2017, awards to non-employee directors were in the form of restricted stock. In addition, the Company has issued in the past, and may issue in the future, its equity securities to compensate employees of acquired businesses for future services. Equity-based awards granted in connection with acquisitions of businesses are generally issued in the form of service-based awards (dependent on continuing employment only) and performance-based awards, which are granted and vest only if certain specified performance and service conditions are met. The awards issued in connection with acquisitions of businesses are subject to the terms and conditions contained in the applicable award agreement and acquisition documents with typical vesting period of three years and equal or variable vesting percentage of the awards granted depending on the terms.

Table of Contents

Service-Based Awards

The table below summarizes activity related to the Company's equity-classified and liability-classified service-based awards for the years ended December 31, 2018, 2017 and 2016:

	Equity-Classified Equity-Settled Restricted Stock		Equity-Classified Equity-Settled Restricted Stock Units		Liability-Classified Cash-Settled Restricted Stock Units	
	Number of Shares	Weighted Average Grant Date Fair Value Per Share	Number of Shares	Weighted Average Grant Date Fair Value Per Share	Number of Shares	Weighted Average Grant Date Fair Value Per Share
Unvested service-based awards outstanding as of January 1, 2016	306,839	\$ 41.14	149,272	\$ 57.55	—	\$ —
Awards granted	6,510	\$ 73.00	408,629	\$ 70.39	207,586	\$ 70.53
Awards vested	(156,535)	\$ 42.64	(41,015)	\$ 55.60	—	\$ —
Awards forfeited/cancelled	(2,689)	\$ 45.32	(31,698)	\$ 70.44	(3,085)	\$ 70.52
Unvested service-based awards outstanding as of December 31, 2016	154,125	\$ 40.89	485,188	\$ 67.69	204,501	\$ 70.53
Awards granted	—	\$ —	424,623	\$ 73.89	170,295	\$ 74.21
Awards modified	—	\$ —	(2,570)	\$ 26.85	2,570	\$ 73.27
Awards vested	(152,285)	\$ 43.39	(140,043)	\$ 66.54	(52,004)	\$ 70.56
Awards forfeited/cancelled	—	\$ —	(79,186)	\$ 70.30	(10,533)	\$ 71.72
Unvested service-based awards outstanding as of December 31, 2017	1,840	\$ 54.37	688,012	\$ 71.60	314,829	\$ 72.50
Awards granted	—	\$ —	380,864	\$ 115.84	85,380	\$ 112.65
Awards modified	—	\$ —	(3,110)	\$ 80.27	3,110	\$ 120.18
Awards vested	(1,047)	\$ 47.76	(217,800)	\$ 70.10	(91,684)	\$ 72.69
Awards forfeited/cancelled	—	\$ —	(50,063)	\$ 86.97	(8,668)	\$ 81.40
Unvested service-based awards outstanding as of December 31, 2018	793	\$ 63.10	797,903	\$ 92.13	302,967	\$ 83.99

The fair value of vested service-based awards (measured at the vesting date) for the years ended December 31, 2018, 2017 and 2016 was as follows:

	For the Years Ended December 31,		
	2018	2017	2016
Equity-classified equity-settled Restricted stock	\$142	\$12,607	\$11,431
Restricted stock units	24,987	10,620	2,932
Liability-classified cash-settled Restricted stock units	10,349	3,811	—
Total fair value of vested service-based awards	\$35,478	\$27,038	\$14,363

As of December 31, 2018, \$38 of total remaining unrecognized stock-based compensation costs related to service-based equity-classified restricted stock is expected to be recognized over the weighted-average remaining requisite service period of 1.5 years.

As of December 31, 2018, \$51,655 of total remaining unrecognized stock-based compensation costs related to service-based equity-classified RSUs, net of estimated forfeitures, is expected to be recognized over the weighted-average remaining requisite service period of 2.6 years. As of December 31, 2018, there were 3,894 restricted stock units vested for which the holders elected to defer delivery of EPAM Systems, Inc. ordinary shares. During the first quarter of 2018, 44,228 RSUs were granted in connection with the acquisition of Continuum. During the fourth quarter of 2018, 44,350 RSUs were granted in connection with the acquisition of Think.

F-34

Table of Contents

As of December 31, 2018, \$23,251 of total remaining unrecognized stock-based compensation costs related to service-based liability-classified RSUs, net of estimated forfeitures, is expected to be recognized over the weighted-average remaining requisite service period of 2.3 years.

The liability associated with our service-based liability-classified RSUs as of December 31, 2018 and 2017 was \$9,920 and \$5,964, respectively, and was classified as Deferred compensation due to employees in the consolidated balance sheets.

Performance -Based Awards

The table below summarizes activity related to the Company's performance-based awards for the years ended December 31, 2018, 2017 and 2016:

	Equity-Classified Equity-Settled Restricted Stock		Liability-Classified Equity-Settled Restricted Stock		Equity-Classified Equity-Settled Restricted Stock Units	
	Number of Shares	Weighted Average Grant Date Fair Value Per Share	Number of Shares	Weighted Average Grant Date Fair Value Per Share	Number of Shares	Weighted Average Grant Date Fair Value Per Share
Unvested performance-based awards outstanding as of January 1, 2016	22,090	\$ 37.52	211,206	\$ 39.65	14,000	\$ 70.22
Awards granted	—	\$ —	—	\$ —	—	\$ —
Awards vested	(9,978)	\$ 40.15	(105,604)	\$ 40.44	(4,666)	\$ 70.22
Awards forfeited/cancelled	(6,539)	\$ 36.97	—	\$ —	(4,667)	\$ 70.22
Unvested performance-based awards outstanding as of December 31, 2016	5,573	\$ 33.47	105,602	\$ 38.86	4,667	\$ 70.22
Awards granted	—	\$ —	—	\$ —	—	\$ —
Awards vested	(5,573)	\$ 33.47	(105,602)	\$ 38.86	—	\$ —
Awards forfeited/cancelled	—	\$ —	—	\$ —	(4,667)	\$ 70.22
Unvested performance-based awards outstanding as of December 31, 2017	—	\$ —	—	\$ —	—	\$ —
Awards granted	—	\$ —	—	\$ —	45,375	\$ 121.75
Awards vested	—	\$ —	—	\$ —	(8,769)	\$ 121.75
Awards forfeited/cancelled	—	\$ —	—	\$ —	(7,014)	\$ 121.75
Unvested performance-based awards outstanding as of December 31, 2018	—	\$ —	—	\$ —	29,592	\$ 121.75

As of December 31, 2018, \$2,779 of total remaining unrecognized stock-based compensation cost related to performance-based equity-classified restricted stock units is expected to be recognized over the weighted-average remaining requisite service period of 1.9 years.

Performance-based equity-classified RSUs were granted during the year ended December 31, 2018 in connection with the acquisition of Continuum and have a variable vesting period, subject to satisfaction of the applicable performance conditions with each vesting portion having its own service inception date. Compensation is recognized over the vesting period and adjusted each period for the probability of achievement of the performance criteria for each vesting portion separately. During the fourth quarter of 2018, the Company accelerated the recognition of \$835 of expense due to vesting of performance-based equity-classified RSUs in accordance with the terms of the award agreement.

Table of Contents

The fair value of vested performance-based awards (measured at the vesting date) for the years ended December 31, 2018, 2017 and 2016 was as follows:

	For the Years Ended		
	December 31,		
	2018	2017	2016
Equity-classified equity-settled			
Restricted stock	\$—	\$452	\$690
Restricted stock units	1,046	—	348
Liability-classified equity-settled			
Restricted stock	—	8,633	7,955
Total fair value of vested performance-based awards	\$1,046	\$9,085	\$8,993

13. EARNINGS PER SHARE

Basic earnings per share is computed by dividing net income available to common shareholders by the weighted average number of common shares outstanding during the period. Diluted earnings per share is computed by dividing net income available to common shareholders by the weighted average number of shares of common stock outstanding during the period increased to include the number of additional shares of common stock that would have been outstanding if the potentially dilutive securities had been issued. Stock options, restricted stock and RSUs that are anti-dilutive are excluded from the computation of weighted average shares outstanding.

The following table sets forth the computation of basic and diluted earnings per share of common stock as follows:

	For the Years Ended December		
	31,		
	2018	2017	2016
Numerator for basic and diluted earnings per share:			
Net income	\$240,256	\$ 72,760	\$ 99,266
Numerator for basic and diluted earnings per share	\$240,256	\$ 72,760	\$ 99,266
Denominator:			
Weighted average common shares for basic earnings per share	53,622,989	52,077,011	50,309,362
Net effect of dilutive stock options, restricted stock units and restricted stock awards	3,049,687	2,907,162	2,906,030
Weighted average common shares for diluted earnings per share	56,672,676	54,984,173	53,215,392
Net Income per share:			
Basic	\$4.48	\$ 1.40	\$ 1.97
Diluted	\$4.24	\$ 1.32	\$ 1.87
Weighted average common shares considered anti-dilutive and not included in computing diluted earnings per share were 138,639, 883,350 and 2,324,667 for the years ended December 31, 2018, 2017 and 2016, respectively.			

Table of Contents**14. COMMITMENTS AND CONTINGENCIES**

The Company leases office space under operating leases, which expire at various dates. Certain leases contain renewal provisions and generally require the Company to pay utilities, insurance, taxes, and other operating expenses. Rent expense under operating lease agreements for the years ended December 31, 2018, 2017 and 2016 was \$46,924, \$37,916, and \$28,220 respectively. Future minimum rental payments under operating leases that have initial or remaining lease terms in excess of one year as of December 31, 2018 were as follows:

Year Ending December 31,	Operating Leases
2019	\$46,082
2020	38,715
2021	32,126
2022	24,341
2023	20,118
Thereafter	77,484
Total minimum lease payments	\$238,866

Indemnification Obligations — In the normal course of business, the Company is a party to a variety of agreements under which it may be obligated to indemnify the other party for certain matters. These obligations typically arise in contracts where the Company customarily agrees to hold the other party harmless against losses arising from a breach of representations or covenants for certain matters such as title to assets and intellectual property rights and data privacy matters associated with certain arrangements. The duration of these indemnifications varies, and in certain cases, is indefinite.

The Company is unable to reasonably estimate the maximum potential amount of future payments under these or similar agreements due to the unique facts and circumstances of each agreement and the fact that certain indemnifications provide for no limitation to the maximum potential future payments under the indemnification. Management is not aware of any such matters that would have a material effect on the financial statements of the Company.

Litigation — From time to time, the Company is involved in litigation, claims or other contingencies arising in the ordinary course of business. The Company accrues a liability when a loss is considered probable and the amount can be reasonably estimated. When a material loss contingency is reasonably possible but not probable, the Company does not record a liability, but instead discloses the nature and the amount of the claim, and an estimate of the loss or range of loss, if such an estimate can be made. Legal fees are expensed as incurred. In the opinion of management, the outcome of any existing claims and legal or regulatory proceedings, if decided adversely, is not expected to have a material effect on the Company's business, financial condition, results of operations and cash flows.

15. SEGMENT INFORMATION

The Company determines its business segments and reports segment information in accordance with how the Company's chief operating decision maker ("CODM") organizes the segments to evaluate performance, allocate resources and make business decisions. Segment results are based on the segment's revenues and operating profit, where segment operating profit is defined as income from operations before unallocated costs. Expenses included in segment operating profit consist principally of direct selling and delivery costs as well as an allocation of certain shared services expenses. Certain corporate expenses are not allocated to specific segments as these expenses are not controllable at the segment level. Such expenses include certain types of professional fees, non-corporate taxes, compensation to non-employee directors and certain other general and administrative expenses, including compensation of specific groups of non-production employees. In addition, the Company does not allocate amortization of acquisition-related intangible assets, goodwill and other asset impairment charges, stock-based compensation expenses, acquisition-related costs and certain other one-time charges. These unallocated amounts are combined with total segment operating profit to arrive at consolidated income from operations as reported below in the reconciliation of segment operating profit to consolidated income before provision for income taxes. Additionally, management has determined that it is not practical to allocate identifiable assets by segment since such assets are used interchangeably among the segments.

Table of Contents

The Company manages its business primarily based on the managerial responsibility for its client base and market. As managerial responsibility for a particular customer relationship generally correlates with the customer's geographic location, there is a high degree of similarity between customer locations and the geographic boundaries of the Company's reportable segments. In some cases, managerial responsibility for a particular customer is assigned to a management team in another region and is usually based on the strength of the relationship between customer executives and particular members of EPAM's senior management team. In such cases, the customer's activity would be reported through the management team's reportable segment.

Revenues from external customers and operating profit, before unallocated expenses, by reportable segments were as follows:

	For the years ended December 31,		
	2018	2017	2016
Total segment revenues:			
North America	\$1,077,094	\$796,126	\$642,216
Europe	693,867	593,167	474,988
Russia	73,148	62,994	43,611
Total segment revenues	\$1,844,109	\$1,452,287	\$1,160,815
Segment operating profit:			
North America	\$221,846	\$169,340	\$143,021
Europe	115,876	92,080	67,545
Russia	11,377	13,906	7,555
Total segment operating profit	\$349,099	\$275,326	\$218,121

Intersegment transactions were excluded from the above on the basis that they are neither included in the measure of a segment's profit and loss results, nor considered by the CODM during the review of segment results.

There were no customers individually exceeding 10% of our total segment revenues for the year ended December 31, 2018 and 2017. During the year ended December 31, 2016, revenues from one customer, UBS AG, were \$138,124 and accounted for more than 10% of total revenues. Revenues from this customer are reported in the Company's Europe segment.

Reconciliation of segment revenues to consolidated revenues and segment operating profit to consolidated income before provision for income taxes is presented below:

	For the Years Ended December 31,		
	2018	2017	2016
Total segment revenues	\$1,844,109	\$1,452,287	\$1,160,815
Other income included in segment revenues	(1,197)	(1,839)	(683)
Revenues	\$1,842,912	\$1,450,448	\$1,160,132
Total segment operating profit:	\$349,099	\$275,326	\$218,121
Unallocated amounts:			
Other income included in segment revenues	(1,197)	(1,839)	(683)
Stock-based compensation expense	(59,188)	(52,407)	(49,244)
Non-corporate taxes	(9,856)	(9,659)	(5,909)
Professional fees	(6,188)	(8,032)	(8,265)
Depreciation and amortization	(8,057)	(7,632)	(8,290)
Bank charges	(2,358)	(1,969)	(1,515)
One-time charges and other acquisition-related expenses	(2,055)	(1,741)	(706)
Other operating expenses	(14,436)	(19,101)	(9,813)
Income from operations	245,764	172,946	133,696
Interest and other income, net	3,522	4,601	4,848
Foreign exchange gain/(loss)	487	(3,242)	(12,078)
Income before provision for income taxes	\$249,773	\$174,305	\$126,466

Table of Contents

During the year ended December 31, 2018, the Company began to allocate certain staff recruitment and development expenses into segment operating profit as these expenses became part of the evaluation of segment management's performance. These costs were previously not allocated to segments and were included in unallocated amounts in the reconciliation of segment operating profit to consolidated income before provision for income taxes above. The effect of this reclassification was not material to segment operating profit and had no impact on total income from operations for the year end December 31, 2018.

Geographic Area Information

Long-lived assets include property and equipment, net of accumulated depreciation and amortization, and management has determined that it is not practical to allocate these assets by segment since such assets are used interchangeably among the segments. Physical locations and values of the Company's long-lived assets are presented below:

	As of December 31, 2018	As of December 31, 2017	As of December 31, 2016
Belarus	\$ 50,085	\$ 49,866	\$ 46,011
United States	13,101	3,371	2,618
Russia	9,902	9,617	7,203
Ukraine	8,433	6,995	5,610
India	7,019	2,698	1,650
Hungary	3,168	3,901	3,485
China	2,651	2,608	1,887
Poland	2,637	2,893	2,213
Other	5,650	4,470	2,939
Total	\$ 102,646	\$ 86,419	\$ 73,616

The table below presents the Company's revenues by customer location for the years ended December 31, 2018, 2017 and 2016:

	For the Years Ended December 31,		
	2018	2017	2016
United States	\$ 1,029,327	\$ 783,563	\$ 611,392
United Kingdom	200,918	188,995	177,194
Switzerland	144,398	123,281	122,919
Germany	80,787	60,158	43,621
Russia	71,181	61,222	40,944
Netherlands	70,274	51,556	17,521
Canada	69,836	57,129	59,189
Other	176,191	124,544	87,352
Revenues	\$ 1,842,912	\$ 1,450,448	\$ 1,160,132

Table of Contents

16. QUARTERLY FINANCIAL DATA (UNAUDITED)

Summarized quarterly results for the years ended December 31, 2018 and 2017 were as follows:

2018	Three Months Ended				
	March 31	June 30	September 30	December 31	Full Year
Revenues	\$424,148	\$445,647	\$468,186	\$504,931	\$1,842,912
Operating expenses:					
Cost of revenues (exclusive of depreciation and amortization)	277,634	289,175	301,081	319,031	1,186,921
Selling, general and administrative expenses	89,641	93,273	93,226	97,447	373,587
Depreciation and amortization expense	8,176	8,962	9,319	10,183	36,640
Income from operations	48,697	54,237	64,560	78,270	245,764
Interest and other income/(expense), net	(551)	1,052	1,941	1,080	3,522
Foreign exchange gain/(loss)	(247)	1,830	(514)	(582)	487
Income before provision for/(benefit from) income taxes	47,899	57,119	65,987	78,768	249,773
Provision for/(benefit from) income taxes	(16,519)	6,864	369	18,803	9,517
Net income	\$64,418	\$50,255	\$65,618	\$59,965	\$240,256
Comprehensive income	\$67,796	\$32,345	\$63,426	\$52,798	\$216,365
Basic net income per share ⁽¹⁾	\$1.21	\$0.94	\$1.22	\$1.11	\$4.48
Diluted net income per share ⁽¹⁾	\$1.15	\$0.89	\$1.15	\$1.05	\$4.24

(1) Earnings per share amounts for each quarter may not necessarily total to the yearly earnings per share due to the weighting of shares outstanding on a quarterly and year to date basis.

2017	Three Months Ended				
	March 31	June 30	September 30	December 31	Full Year
Revenues	\$324,651	\$348,977	\$377,523	\$399,297	\$1,450,448
Operating expenses:					
Cost of revenues (exclusive of depreciation and amortization)	207,730	220,132	239,369	254,121	921,352
Selling, general and administrative expenses	79,283	81,143	81,732	85,430	327,588
Depreciation and amortization expense	6,672	7,020	7,174	7,696	28,562
Income from operations	30,966	40,682	49,248	52,050	172,946
Interest and other income, net	584	802	1,416	1,799	4,601
Foreign exchange (loss)/gain	(2,955)	1,562	(77)	(1,772)	(3,242)
Income before provision for income taxes	28,595	43,046	50,587	52,077	174,305
Provision for income taxes	4,954	5,687	7,953	82,951	101,545
Net income/(loss)	\$23,641	\$37,359	\$42,634	\$(30,874)	\$72,760
Comprehensive income/(loss)	\$30,027	\$41,910	\$48,337	\$(27,449)	\$92,825
Basic net income/(loss) per share ⁽¹⁾	\$0.46	\$0.72	\$0.81	\$(0.58)	\$1.40
Diluted net income/(loss) per share ^{(1) (2)}	\$0.44	\$0.68	\$0.77	\$(0.58)	\$1.32

(1) Earnings per share amounts for each quarter may not necessarily total to the yearly earnings per share due to the weighting of shares outstanding on a quarterly and year to date basis.

(2) Due to the net loss during the three months ended December 31, 2017, zero incremental shares are included in the calculation of diluted loss per share because of their antidilutive effect.

Table of Contents

SCHEDULE II
 VALUATION AND QUALIFYING ACCOUNTS
 FOR THE YEARS ENDED DECEMBER 31, 2018, 2017 AND 2016
 (In thousands)

	Balance at Beginning of Year	Additions	Deductions/ Write offs	Balance at End of Year
Year Ended December 31, 2018				
Allowance for doubtful accounts for accounts receivable	\$ 1,186	2,722	(2,351)	\$ 1,557
Valuation allowance on deferred tax assets	\$ 924	2,265	—	\$ 3,189
Year Ended December 31, 2017				
Allowance for doubtful accounts for accounts receivable	\$ 2,014	998	(1,826)	\$ 1,186
Valuation allowance on deferred tax assets	\$ —	924	—	\$ 924
Year Ended December 31, 2016				
Allowance for doubtful accounts for accounts receivable	\$ 1,729	3,500	(3,215)	\$ 2,014