ACI WORLDWIDE, INC.
Form 10-K
March 01, 2019
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

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

For the fiscal year ended December 31, 2018

Commission File Number 0-25346

ACI WORLDWIDE, INC.

(Exact name of registrant as specified in its charter)

Delaware	**47-0772104**
(State or other jurisdiction of	**(I.R.S. Employer**

incorporation or organization)	**Identification No.)**

3520 Kraft Rd, Suite 300

Naples, FL 34105	**(239) 403-4600**
(Address of principal executive offices, including zip code)	**(Registrant s telephone number, including area code)**

Securities registered pursuant to Section 12(b) of the Act: Common Stock, $.005 par value, NASDAQ Global Select Market

Securities registered pursuant to Section 12(g) of the Act: None

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

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

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of 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, smaller reporting company, or an emerging growth company. See the definitions of large accelerated filer, accelerated filer, smaller reporting company , and emerging growth company in Rule 12b-2 of the Act. (Check one):

Large accelerated filer	Accelerated filer
Non-accelerated filer	Smaller reporting company
Emerging growth company	

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

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

The aggregate market value of the Company s voting common stock held by non-affiliates on June 29, 2018 (the last business day of the registrant s most recently completed second fiscal quarter), based upon the last sale price of the common stock on that date of $24.67 was $2,181,473,639. For purposes of this calculation, executive officers, directors, and holders of 10% or more of the outstanding shares of the registrant s common stock are deemed to be affiliates of the registrant and are excluded from the calculation.

As of February 25, 2019, there were 116,143,338 shares of the registrant s common stock outstanding.

Documents Incorporated by Reference Portions of the registrant s definitive Proxy Statement for the Annual Meeting of Shareholders to be held on June 11, 2019, are incorporated by reference in Part III of this report. This registrant s Proxy Statement will be filed with the Securities and Exchange Commission pursuant to Regulation 14A.

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Forward-Looking Statements

This report contains forward-looking statements based on current expectations that involve a number of risks and uncertainties. Generally, forward-looking statements do not relate strictly to historical or current facts and may include words or phrases such as believes, will, expects, anticipates, intends, and words and phrases of similar impact. The forward-looking statements are made pursuant to safe harbor provisions of the Private Securities Litigation Reform Act of 1995, as amended.

Forward-looking statements in this report include, but are not limited to, statements regarding future operations, business strategy, business environment, key trends, and, in each case, statements related to expected financial and other benefits. Many of these factors will be important in determining our actual future results. Any or all of the forward-looking statements in this report may turn out to be incorrect. They may be based on inaccurate assumptions or may not account for known or unknown risks and uncertainties. Consequently, no forward-looking statement can be guaranteed. Actual future results may vary materially from those expressed or implied in any forward-looking statements, and our business, financial condition and results of operations could be materially and adversely affected. In addition, we disclaim any obligation to update any forward-looking statements after the date of this report, except as required by law.

All of the forward-looking statements in this report are expressly qualified by the risk factors discussed in our filings with the Securities and Exchange Commission (SEC). Such factors include, but are not limited to, risks related to:

- increased competition;
- the performance of our strategic products, Universal Payments solutions;
- demand for our products;
- consolidations and failures in the financial services industry;
- customer reluctance to switch to a new vendor;
- failure to obtain renewals of customer contracts or to obtain such renewals on favorable terms;
- delay or cancellation of customer projects or inaccurate project completion estimates;
- the complexity of our products and services and the risk that they may contain hidden defects;
- compliance of our products with applicable legislation, governmental regulations, and industry standards;
- failing to comply with money transmitter rules and regulations;
- our compliance with privacy regulations;

being subject to security breaches or viruses;

our ability to adequately protect our intellectual property;

increasing intellectual property rights litigation;

certain payment funding methods expose us to the credit and/or operating risk of our clients;

business interruptions or failure of our information technology and communication systems;

our offshore software development activities;

operating internationally;

global economic conditions impact on demand for our products and services;

volatility and disruption of the capital and credit markets and adverse changes in the global economy;

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- attracting and retaining employees;
- potential future litigation;
- our sale of Community Financial Services (CFS) assets and liabilities to Fiserv, Inc. (Fiserv), including potential claims arising under the transaction agreement, the transition services agreement or with respect to retained liabilities;
- future acquisitions, strategic partnerships, and investments;
- impairment of our goodwill or intangible assets;
- restrictions and other financial covenants in our debt;
- difficulty meeting our debt service requirements;
- the accuracy of our backlog estimates;
- exposure to unknown tax liabilities;
- the cyclical nature of our revenue and earnings and the accuracy of forecasts due to the concentration of revenue generating activity during the final weeks of each quarter; and
- volatility in our stock price.

The cautionary statements in this report expressly qualify all of our forward-looking statements. Factors that could cause actual results to differ from those expressed or implied in the forward-looking statements include, but are not limited to, those discussed in Item 1A, Risk Factors .

Trademarks and Service Marks

ACI, ACI logo, ACI PAY.ON, ACI ReD Shield, ACI Universal Payments, ACI Worldwide, Any Payment, Every Possibility., AuthoAlert, BASE24, BASE24-atm, BASE24-Card, BASE24-eps, BASE24-pos, BASE24-Teller, ChoicePay, Distra, Enguard, eSocket, iBroker, IEX, iExchange, Money HQ, Official Payments, Official Payments logo, Officially Paid, Online Resources, PayAnyone, PayMyBill, Postilion, Prism, Prism Credit, Prism Debit, Prism Merchant, Real-Time Digital Scanline, Universal Payments, UP, UP BASE24-eps, UP logo, among others, are registered trademarks and/or registered service marks of ACI Worldwide, Inc., or one of its subsidiaries, in the United States and/or other countries.

ACI Acquirer, ACI Automated Dispute Manager, ACI Card and Merchant Management, ACI Card Management System, ACI Communication Services, ACI DataWise, ACI Enterprise Banker, ACI Enterprise Security Services, ACI Global Banker, ACI Interchange, ACI Issuer, ACI Model Generator, ACI Money Transfer System, ACI Monitoring and Management, ACI On Demand, ACI On Premise, ACI PAY.ON Payments Gateway, ACI Proactive Risk Manager, ACI ReD Fraud Xchange, ACI ReD*i*, ACI Retail Commerce Server, ACI RFX Club, ACI Simulation Services for Enterprise Testing (ASSET or ACI Payment Testing), ACI Token Manager, ACI Universal Online Banker, ACI Web Access Services, ASx, eSocket.POS, Global HELP24, NET24, NET24-XPNET, ON/2, Stream Analytics Engine, Universal Scoring Engine, UP Bill Payment, UP eCommerce Payments, UP Framework, UP Immediate Payments, UP Merchant Payments, UP Payments Risk Management, UP Retail Payments, UP Real-Time Payments, among others, are common-law trademarks and/or service marks of ACI Worldwide, Inc., or one of its subsidiaries, in the United States and/or other countries. Other parties marks referred to in this report are the property of their respective owners.

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PART I

ITEM 1. BUSINESS

General

ACI Worldwide, Inc. (ACI , ACI Worldwide , the Company, we, us, or our) is a Delaware corporation incorporated in November 1993 un name ACI Holding, Inc. ACI is largely the successor to Applied Communications, Inc. and Applied Communications Inc. Limited, which we acquired from Tandem Computers Incorporated on December 31, 1993. On July 24, 2007, we changed our corporate name from Transaction Systems Architects, Inc. to ACI Worldwide, Inc. We have been marketing our products and services under the ACI Worldwide brand since 1993 and have gained significant market recognition under this brand name.

We develop, market, install, and support a broad line of software products and solutions primarily focused on facilitating real-time electronic payments. Our payment capabilities, technologies, and solutions are marketed under the brand name Universal Payments, or UP, which describes the breadth and depth of ACI s product offerings. UP defines ACI s enterprise or universal payments capabilities targeting any channel, any network, and any payment type. ACI UP solutions empower customers to regain control, choice, and flexibility in today s complex payments environment, get to market more quickly, and reduce operational costs.

These products and services are used globally by banks, financial intermediaries, merchants and corporates, such as third-party electronic payment processors, payment associations, switch interchanges and a wide range of transaction-generating endpoints, including automated teller machines (ATM), merchant point-of-sale (POS) terminals, bank branches, mobile phones, tablets, corporations, and internet commerce sites. The authentication, authorization, switching, settlement, fraud-checking, and reconciliation of electronic payments is a complex activity due to the large number of locations and variety of sources from which transactions can be generated, the large number of participants in the market, high transaction volumes, geographically dispersed networks, differing types of authorization, and varied reporting requirements. These activities are typically performed online and are conducted 24 hours a day, seven days a week.

ACI combines a global perspective with local presence to tailor electronic payment solutions for our customers. We believe that we have one of the most diverse and robust electronic payment product portfolios in the industry with application software spanning the entire payments value chain. We also believe that our financial performance has been attributable to our ability to design and deliver quality products and solutions coupled with our ability to identify and successfully consummate and integrate strategic acquisitions.

Fiscal 2016 Divestiture

On March 3, 2016, we completed the sale of our CFS assets and liabilities to Fiserv. The transaction included employee agreements and customer contracts as well as technology assets and intellectual property. The sale of CFS assets and liabilities enabled us to focus resources on our strategic products and new high-growth initiatives in support of large banks, financial intermediaries, merchants and corporates worldwide.

Target Markets

ACI s comprehensive electronic payment solutions serve four key markets:

Banks

ACI provides payment solutions to large and mid-size banks globally for both retail banking, digital, and other payment services. Our solutions transform banks complex payment environments to speed time to market, reduce costs, and deliver a consistent experience to customers across channels while enabling them to prevent

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and rapidly react to fraudulent activity. In addition, we enable banks to meet the requirements of different real-time payment schemes and to quickly create differentiated products to meet consumer, business, and merchant demands.

Financial intermediaries

ACI s payment solutions support financial intermediaries, such as processors, networks, payment service providers (PSPs), and new financial technology (FinTech) entrants. We offer these customers scalable solutions that strategically position them to innovate and achieve growth and cost efficiency, while protecting them against fraud. Our solutions also allow new entrants in the digital marketplace to access innovative payment schemes, such as the U.K. Faster Payments New Access Model, Singapore FAST and the Payments Network Malaysia (PayNet) Real-Time Retail Payments Platform.

Merchants

ACI s support of merchants globally includes Tier 1 and Tier 2 merchants, online-only merchants and the PSPs, independent selling organizations (ISOs), value added resellers (VARs), and acquirers who service them. These customers operate in a variety of verticals, including general merchandise, grocery, hospitality, dining, transportation, and others. Our solutions provide merchants with a secure, omni-channel payments platform that gives them independence from third-party payment providers. We also offer secure solutions to online-only merchants that provide consumers with a convenient and seamless way to shop.

Corporates

Within the corporate segment, ACI provides electronic bill presentment and payment (EBPP) services to companies operating in the consumer finance, insurance, healthcare, higher education, tax, and utility categories. Our solutions enable these customers to support a wide range of payment options and provide a painless consumer payments experience that drives consumer loyalty and increases revenue.

Solutions

ACI s UP® solutions span the payments ecosystem to support the electronic payment needs of banks, intermediaries, merchants and corporates. Our six strategic solution areas include the following:

Retail Payments

ACI offers comprehensive consumer payment solutions ranging from core payment engines to back-office support that enable banks and financial intermediaries to compete effectively in today s real-time, open payments ecosystem.

UP Retail Payments solution enables banks and financial intermediaries to accept, authorize, route and secure payment transactions. Using the orchestration capabilities of UP Framework , this solution combines legacy technology with the modern, service-oriented architecture (SOA)-enabled UP BASE24-eps®, protecting customers existing investment while enabling them to move to a real-time, open environment. Customers have the flexibility to operate this solution on a range of hardware options, including x86/Linux, IBM System z, IBM System p, HP NonStop and Oracle Solaris servers. This solution drives innovation and increases customer loyalty by delivering choice and consistency across channels.

ACI Card and Merchant Management solutions include comprehensive credit, debit, smart card and prepaid card issuance and management; end-to-end merchant account management and settlement; and operation of complex settlement environments through a flexible system designed to support changing business models. With proven scalability and interoperability with ACI s other payment offerings, this suite allows banks to introduce new products to their consumer segments quickly, across different markets, nationally and internationally.

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Real-Time Payments

ACI supports both low- and high-value, real-time payment processing for banks and financial intermediaries globally, ensuring multi-bank, multi-currency and 24x7 payment processing capabilities, as well as complete and ongoing regulatory compliance.

UP Real-Time Payments solution is the only global solution that allows banks to address their RTGS (Real-Time Gross Settlement), SWIFT messaging, ACH and real-time faster payments needs with a single, universal offering. The solution delivers accelerated time to market with improved management of cash flow; payments security and fraud detection capabilities; simplified connectivity to new payment types and transparency for customers in tracking their payments. It supports several major schemes globally, including EBA and ECB in Europe; Faster Payments in the U.K.; Equens in the Netherlands, Germany and Italy; GIRO in Hungary; UPI in India; FAST in Singapore; ITMX in Thailand; RPP in Malaysia; NPP in Australia; and Zell and TCH in the U.S.

UP Immediate Payments solution enables banks and PSPs to meet multiple real-time payment scheme requirements globally and to quickly create differentiated products to address consumer, business and merchant demands. The solution provides gateway connectivity to any live, real-time payments scheme around the world and can serve as a modern, real-time hub. The cloud solution speeds time to market through pre-packaged offerings available for major schemes globally, including U.K. Faster Payments, The Clearing House Real-Time Payments System, Early Warning Services Zelle Network, ECB TIPS, and EBA RT1.

Merchant Payments

ACI provides real-time, any-to-any payment capabilities globally in both card-present and card-not-present environments.

UP Merchant Payments solution provides merchants with a vendor-agnostic, flexible and secure omni-channel payments environment through an integration of Postilion®, ACI ReD Shield® and ACI PAY.ON® Payments Gateway . Postilion facilitates transactions generated at the point of purchase, as well as back-office functions, including prepaid, debit and credit card processing, ACH processing, electronic benefits transfer, card issuance and management, check authorization, customer loyalty programs and returned check collection. ACI ReD Shield offers real-time fraud prevention to detect and manage domestic and cross-border payments fraud across all payment types, as well as an interactive, self-service business intelligence portal for deep insight into merchant fraud activity. Lastly, the ACI PAY.ON Payments Gateway delivers global payments connectivity through eCommerce and mCommerce channels, including a network of hundreds of local and cross-border card acquirers and alternative payment methods almost anywhere in the world.

UP eCommerce Payments solution is designed for PSPs, ISOs, VARs, acquirers and others that offer payment services to their merchant customer base. The cloud-based solution integrates ACI PAY.ON Payments Gateway and ACI ReD Shield, and is available as a white-label product.

Payments Intelligence

ACI s big data engine uses powerful analytics to deliver robust fraud prevention and detection capabilities to bank, financial intermediary and merchant customers.

UP Payments Risk Management solution uses a 360-degree approach to enterprise fraud management. The solution is designed to combat existing and emerging fraud threats using a combination of machine learning, fraud and payments data, advanced analytics, flexible rules and agile decision strategies. For banks and financial intermediaries, the ACI® Proactive Risk Manager component gives customers real-time visibility into threats across their enterprise, including issuer card fraud, check/deposit fraud, wire fraud, merchant acquirer fraud, internal fraud and money laundering schemes at multiple perspectives, ranging from an account or customer level. It is available to financial institutions on premise or in the cloud. For merchants, ACI ReD Shield provides real-time fraud prevention for eCommerce and mCommerce transactions. It is available in the cloud.

Digital Channels

ACI offers banks advanced cash management capabilities in a multi-tenant, cloud-based platform.

ACI Universal Online Banker is a comprehensive digital banking platform designed to meet the needs of small businesses up to large corporations. It enables banks to generate new revenues through an extensive library of APIs and payment services while delivering a compelling customer experience with a highly-intuitive user interface. Customers can use digital tools to easily manage daily collections, disbursements, information reporting and numerous other corporate cash management services.

Bill Payments

ACI meets the bill payment needs of corporate customers across myriad industries through a range of electronic bill payment solutions that help companies raise consumer satisfaction while reducing costs.

UP Bill Payment solutions enable corporate customers to electronically present bills and collect payments from consumers through a single, integrated platform that powers the entire bill payments operation. The solution overcomes internal application silos, providing a seamless consumer experience across all payment channels, payment types and methods. Customers can use UP Bill Payment solutions to power one-time payments, recurring payments, service-fee payments, disbursement services, remittance services and eBilling. The solution also simplifies treasury management operations through a broad array of reconciliation, reporting and payment servicing tools. UP Bill Payment solutions include industry-leading security, full payment card industry (PCI) compliance and privacy practices.

On Premises or On Demand Software Delivery Options

Our software solutions are offered to our customers through either a traditional term software license arrangement where the software is installed and operated on the customer premises (ACI On Premise) or through an on-demand arrangement where the solution is maintained and delivered through the cloud via our global data centers (ACI On Demand). Solutions delivered through ACI s On Demand cloud are available in either a single-tenant environment, known as a software as a service (SaaS) offering, or in a multi-tenant environment, known as a platform as a service (PaaS) offering. Pricing and payment terms depend on which solutions the customer requires and their transaction volumes. Generally, customers are required to commit to a minimum contract of five years, three years in the case of certain acquired SaaS and PaaS contracts.

Partnerships and Industry Participation

We have two major types of third-party product partners: Technology Partners, industry leaders with whom we work closely and drive key industry trends and mandates, and Business Partners, with whom we embed the partners technology in ACI products, host the partners software in ACI s cloud as a part of our ACI On Demand (AOD) offering, or jointly market solutions that include the products of the other company.

Technology partners help us add value to our solutions, stay abreast of current market conditions and industry developments such as standards. Technology partner organizations include Diebold, Inc. (Diebold), NCR Corporation (NCR), Wincor-Nixdorf, VISA, MasterCard, and SWIFT. In addition, ACI has membership in or participates in the relevant committees of a number of industry associations, such as the International Organization for Standardization (ISO), Accredited Standards Committee (ASC) X9, Financial Services, Interactive Financial eXchange Forum (IFX), nexo standards, International Payments Framework Association (IPFA), U.K. Cards Association, and the PCI Security Standards Council. These partnerships provide direction as it relates to the specifications that are used by the card schemes, and in some cases, manufacturers. These organizations typically look to ACI as a source of knowledge and experience to be shared in conjunction with creating and enhancing their standards. The benefit to ACI is in having the opportunity to influence these standards with concepts and ideas that will benefit the market, our customers, and ACI.

Business partner relationships extend our product portfolio, improve our ability to get our solutions to market and enhance our ability to deliver market-leading solutions. We share revenues with these business partners based on a number of factors related to overall value contribution in the delivery of the joint solution or payment type. The agreements with business partners include referral, resale, traditional original equipment manufacturer (OEM) relationships, and transaction fee based payment-enablement partnerships. These agreements generally grant ACI the right to create an integrated solution that we host or distribute, or provide ACI access to established payment networks or capabilities. The agreements are generally worldwide in scope and have a term of several years.

We have alliances with our technology partners HP, IBM, Microsoft Corporation, Red Hat, Inc., and Oracle USA, Inc. (Oracle), whose industry-leading hardware, software, and cloud-based infrastructure services are utilized by ACI s products. These partnerships allow us to understand developments in the partners technology and to utilize their expertise in topics like sizing, scalability, and performance testing.

The following is a list of key product business partners:

- Accuity, Inc.
- Aptean
- Arvato Financial solutions
- Bank of America Cashpro Online
- Biocatch
- Cardinal Commerce
- Chase Paymentech
- Clickatel
- Computershare Inc.
- DataOceans, LLC
- Diamond Communications Solutions

Discover

FairCom Corporation

Fidelity National Information Services, Inc. (FIS)

Fifth Third Bank

Fundtech Corporation

Gallit

GFKL

Heirloom Computing

Hewlett-Packard Company (HP)

International Business Machines Corporation (IBM)

Ingenico Group

Integrated Research Limited

Intuit, Inc.

iovation

Jack Henry & Associates, Inc.

Lean Software Services, Inc.

Limontech

Mi-Pay Limited

Microsoft Corporation

Micro Focus, Inc.

Monex Financial Services Limited

MTFX

N2N

Neustar, Inc.

Noggintech

Opentext

Oracle USA, Inc. (Oracle)

Paragon Application Systems, Inc.

PayDirect

PayPal

Payworks GmbH

IATA Perseuss

Rambus Company

Reliant Solutions

Red Hat, Inc.

RR Donnelley

RSA Security LLC, the Security Division of Dell EMC Corporation

Semafone Card Protect

Solutions by Text, LLC

Spectrum Message Services Pty Ltd

SWIFT

Symantec Corporation

TIBCO Software, Inc.

tru-Rating

ThreatMetrix, Inc.

Vantiv LLC.

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- Visa
- Vocalink Limited
- Walletron, Inc.

Services

We offer our customers a wide range of professional services, including analysis, design, development, implementation, integration, and training. Our service professionals generally perform the majority of the work associated with installing and integrating our software products. In addition, we work with a limited number of systems integration and services partners, such as Accenture, LLC, Cognizant Technology Solutions Corporation, and Stanchion Payments Solution, for staff augmentation and coordinated co-prime delivery where appropriate.

We offer the following types of services for our customers:

- **Implementation Services.** We utilize a standard methodology to deliver customer project implementations across all products lines and delivery options. Within the process, we provide customers with a variety of services, including solution scoping reviews, project planning, training, site preparation, installation, product configuration, product customization, testing and go-live support, and project management throughout the project lifecycle. Implementation services are typically priced according to the level of technical expertise required.

- **Product Support Services.** These product-support-funded services are available to customers after a solution has been installed and are based on the relevant product support category. An extensive team of support analysts are available to assist customers.

- **Technical Services.** Our technical services are provided to customers who have licensed one or more of our software products. Services offered include programming and programming support, day-to-day systems operations, network operations, help desk staffing, quality assurance testing, problem resolution, system design, and performance planning and review. Technical services are typically priced according to the level of technical expertise required.

- **Education Services**. ACI courses include both theory and practical sessions to allow students to work though real business scenarios and put their newly learned skills to use. This hands-on approach ensures that the knowledge is retained and the student is more productive upon their return to the workplace. ACI s education courses provide students with knowledge at all levels, to enhance and improve their understanding of ACI products. ACI also provides further, more in-depth technical courses that allow students to use practical labs to enhance what they have learned in the classroom. The ACI trainers ability to understand customers systems means ACI can also provide tailored course materials for individual customers. Depending upon products purchased, training may be conducted at a dedicated education facility at one of ACI s offices, online, or at the customer site.

Customer Support

ACI provides our customers with product support that is available 24 hours a day, seven days a week. When requested by a customer, the product support group can remotely access that customer s systems on a real-time basis which allows us to help diagnose and correct problems and enhance the continuous availability of a customer s business-critical systems. We offer our customers three support options.

Standard Customer Support. After software installation and project completion, we provide maintenance services to customers for a monthly product support fee. Maintenance services include:

- New product releases (major, minor and patches)

24-hour hotline for priority one (P1   ) problem resolution

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- Online support portal (eSupport)
- Vendor-required mandates and updates
- Product documentation
- Hardware operating system compatibility
- User group membership

Enhanced Customer Support. This includes all features of Standard Customer Support plus the following:

- Named technical account manager
- Accelerated service levels
- Annual consulting hours

Premium Customer Support. Under the premium customer support option, referred to as the Premium Customer Support Program, each customer is assigned an experienced technician(s) to work with its system. The technician(s) typically performs functions such as:

- Configure and test software fixes
- Retrofit custom software modifications (CSMs) into new software releases
- Answer questions and resolve problems related to the customer s implementation
- Maintain a detailed CSM history
- Monitor customer problems on ACI s HELP24 hotline database on a priority basis
- Supply onsite support, available upon demand
- Perform an annual system review/health check and capacity planning exercise

We provide new releases of our products on a periodic basis. New releases of our products, which often contain minor product enhancements, are typically provided at no additional fee for customers under maintenance agreements. Agreements with our customers permit us to charge for substantial product enhancements that are not provided as part of the maintenance agreement.

Competition

The electronic payments market is highly competitive and subject to rapid change. Competitive factors affecting the market for our products and services include product features, price, availability of customer support, ease of implementation, product and company reputation, and a commitment to continued investment in research and development.

Our competitors vary by solution, geography, and market segment. Generally, our most significant competition comes from in-house information technology departments of existing and potential customers, as well as third-party electronic payments processors (some of whom are our customers). Many of these companies are significantly larger than us and have significantly greater financial, technical, and marketing resources.

Key competitors by solution include the following:

Retail Payments and Real-Time Payments

The third-party software competitors for ACI s Retail Payments and Real-Time Payments solutions are FIS, Fiserv, Finastra, Computer Sciences Corporation, NCR, OpenWay Group, and Total System

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Services, Inc. (TSYS), as well as small, regionally-focused companies such as, BPC Banking Technologies, PayEx Solutions AS, Financial Software and Systems, CR2, Lusis Payments Ltd., and Opus Software Solutions Private Limited. Primary electronic payment processing competitors in this area include global entities such as Atos Origin S.A., First Data Corporation, SiNSYS, TSYS, VISA and MasterCard, as well as regional or country-specific processors.

Merchant Payments

Competitors in the Merchant Payments solution area come from both third-party software and service providers as well as service organizations run by major banks. Third-party software and service competitors include NCR, Ingenico Group, Adyen, Worldpay Inc., GlobalCollect, Cybersource, Square, Inc., Tender Retail Inc., and VeriFone Systems, Inc. Primary competition in this space are large third-party acquirer/processors and payment service providers that offer complete solutions to the retailer.

Payments Intelligence

Principal competitors for our Payments Intelligence solution are NICE LTD, Fair Isaac Corporation, NCR, BAE Systems, FIS, Fiserv, SAS Institute, Inc., Accertify (American Express), and Cybersource (Visa), as well as dozens of smaller companies focused on niches of this segment such as anti-money laundering.

Bill Payments

The principal competitors for Bill Payment solutions are Fiserv, FIS, Jack Henry & Associates, Inc., Western Union Holdings, Inc., TouchNet Information Systems, Inc., Kubra Customer Interaction Management, WorldPay, Inc., Forte Payment Systems, Point & Pay, LLC, Nelnet, Inc. and Affiliates, Higher One, Inc., Paymentus Corp., Aliaswire Inc., and Invoice Cloud, Inc., as well as smaller vertical-specific providers.

Digital Channels

Principal competitors for our Digital Channel solutions are NCR, Bottomline Technologies, Q2 Software, Inc., Jack Henry, FIS, First Data Corporation, Fiserv, and Finastra.

Research and Development

Our product development efforts focus on new products and improved versions of existing products. We facilitate user group meetings to help us determine our product strategy, development plans, and aspects of customer support. The user groups are generally organized geographically or by product lines. We believe that the timely development of new applications and enhancements is essential to maintain our competitive position in the market.

During the development of new products, we work closely with our customers and industry leaders to determine requirements. We work with device manufacturers, such as Diebold, NCR, and Wincor-Nixdorf, to ensure compatibility with the latest ATM technology. We work with network vendors, such as MasterCard, VISA, and SWIFT, to ensure compliance with new regulations or processing mandates. We work with computer hardware and software manufacturers, such as HP, IBM, Microsoft Corporation, and Oracle to ensure compatibility with new operating system releases and generations of hardware. Customers often provide additional information on requirements and serve as beta-test partners.

We have a continuous process to encourage and capture innovative product ideas. Such ideas include features, as well as entirely new products or service offerings. A Proof of Concept (POC) may be conducted to validate the idea. If determined to be viable, the innovation is scheduled into a Product Roadmap for development and release.

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Customers

We provide software products and solutions to customers in a range of industries worldwide, with banks, intermediaries, merchants and corporates comprising our largest industry segments. As of December 31, 2018, we serve over 5,100 customers, including 18 of the top 20 banks worldwide, as measured by asset size, and more than 300 of the leading merchants globally, as measured by revenue, in over 90 countries on six continents. No single customer accounted for more than 10% of our consolidated revenues for the years ended December 31, 2018, 2017, and 2016. No customer accounted for more than 10% of our consolidated receivables balance as of December 31, 2018 and 2017.

Selling and Implementation

Our primary method of distribution is direct sales by employees assigned to specific target segments. Headquartered in Naples, Florida, we have principal United States sales offices in East Brunswick, Norcross, Omaha, and Waltham. In addition, we have sales offices located outside the United States in Auckland, Bahrain, Bangkok, Beijing, Bogota, Brussels, Buenos Aires, Cape Town, Dubai, Gouda, Johannesburg, Kuala Lumpur, Limerick, Madrid, Manila, Melbourne, Mexico City, Milan, Montevideo, Mumbai, Munich, Naples (Italy), Paris, Quito, Santiago, Sao Paulo, Shanghai, Singapore, Sulzbach, Sydney, Tokyo, Toronto, and Watford.

We use distributors and referral partners to supplement our direct sales force in countries where business practices or customs make it appropriate, or where it is more economical to do so. We generate a majority of our sales leads through existing relationships with vendors, direct marketing programs, customers and prospects, or through referrals. ACI s distributors, resellers and system integration partners are enabled to provide supplemental or complete product implementation and customization services directly to our customers or in a joint delivery model.

Current international distributors, resellers, sales agents, and implementation partners (collectively, Channel Partners) for us during the year ended December 31, 2018, included:

- AGS Technology Inc. (India)
- ASI International (Colombia/Venezuela/Caribbean)
- Bayshore (China)
- CAPSYS Technologies, LLC (Russia/Eastern Europe)
- Channel Solutions Inc. (Philippines)
- Cognizant (United States)
- DataOne Asia Co., Ltd. (Thailand)
- DDWay (Italy)
- EFT Corporation (Sub-Saharan Africa)

HPE Spore (Singapore)

Interswitch Ltd. (Sub-Saharan Africa)

Korea Computer Inc (Korea)

Kuvaz (Chile)

Pactera (China)

P.T. Mitra Integrasi Informatika (Indonesia)

P.T. Abhimata Persada (Indonesia)

- Stanchion (South Africa)
- STJ-CA, Inc. (United States)
- Stream IT Consulting Ltd. (Thailand)
- STET (EU)
- Syscom Computer Co., Ltd. (Shenzhen) (China)
- Syscom Computer Engineering Co. (Taiwan)
- Tomax Corp. (United States)
- Transaction Payment Solutions (Sub-Saharan Africa)
- Worldline (China)

ACI ReD Shield channel partners during the year ended December 31, 2018, included:

- Altapay (Denmark)
- Amadeus (Spain)
- Barclaycard (U.K.)
- Citrus Pay (India)
- Computop (Germany)
- Credit Call (European Union)
- Digital River (European Union)
- Easynollo (Italy)

eCommera Ltd. (U.K.)

Evo Payments (United States)

eWay Pty Ltd. (Australia)

Global E Online (Israel)

Ingenico Group (Netherlands)

Mastercard/Datacash (U.K.)

Metrics Global (USA)

MNP Media Ltd. (U.K.)

Navitaire, an Amadeus Company (United States)

Nostrum (U.K.)

Paysafe Group Plc (United States)

PayU South Africa (South Africa)

Planet Payments (United States)

Sagepay (U.K.)

Secure Trading (U.K.)

Simplepay (Australia)

The Logic Group (U.K.)

UOL Diveo (Brazil)

VeriFone Systems, Inc. (United States and European Union)

WEX Australia

EBPP channel partners during the year ended December 31, 2018, included:

3 Point Alliance

ACH Payment Solutions

Adirondack Solutions

API Outsourcing

Avitar & Assoc. of New England

Black Knight Financial Services

BS&A Software

County Information Resources Agency

Campus Management Corp

Competitive Edge Software

Creative Micro CMI

Discover

Donald R. Frey & Co.

FICO

Ellucian

ETA Data Direct

Harris

LD Systems

Megabyte Systems Inc.

Megasys

MoneyGram

Nortridge Software Company

Ontario Systems

Oracle/Peoplesoft

Pay Plus (Dallas)

Radiant 44

Salepoint

Selectron

Shaw

Sofbang

Solutions by Text

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SourceHOV

Thompson Reuters

Tyler Technology

Semafone

We distribute the products of other vendors where they complement our existing product lines. We are typically responsible for the sales and marketing of the vendor s products, and agreements with these vendors generally provide for revenue sharing based on relative responsibilities.

Proprietary Rights and Licenses

We rely on a combination of trade secret and copyright laws, license agreements, contractual provisions, and confidentiality agreements to protect our proprietary rights. We distribute our software products under software license agreements that typically grant customers nonexclusive licenses to use our products. Use of our software products is usually restricted to designated computers, specified locations and/or specified capacity, and is subject to terms and conditions prohibiting unauthorized reproduction or transfer of our software products. We also seek to protect the source code of our software as a trade secret and as a copyrighted work. Despite these precautions, there can be no assurance that misappropriation of our software products and technology will not occur.

In addition to our own products, we distribute, or act as a sales agent for, software developed by third parties. However, we typically are not involved in the development process used by these third parties. Our rights to those third-party products and the associated intellectual property rights are limited by the terms of the contractual agreement between us and the respective third party.

Although we believe that our owned and licensed intellectual property rights do not infringe upon the proprietary rights of third parties, there can be no assurance that third parties will not assert infringement claims against us. Further, there can be no assurance that intellectual property protection will be available for our products in all foreign countries.

Like many companies in the electronic commerce and other high-tech industries, third parties have in the past and may in the future assert claims or initiate litigation related to patent, copyright, trademark, or other intellectual property rights to business processes, technologies, and related standards that are relevant to us and our customers. These assertions have increased over time as a result of the general increase in patent claims assertions, particularly in the United States. Third parties may also claim that the third-party s intellectual property rights are being infringed by our customers use of a business process method that utilizes products in conjunction with other products, which could result in indemnification claims against us by our customers. Any claim against us, with or without merit, could be time-consuming, result in costly litigation, cause product delivery delays, require us to enter into royalty or licensing agreements or pay amounts in settlement, or require us to develop alternative non-infringing technology. We could also be required to defend or indemnify our customers against such claims. A successful claim by a third party of intellectual property infringement or one of our customers could compel us to enter into costly royalty or license agreements, pay significant damages or even stop selling certain products and incur additional costs to develop alternative non-infringing technology.

Government Regulation

Certain of our solutions are subject to federal, state, and foreign regulations and requirements.

Oversight by Banking Regulators. As a provider of payment services to banks and financial intermediaries, we are subject to regulatory oversight and examination by the Federal Financial Institutions Examination Council (FFIEC), an interagency body of the Federal Deposit Insurance Corporation, the Office of the Comptroller of

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the Currency, the Board of Governors of the Federal Reserve System, the National Credit Union Administration and various state regulatory authorities as part of the Multi-Region Data Processing Servicer Program (MDPS). The MDPS program includes technology suppliers who provide mission critical applications for a large number of financial institutions that are regulated by multiple regulatory agencies. Periodic information technology examination assessments are performed using FFIEC interagency guidelines to identify potential risks that could adversely affect serviced financial institutions, determine compliance with applicable laws and regulations that affect the services provided to financial institutions and ensure the services we provide to financial institutions do not create systemic risk to the banking system or impact the safe and sound operation of the financial institutions we serve. In addition, independent auditors annually review several of our operations to provide reports on internal controls for our clients auditors and regulators. We are also subject to review under state and foreign laws and rules that regulate many of the same activities that are described above, including electronic data processing and back-office services for financial institutions and the use of consumer information.

Money Transfer. Official Payments Corporation, our EBPP affiliate, is registered as a Money Services Business. Accordingly, we are subject to the USA Patriot Act and reporting requirements of the Bank Secrecy Act and U.S. Treasury Regulations. These businesses may also be subject to certain state and local licensing requirements. The Financial Crimes Enforcement Network (FinCEN), state attorneys general, and other agencies have enforcement responsibility over laws relating to money laundering, currency transmission, and licensing. In addition, most states have enacted statutes that require entities engaged in money transmission to register as a money transmitter with that jurisdiction s banking department. We have implemented policies, procedures, and internal controls that are designed to comply with all applicable anti-money laundering laws and regulations. ACI has also implemented policies, procedures, and internal controls that are designed to comply with the regulations and economic sanctions programs administered by the U.S. Treasury s Office of Foreign Assets Control (OFAC), which enforces economic and trade sanctions against targeted foreign countries, entities and individuals based on external threats to the U.S. foreign policy, national security, or economy; by other governments; or by global or regional multilateral organizations, such as the United Nations Security Council and the European Union as applicable.

Employees

As of December 31, 2018, we had a total of 3,807 employees.

None of our employees are subject to a collective bargaining agreement. We believe that relations with our employees are good.

Available Information

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (the Exchange Act), are available free of charge on our website at www.aciworldwide.com as soon as reasonably practicable after we file such information electronically with the SEC. The information found on our website is not part of this or any other report we file with or furnish to the SEC. The public may read and copy any materials that we file with the SEC at the SEC s Public Reference Room at 100 F Street, Room 1580, NW, Washington DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at www.sec.gov.

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Executive Officers of the Registrant

As of February 28, 2019, our executive officers, their ages, and their positions were as follows:

Name	Age	Position
Philip G. Heasley	69	President, Chief Executive Officer and Director
Scott W. Behrens	47	Senior Executive Vice President, Chief Financial Officer
Craig S. Saks	48	Chief Operating Officer
Craig A. Maki	52	Executive Vice President, Chief Development Officer and Treasurer
Dennis P. Byrnes	55	Executive Vice President, Chief Administrative Officer, General Counsel and Secretary

Mr. Heasley has been a director and our President and Chief Executive Officer since March 2005. Mr. Heasley has a comprehensive background in payment systems and financial services. From October 2003 to March 2005, Mr. Heasley served as Chairman and Chief Executive Officer of PayPower LLC, an acquisition and consulting firm specializing in financial services and payment services. Mr. Heasley served as Chairman and Chief Executive Officer of First USA Bank from October 2000 to November 2003. Prior to joining First USA Bank, from 1987 until 2000, Mr. Heasley served in various capacities for U.S. Bancorp, including Executive Vice President, and President and Chief Operating Officer. Mr. Heasley also serves on the National Infrastructure Advisory Council. Mr. Heasley holds a Master of Business Administration from the Bernard Baruch Graduate School of Business in New York and a Bachelor of Arts from Marist College in Poughkeepsie, New York.

Mr. Behrens serves as Senior Executive Vice President and Chief Financial Officer. Mr. Behrens joined ACI in June 2007 as our Corporate Controller and was appointed as Chief Accounting Officer in October 2007. Mr. Behrens was appointed Chief Financial Officer in December 2009. Mr. Behrens ceased serving as our Corporate Controller in December 2010. Mr. Behrens was appointed as Executive Vice President in March 2011 and promoted to Senior Executive Vice President in December of 2013. Prior to joining ACI, Mr. Behrens served as Senior Vice President, Corporate Controller and Chief Accounting Officer at SITEL Corporation from January 2005 to June 2007. He also served as Vice President of Financial Reporting at SITEL Corporation from April 2003 to January 2005. From 1993 to 2003, Mr. Behrens was with Deloitte & Touche, LLP, including two years as a Senior Audit Manager. Mr. Behrens holds a Bachelor of Science from the University of Nebraska Lincoln.

Mr. Saks serves as Chief Operating Officer. Prior to joining ACI in February 2012, Mr. Saks was Senior Vice President of Shared Services at S1 Corporation, which was subsequently acquired by ACI. From 1999 to 2007, Mr. Saks served as the Chief Operating Officer at Fundamo. Mr. Saks holds a Master of Commerce in IT Management from the University of Cape Town and a Bachelor s degree in Accounting and Computer Science from the University of Port Elizabeth.

Mr. Maki serves as Executive Vice President, Chief Development Officer, and Treasurer. Prior to joining ACI in June 2006, Mr. Maki served as Senior Vice President for Stephens, Inc. from 1999 through May 2006. From 1994 to 1999, Mr. Maki was a director in the corporate finance group at Arthur Andersen, and from 1991 to 1994, he was a senior consultant at Andersen Consulting. Mr. Maki holds a Master of Business Administration degree from the University of Denver and Bachelor of Science degree from the University of Wyoming.

Mr. Byrnes serves as Executive Vice President, Chief Administrative Officer, General Counsel and Secretary. He has served in that capacity since March 2011 and as General Counsel and Secretary since joining the Company in June 2003. Prior to that Mr. Byrnes served as an attorney in Bank One Corporation s technology group from 2002 to 2003 and before that with Sterling Commerce, an electronic commerce software and services company, from 1996. From 1991 to 1996 Mr. Byrnes was an attorney with Baker Hostetler. Mr. Byrnes holds a JD from The Ohio State University College of Law, a Master of Business Administration from Xavier University and a Bachelor of Science in engineering from Case Western Reserve University.

ITEM 1A. RISK FACTORS

Factors That May Affect Our Future Results or the Market Price of Our Common Stock

We operate in a rapidly changing technological and economic environment that presents numerous risks. Many of these risks are beyond our control and are driven by factors that often cannot be predicted. The following discussion highlights some of these risks.

The markets in which we compete are rapidly changing and highly competitive, and we may not be able to compete effectively.

The markets in which we compete are characterized by rapid change, evolving technologies and industry standards and intense competition. There is no assurance that we will be able to maintain our current market share or customer base. We face intense competition in our businesses and we expect competition to remain intense in the future. We have many competitors that are significantly larger than us and have significantly greater financial, technical and marketing resources, have well-established relationships with our current or potential customers, advertise aggressively or beat us to the market with new products and services. In addition, we expect that the markets in which we compete will continue to attract new competitors and new technologies. Increased competition in our markets could lead to price reductions, reduced profits, or loss of market share.

To compete successfully, we need to maintain a successful research and development effort. If we fail to enhance our current products and develop new products in response to changes in technology and industry standards, bring product enhancements or new product developments to market quickly enough, or accurately predict future changes in our customers needs and our competitors develop new technologies or products, our products could become less competitive or obsolete.

Our Universal Payments strategy could prove to be unsuccessful in the market.

Our UP solutions, including our UP Retail Payments and Real-Time Payments solutions, are strategic for us, in that they are designated to help us win new accounts, replace legacy payments systems on multiple hardware platforms, and help us transition our existing customers to a new, real-time, and open-systems product architecture. Our business, financial condition, cash flows and/or results of operations could be materially adversely affected if we are unable to generate adequate sales of Universal Payments solutions or if we are unable to successfully deploy them in production environments.

Our future profitability depends on demand for our products.

Our revenue and profitability depend on the overall demand for our products and services. A significant portion of our total revenues result from licensing our UP Retail Payments solution, including our BASE24 product line and providing related services and maintenance. Any reduction in demand for, or increase in competition with respect to, our UP Retail Payments solution could have a material adverse effect on our financial condition, cash flows and/or results of operations.

Consolidations and failures in the financial services industry may adversely impact the number of customers and our revenues in the future.

Mergers, acquisitions and personnel changes at key financial services organizations have the potential to adversely affect our business, financial condition, cash flows, and results of operations. Our business is concentrated in the financial services industry, making us susceptible to consolidation in, or contraction of, the number of participating institutions within that industry. Consolidation activity among financial institutions has increased in recent years and changes in financial conditions have historically resulted in even further consolidation and contraction as financial institutions have failed or have been acquired by or merged with other financial institutions. There are several potential negative effects of increased consolidation activity. Continuing consolidation and failure of financial institutions could cause us to lose existing and potential customers for our products and services. For instance, consolidation of two of our customers could result in reduced revenues if the combined entity were to negotiate greater volume discounts or discontinue use of certain of our products. Additionally, if a non-customer and a customer combine and the combined entity in turn decided to forego future use of our products, our revenues would decline.

Potential customers may be reluctant to switch to a new vendor, which may adversely affect our growth, both in the United States and internationally.

For banks, financial intermediaries, and other potential customers of our products, switching from one vendor of core financial services software (or from an internally-developed legacy system) to a new vendor is a significant endeavor. Many potential customers believe switching vendors involves too many potential disadvantages such as disruption of business operations, loss of accustomed functionality, and increased costs (including conversion and transition costs). As a result, potential customers may resist change. We seek to overcome this resistance through value enhancing strategies such as a defined conversion/migration process, continued investment in the enhanced functionality of our software and system integration expertise. However, there can be no assurance that our strategies for overcoming potential customers reluctance to change vendors will be successful, and this resistance may adversely affect our growth, both in the United States and internationally.

Failure to obtain renewals of customer contracts or obtain such renewals on favorable terms could adversely affect our results of operations and financial condition.

Failure to achieve favorable renewals of customer contracts could negatively impact our business. Our contracts with our customers generally run for a period of five years, three years in the case of certain acquired SaaS and PaaS contracts. At the end of the contract term, customers have the opportunity to renegotiate their contracts with us and to consider whether to engage one of our competitors to provide products and services. Failure to achieve high renewal rates on commercially favorable terms could adversely affect our results of operations and financial condition.

The delay or cancellation of a customer project or inaccurate project completion estimates may adversely affect our operating results and financial performance.

Any unanticipated delays in a customer project, changes in customer requirements or priorities during the project implementation period, or a customer s decision to cancel a project, may adversely impact our operating results and financial performance. In addition, during the project implementation period, we perform ongoing estimates of the progress being made on complex and difficult projects and documenting this progress is subject to potential inaccuracies. Changes in project completion estimates are heavily dependent on the accuracy of our initial project completion estimates and our ability to evaluate project profits and losses. Any inaccuracies or changes in estimates resulting from changes in customer requirements, delays or inaccurate initial project completion estimates may result in increased project costs and adversely impact our operating results and financial performance.

Our software products may contain undetected errors or other defects, which could damage our reputation with customers, decrease profitability, and expose us to liability.

Our software products are complex. Software typically contains bugs or errors that can unexpectedly interfere with the operation of the software products. Our software products may contain undetected errors or flaws when first introduced or as new versions are released. These undetected errors may result in loss of, or delay in, market acceptance of our products and a corresponding loss of sales or revenues. Customers depend upon our products for mission-critical applications, and these errors may hurt our reputation with customers. In addition, software product errors or failures could subject us to product liability, as well as performance and warranty claims, which could materially adversely affect our business, financial condition, cash flows and/or results of operations.

If our products and services fail to comply with legislation, government regulations, and industry standards to which our customers are subject, it could result in a loss of customers and decreased revenue.

Legislation, governmental regulation and industry standards affect how our business is conducted, and in some cases, could subject us to the possibility of future lawsuits arising from our products and services. Globally, legislation, governmental regulation and industry standards may directly or indirectly impact our current and prospective customers activities, as well as their expectations and needs in relation to our products and services. For example, our products are affected by VISA, MasterCard and other major payment brand electronic payment standards that are generally updated twice annually. Beyond this, our products are affected by PCI Security Standards. As a provider of electronic data processing to financial institutions, we must comply with FFIEC regulations and are subject to FFIEC examinations.

In addition, action by government and regulatory authorities such as the Dodd-Frank Wall Street Reform and the Consumer Protection Act relating to financial regulatory reform and the European Union-wide General Data Protection Regulation (GDPR) (which imposes strict data privacy requirements and regulatory fines of up to 4% of worldwide turnover), as well as legislation and regulation related to credit availability, data usage, privacy, or other related regulatory developments could have an adverse effect on our customers and therefore could have a material adverse effect on our business, financial condition, cash flows and results of operations. The regulatory focus on privacy issues also continues to increase and worldwide laws and regulations concerning the handling of personal information are expanding and becoming more complex. Our failure, or perceived failure, to comply with laws and regulations concerning the handling of personal information could result in lost or restricted business, proceedings, actions or fines brought against us or levied by governmental entities or others, or could adversely affect our business and harm our reputation.

If we fail to comply with the complex regulations applicable to our payments business, we could be subject to liability or our revenues may be reduced.

Official Payments Corporation is licensed as a money transmitter in those states where such licensure is required. These licenses require us to demonstrate and maintain certain levels of net worth and liquidity, require us to file periodic reports and subject us to inspections by state regulatory agencies. In addition, our payment business is generally subject to federal regulation in the United States, including anti-money laundering regulations and certain restrictions on transactions to or from certain individuals or entities. The complexity of these regulations will continue to increase our cost of doing business. Any violations of these laws may also result in civil or criminal penalties against us and our officers or the prohibition against us providing money transmitter services in particular jurisdictions. We could also be forced to change our business practices or be required to obtain additional licenses or regulatory approvals that could cause us to incur substantial costs.

In addition, our customers must ensure that our services comply with the government regulations, including the EU GDPR, and industry standards that apply to their businesses. Federal, state, foreign or industry authorities could adopt laws, rules, or regulations affecting our customers businesses that could lead to increased operating costs that may lead to reduced market acceptance. In addition, action by regulatory authorities relating to credit availability, data usage, privacy, or other related regulatory developments could have an adverse effect on our customers and, therefore, could have a material adverse effect on our business, financial condition, and results of operations.

If we fail to comply with privacy regulations imposed on providers of services to financial institutions, our business could be harmed.

As a provider of services to financial institutions, we may be bound by the same limitations on disclosure of the information we receive from our customers as apply to the financial institutions themselves. If we are subject to these limitations and we fail to comply with applicable regulations, including the EU GDPR, we could be exposed to suits for breach of contract or to governmental proceedings, our customer relationships and reputation could be harmed, and we could be inhibited in our ability to obtain new customers. In addition, if more restrictive privacy laws or rules are adopted in the future on the federal or state level, or, with respect to our international operations, by authorities in foreign jurisdictions on the national, provincial, state, or other level, that could have an adverse impact on our business.

Our risk management and information security programs are the subject of oversight and periodic reviews by the federal agencies that regulate our business. In the event an examination of our information security and risk management functions results in adverse findings, such findings could be made public or communicated to our regulated financial institution customers, which could have a material adverse effect on our business.

If our security measures are breached or become infected with a computer virus, or if our services are subject to attacks that degrade or deny the ability of users to access our products or services, our business will be harmed by disrupting delivery of services and damaging our reputation.

As part of our business, we electronically receive, process, store, and transmit sensitive business information of our customers. Unauthorized access to our computer systems or databases could result in the theft or publication of confidential information or the deletion or modification of records or could otherwise cause interruptions in our operations. These concerns about security are increased when we transmit information over the Internet. Security breaches in connection with the delivery of our products and services, including products and services utilizing the Internet, or well-publicized security breaches, and the trend toward broad consumer and general public notification of such incidents, could significantly harm our business, financial condition, cash flows and/or results of operations. We cannot be certain that advances in criminal capabilities, discovery of new vulnerabilities, attempts to exploit vulnerabilities in our systems, data thefts, physical system or network break-ins or inappropriate access, or other developments will not compromise or breach the technology protecting our networks and confidential information. Computer viruses have also been distributed and have rapidly spread over the Internet. Computer viruses could infiltrate our systems, disrupting our delivery of services and making our applications unavailable. Any inability to prevent security breaches or computer viruses could also cause existing customers to lose confidence in our systems and terminate their agreements with us, and could inhibit our ability to attract new customers.

We may be unable to protect our intellectual property and technology.

To protect our proprietary rights in our intellectual property, we rely on a combination of contractual provisions, including customer licenses that restrict use of our products, confidentiality agreements and procedures, and trade secret and copyright laws. Despite such efforts, we may not be able to adequately protect our proprietary rights, or our competitors may independently develop similar technology, duplicate products, or design around any rights we believe to be proprietary. This may be particularly true in countries other than the United States because some foreign laws do not protect proprietary rights to the same extent as certain laws of the United States. Any failure or inability to protect our proprietary rights could materially adversely affect our business.

We also use a limited amount of software licensed by its authors or other third parties under so-called open source licenses and may continue to use such software in the future. Some of these licenses contain requirements that we make available source code for modifications or derivative works we create based upon the open source software, and that we license such modifications or derivative works under the terms of a particular open source license or other license granting third parties certain rights of further use. By the terms of certain open source licenses, we could be required to release the source code of our proprietary software if we combine our proprietary software with open source software in a certain manner. Additionally, the terms of many open source licenses have not been interpreted by United States or other courts, and there is a risk that these licenses could be construed in a manner that could impose unanticipated conditions or restrictions on our ability to commercialize our solutions. In addition to risks related to license requirements, usage of open source software can lead to greater risks than use of third-party commercial software, as open source licensors generally do not provide warranties or controls on origin of the software.

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Our exposure to risks associated with the use of intellectual property may be increased for third-party products distributed by us or as a result of acquisitions since we have a lower level of visibility, if any, into the development process with respect to such third-party products and acquired technology or the care taken to safeguard against infringement risks.

We may be subject to increasing litigation over our intellectual property rights.

There has been a substantial amount of litigation in the software industry regarding intellectual property rights. Third parties have in the past, and may in the future, assert claims or initiate litigation related to exclusive patent, copyright, trademark or other intellectual property rights to business processes, technologies and related standards that are relevant to us and our customers. These assertions have increased over time as a result of the general increase in patent claims assertions, particularly in the United States. Because of the existence of a large number of patents in the electronic commerce field, the secrecy of some pending patents and the rapid issuance of new patents, it is not economical or even possible to determine in advance whether a product or any of its components infringes or will infringe on the patent rights of others. Any claim against us, with or without merit, could be time-consuming, result in costly litigation, cause product delivery delays, require us to enter into royalty or licensing agreements or pay amounts in settlement, or require us to develop alternative non-infringing technology.

We anticipate that software product developers and providers of electronic commerce solutions could increasingly be subject to infringement claims, and third parties may claim that our present and future products infringe upon their intellectual property rights. Third parties may also claim, and we are aware that at least two parties have claimed on several occasions, that our customers use of a business process method which utilizes our products in conjunction with other products infringe on the third-party s intellectual property rights. These third-party claims could lead to indemnification claims against us by our customers. Claims against our customers related to our products, whether or not meritorious, could harm our reputation and reduce demand for our products. Where indemnification claims are made by customers, resistance even to unmeritorious claims could damage the customer relationship. A successful claim by a third-party of intellectual property infringement by us or one of our customers could compel us to enter into costly royalty or license agreements, pay significant damages, or stop selling certain products and incur additional costs to develop alternative non-infringing technology. Royalty or licensing agreements, if required, may not be available on terms acceptable to us or at all, which could adversely affect our business.

Certain payment funding methods expose us to the credit and/or operating risk of our clients.

When we process an automated clearing house or automated teller machine network payment transaction for certain clients, we occasionally transfer funds from our settlement account to the intended destination account before we receive funds from a client s source account. The vast majority of these occurrences are resolved quickly through normal processes. However, if they are not resolved and we are then unable to reverse the transaction that sent funds to the intended destination, a shortfall in our settlement account will be created. Although we have legal recourse against our clients for the amount of the shortfall, timing of recovery may be delayed by litigation or the amount of any recovery may be less than the shortfall. In either case, we would have to fund the shortfall in our settlement account from our corporate funds.

If we experience business interruptions or failure of our information technology and communication systems, the availability of our products and services could be interrupted which could adversely affect our reputation, business and financial condition.

Our ability to provide reliable service in a number of our businesses depends on the efficient and uninterrupted operation of our data centers, information technology and communication systems, and those of our external service providers. As we continue to grow our ACI On Demand business, our dependency on the continuing operation and availability of these systems increases. Our systems and data centers, and those of our external service providers, could be exposed to damage or interruption from fire, natural disasters, power loss, telecommunications failure, unauthorized entry and computer viruses. Although we have taken steps to prevent system failures and we have installed back-up systems and procedures to prevent or reduce disruption, such steps may not be sufficient to prevent an interruption of services and our disaster recovery planning may not account for all eventualities. Further, our property and business interruption insurance may not be adequate to compensate us for all losses or failures that may occur.

An operational failure or outage in any of these systems, or damage to or destruction of these systems, which causes disruptions in our services, could result in loss of customers, damage to customer relationships, reduced revenues and profits, refunds of customer charges and damage to our brand and reputation and may require us to incur substantial additional expense to repair or replace damaged equipment and recover data loss caused by the interruption. Any one or more of the foregoing occurrences could have a material adverse effect on our reputation, business, financial condition, cash flows and results of operations.

We are engaged in offshore software development activities, which may not be successful and which may put our intellectual property at risk.

As part of our globalization strategy and to optimize available research and development resources, we utilize our Irish subsidiary to serve as the focal point for certain international product development and commercialization efforts. This subsidiary oversees remote software development operations in Romania and elsewhere, as well as manages certain of our intellectual property rights. In addition, we manage certain offshore development activities in India. While our experience to date with our offshore development centers has been positive, there is no assurance that this will continue. Specifically, there are a number of risks associated with this activity, including but not limited to the following:

- communications and information flow may be less efficient and accurate as a consequence of the time, distance and language differences between our primary development organization and the foreign based activities, resulting in delays in development or errors in the software developed;

- in addition to the risk of misappropriation of intellectual property from departing personnel, there is a general risk of the potential for misappropriation of our intellectual property that might not be readily discoverable;

- the quality of the development efforts undertaken offshore may not meet our requirements because of language, cultural and experiential differences, resulting in potential product errors and/or delays;

- potential disruption from the involvement of the United States in political and military conflicts around the world; and

- currency exchange rates could fluctuate and adversely impact the cost advantages intended from maintaining these facilities.

There are a number of risks associated with our international operations that could have a material impact on our operations and financial condition.

We derive a significant portion of our revenues from international operations and anticipate continuing to do so. As a result, we are subject to risks of conducting international operations. One of the principal risks associated with international operations is potentially adverse movements of foreign currency exchange rates. Our exposures resulting from fluctuations in foreign currency exchange rates may change over time as our business evolves and could have an adverse impact on our financial condition, cash flows and/or results of operations. We have not entered into any derivative instruments or hedging contracts to reduce exposure to adverse foreign currency changes.

Other potential risks include difficulties associated with staffing and management, reliance on independent distributors, longer payment cycles, potentially unfavorable changes to foreign tax rules, compliance with foreign regulatory requirements, effects of a variety of foreign laws and regulations, including restrictions on access to personal information, reduced protection of intellectual property rights, variability of foreign economic conditions, governmental currency controls, difficulties in enforcing our contracts in foreign jurisdictions, and general economic and political conditions in the countries where we sell our products and services. Some of our products may contain encrypted technology, the export of which is regulated by the United States government. Changes in U.S. and other applicable export laws and regulations restricting the export of software or encryption technology could result in delays or reductions in our shipments of products internationally. There can be no assurance that we will be able to successfully address these challenges.

In addition, the implementation of the United Kingdom s decision to exit the European Union (referred to as Brexit) could, among other outcomes, disrupt the free movement of goods, services, and people between the U.K. and the E.U., undermine bilateral cooperation in key policy areas, and significantly disrupt trade between the U.K. and the E.U. Unless the E.U. agrees to an extension, the U.K. is scheduled to exit the E.U. on March, 29, 2019, and it is possible that the U.K. may exit without an agreement in place. The uncertainties related to Brexit have cross-border operational, financial and tax implications, among others, and any economic volatility that may arise in the U.K., the E.U., or elsewhere may adversely affect our business.

Global economic conditions could reduce the demand for our products and services or otherwise adversely impact our cash flows, operating results and financial condition.

For the foreseeable future, we expect to derive most of our revenue from products and services we provide to the banking and financial services industries. The global electronic payments industry and the banking and financial services industries depend heavily upon the overall levels of consumer, business and government spending. Adverse economic conditions and the potential for disruptions in these industries as well as the general software sector could result in a decrease in consumers use of banking services and financial service providers resulting in significant decreases in the demand for our products and services which could adversely affect our business and operating results. A lessening demand in either the overall economy, the banking and financial services industry or the software sector could also result in the implementation by banks and related financial service providers of cost reduction measures or reduced capital spending resulting in longer sales cycles, deferral or delay of purchase commitments for our products and increased price competition which could lead to a material decrease in our future revenues and earnings.

Failure to attract and retain senior management personnel and skilled technical employees could harm our ability to grow

Our senior management team has significant experience in the financial services industry, including Philip Heasley who has been our CEO since March 2005 and has more than 30 years of experience in payment systems and financial services. The loss of this leadership could have an adverse effect on our business, operating results and financial condition. Further, the loss of this leadership may have an adverse impact on senior management s ability to provide effective oversight and strategic direction for all key functions within the Company, which could impact our future business, operating results and financial condition.

Our future success also depends upon our ability to attract and retain highly-skilled technical personnel. Because the development of our solutions and services requires knowledge of computer hardware, operating system software, system management software and application software, our technical personnel must be proficient in a number of disciplines. Competition for such technical personnel is intense, and our failure to hire and retain talented personnel could have a material adverse effect on our business, operating results and financial condition.

Our future growth will also require sales and marketing, financial and administrative personnel to develop and support new solutions and services, to enhance and support current solutions and services and to expand operational and financial systems. There can be no assurance that we will be able to attract and retain the necessary personnel to accomplish our growth strategies and we may experience constraints that could adversely affect our ability to satisfy client demand in a timely fashion.

Our ability to maintain compliance with applicable laws, rules and regulations and to manage and monitor the risks facing our business relies upon the ability to maintain skilled compliance, security, risk and audit professionals. Competition for such skillsets is intense, and our failure to hire and retain talented personnel could have an adverse effect on our internal control environment and impact our operating results.

The volatility and disruption of the capital and credit markets and adverse changes in the global economy may negatively impact our liquidity and our ability to access financing.

While we intend to finance our operations and growth of our business with existing cash and cash flow from operations, if adverse global economic conditions persist or worsen, we could experience a decrease in cash from operations attributable to reduced demand for our products and services and as a result, we may need to borrow additional amounts under our existing credit facility or we may require additional financing for our continued operation and growth. However, due to the existing uncertainty in the capital and credit markets and the impact of the current economic conditions on our operating results, cash flows and financial conditions, the amount of available unused borrowings under our existing credit facility may be insufficient to meet our needs and/or our access to capital outside of our existing credit facility may not be available on terms acceptable to us or at all. Additionally, if one or more of the financial institutions in our syndicate were to default on its obligation to fund its commitment, the portion of the committed facility provided by such defaulting financial institution would not be available to us. There can be no assurance that alternative financing on acceptable terms would be available to replace any defaulted commitments.

We may become involved in litigation that could materially adversely affect our business financial condition, cash flows and/or results of operations.

From time to time, we are involved in litigation relating to claims arising out of our operations. Any claims, with or without merit, could be time-consuming and result in costly litigation. Failure to successfully defend against these claims could result in a material adverse effect on our business, financial condition, results of operations and/or cash flows.

We may face claims associated with the sale and transition of our Community Financial Services assets and liabilities.

On March 3, 2016, we completed the sale of our CFS related assets and liabilities to Fiserv. In connection with that sale we entered into a transaction agreement and a transition services agreement in which we undertook certain continuing obligations to effect the transition of the assets and liabilities to Fiserv. We could face claims under the transaction agreement, including based on our representations and warranties, covenants and retained liabilities. We could also face claims under the transition services agreement related to our obligations to provide transition services and assistance. Any such claim or claims could result in a material adverse effect on our business, financial condition, results of operations and cash flows.

If we engage in acquisitions, strategic partnerships or significant investments in new business, we will be exposed to risks which could materially adversely affect our business.

As part of our business strategy, we anticipate that we may acquire new products and services or enhance existing products and services through acquisitions of other companies, product lines, technologies and personnel, or through investments in, or strategic partnerships with, other companies. Any acquisition, investment or partnership, is subject to a number of risks. Such risks include the diversion of management time and resources, disruption of our ongoing business, potential overpayment for the acquired company or assets, dilution to existing stockholders if our common stock is issued in consideration for an acquisition or investment, incurring or assuming indebtedness or other liabilities in connection with an acquisition which may increase our interest expense and leverage significantly, lack of familiarity with new markets, and difficulties in supporting new product lines.

Further, even if we successfully complete acquisitions, we may encounter issues not discovered during our due diligence process, including product or service quality issues, intellectual property issues and legal contingencies, the internal control environment of the acquired entity may not be consistent with our standards and may require significant time and resources to improve and we may impair relationships with employees and customers as a result of migrating a business or product line to a new owner. We will also face challenges in integrating any acquired business. These challenges include eliminating redundant operations, facilities and systems, coordinating management and personnel, retaining key employees, customers and business partners, managing different corporate cultures, and achieving cost reductions and cross-selling opportunities. There can be no assurance that we will be able to fully integrate all aspects of acquired businesses successfully, realize synergies expected to result from the acquisition, advance our business strategy or fully realize the potential benefits of bringing the businesses together, and the process of integrating these acquisitions may further disrupt our business and divert our resources.

In addition, under business combination accounting standards pursuant to Accounting Standards Codification (ASC) 805, *Business Combinations*, we recognize the identifiable assets acquired, the liabilities assumed and any non-controlling interests in acquired companies generally at their acquisition date fair values and, in each case, separately from goodwill. Goodwill as of the acquisition date is measured as the excess amount of consideration transferred, which is also generally measured at fair value, and the net of the acquisition date amounts of the identifiable assets acquired and the liabilities assumed. Our estimates of fair value are based upon assumptions believed to be reasonable but which are inherently uncertain. After we complete an acquisition, a number of factors could result in material goodwill impairment charges that could adversely affect our operating results.

Our failure to successfully manage acquisitions or investments, or successfully integrate acquisitions could have a material adverse effect on our business, financial condition, cash flows and/or results of operations. Correspondingly, our expectations related to the benefits related to our recent acquisitions, prior acquisitions or any other future acquisition or investment could be inaccurate.

Our balance sheet includes significant amounts of goodwill and intangible assets. The impairment of a significant portion of these assets could negatively affect our financial results.

Our balance sheet includes goodwill and intangible assets that represent a significant portion of our total assets at December 31, 2018. On at least an annual basis, we assess whether there have been impairments in the carrying value of goodwill and intangible assets. If the carrying value of the asset is determined to be impaired, then it is written down to fair value by a charge to operating earnings. An impairment of a significant portion of goodwill or intangible assets could materially negatively affect our results of operations.

Our outstanding debt contains restrictions and other financial covenants that limit our flexibility in operating our business.

Our credit facility and the indenture governing our 5.750% Senior Notes due 2026 (2026 Notes) contain customary affirmative and negative covenants for debt of these types that limit our ability to engage in specified types of transactions. These covenants limit our ability, and the ability of our subsidiaries, to, among other things: pay dividends on, repurchase or make distributions in respect of our capital stock or make other restricted payments; make certain investments; sell certain assets; create liens; incur additional indebtedness or issue certain preferred shares; consolidate, merge, sell or otherwise dispose of all or substantially all of our assets; and enter into certain transactions with our affiliates. Our outstanding debt also requires us to meet certain quarterly financial tests, including a maximum leverage ratio and a minimum interest coverage ratio. Our outstanding debt includes customary events of default, including, but not limited to, failure to pay principal or interest, breach of covenants or representations and warranties, cross-default to other indebtedness, judgment default and insolvency. If an event of default occurs, the lenders, trustee, or holders of the 2026 Notes will be entitled to take various actions, including, but not limited to, demanding payment for all amounts outstanding. If adverse global

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economic conditions persist or worsen, we could experience decreased revenues from our operations attributable to reduced demand for our products and services and as a result, we could fail to satisfy the financial and other restrictive covenants to which we are subject under our existing debt, resulting in an event of default. If we are unable to cure the default or obtain a waiver, we will not be able to access our credit facility and there can be no assurance that we would be able to obtain alternative financing.

Our existing levels of debt and debt service requirements may adversely affect our financial condition or operational flexibility and prevent us from fulfilling our obligations under our outstanding indebtedness.

Our level of debt could have adverse consequences for our business, financial condition, operating results and operational flexibility, including the following: (i) the debt level may cause us to have difficulty borrowing money in the future for working capital, capital expenditures, acquisitions or other purposes; (ii) our debt level may limit operational flexibility and our ability to pursue business opportunities and implement certain business strategies; (iii) we use a large portion of our operating cash flow to pay principal and interest on our credit facility and the 2026 Notes, which reduces the amount of money available to finance operations, acquisitions and other business activities; (iv) we have a higher level of debt than some of our competitors or potential competitors, which may cause a competitive disadvantage and may reduce flexibility in responding to changing business and economic conditions, including increased competition and vulnerability to general adverse economic and industry conditions; (v) some of our debt has a variable rate of interest, which exposes us to the risk of increased interest rates; (vi) there are significant maturities on our debt that we may not be able to fulfill or that may be refinanced at higher rates; and (vii) if we fail to satisfy our obligations under our outstanding debt or fail to comply with the financial or other restrictive covenants required under our credit facility and the 2026 Notes, an event of default could result that could cause all of our debt to become due and payable and could permit the lenders under our credit facility to foreclose on the assets securing such debt.

Management s backlog estimate may not be accurate and may not generate the predicted revenues.

Estimates of future financial results are inherently unreliable. Our backlog estimates require substantial judgment and are based on a number of assumptions, including management s current assessment of customer and third-party contracts that exist as of the date the estimates are made, as well as revenues from assumed contract renewals, to the extent that we believe that recognition of the related revenue will occur within the corresponding backlog period. A number of factors could result in actual revenues being less than the amounts reflected in backlog. Our customers or third-party partners may attempt to renegotiate or terminate their contracts for a number of reasons, including mergers, changes in their financial condition, or general changes in economic conditions within their industries or geographic locations, or we may experience delays in the development or delivery of products or services specified in customer contracts. Actual renewal rates and amounts may differ from historical experiences used to estimate backlog amounts. Changes in foreign currency exchange rates may also impact the amount of revenue actually recognized in future periods. Accordingly, there can be no assurance that contracts included in backlog will actually generate the specified revenues or that the actual revenues will be generated within a 12-month or 60-month period. Additionally, because backlog estimates are operating metrics, the estimates are not required to be subject to the same level of internal review or controls as a U.S. generally accepted accounting principles (GAAP) financial measure.

We may face exposure to unknown tax liabilities, which could adversely affect our financial condition, cash flows and/or results of operations.

We are subject to income and non-income based taxes in the United States and in various foreign jurisdictions. Significant judgment is required in determining our worldwide income tax liabilities and other tax liabilities. In addition, we expect to continue to benefit from implemented tax-saving strategies. We believe that these tax-saving strategies comply with applicable tax law. If the governing tax authorities have a different interpretation of the applicable law and successfully challenge any of our tax positions, our financial condition, cash flows and/or results of operations could be adversely affected.

Our U.S. companies are the subject of an examination by several state tax departments. Some of our foreign subsidiaries are currently the subject of a tax examination by the local taxing authorities. Other foreign subsidiaries could face challenges from various foreign tax authorities. It is not certain that the local authorities will accept our tax positions. We believe our tax positions comply with applicable tax law and intend to vigorously defend our positions. However, differing positions on certain issues could be upheld by foreign tax authorities, which could adversely affect our financial condition and/or results of operations.

Our revenue and earnings are highly cyclical, our quarterly results fluctuate significantly and we have revenue-generating transactions concentrated in the final weeks of a quarter which may prevent accurate forecasting of our financial results and cause our stock price to decline.

Our revenue and earnings are highly cyclical causing significant quarterly fluctuations in our financial results. Revenue and operating results are usually strongest during the third and fourth fiscal quarters ending September 30 and December 31, primarily due to the sales and budgetary cycles of our customers. We experience lower revenues, and possible operating losses, in the first and second quarters ending March 31 and June 30. Our financial results may also fluctuate from quarter to quarter and year to year due to a variety of factors, including changes in product sales mix that affect average selling prices, and the timing of customer renewals (any of which may impact the pattern of revenue recognition).

In addition, large portions of our customer contracts are consummated in the final weeks of each quarter. Before these contracts are consummated, we create and rely on forecasted revenues for planning, modeling and earnings guidance. Forecasts, however, are only estimates and actual results may vary for a particular quarter or longer periods of time. Consequently, significant discrepancies between actual and forecasted results could limit our ability to plan, budget or provide accurate guidance, which could adversely affect our stock price. Any publicly-stated revenue or earnings projections are subject to this risk.

Our stock price may be volatile.

No assurance can be given that operating results will not vary from quarter to quarter, and past performance may not accurately predict future performance. Any fluctuations in quarterly operating results may result in volatility in our stock price. Our stock price may also be volatile, in part, due to external factors such as announcements by third parties or competitors, inherent volatility in the technology sector, variability in demand from our existing customers, failure to meet the expectations of market analysts, the level of our operating expenses and changing market conditions in the software industry. In addition, the financial markets have experienced significant price and volume fluctuations that have particularly affected the stock prices of many technology companies and financial services companies, and these fluctuations sometimes are unrelated to the operating performance of these companies. Broad market fluctuations, as well as industry-specific and general economic conditions may adversely affect the market price of our common stock.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We lease office space in Naples, Florida, for our principal executive headquarters. The Naples lease expires in 2027. We also lease office space in Omaha, Nebraska, for our principal product development group, sales and support groups for the Americas, as well as our corporate, accounting, and administrative functions. The Omaha lease continues through 2028. Our Europe/Middle East/Africa (EMEA) headquarters is in Watford, England. The lease for the Watford facility expires at the end of 2023. Our Asia/Pacific headquarters is in Singapore, with the lease for this facility expiring in fiscal 2020. We also lease office space in numerous other locations in the United States as well as in many other countries.

We believe our current facilities are adequate for our present and short-term foreseeable needs and that additional suitable space will be available as required. We also believe we will be able to renew leases as they expire or secure alternate suitable space. See Note 14, *Commitments and Contingencies*, in the Notes to Consolidated Financial Statements for additional information regarding our obligations under our facilities leases.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we are involved in various litigation matters arising in the ordinary course of our business. We are not currently a party to any legal proceedings, the adverse outcome of which, individually or in the aggregate, we believe would be likely to have a material effect on our financial condition or results of operations.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

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PART II

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

Our common stock trades on The NASDAQ Global Select Market under the symbol ACIW.

As of February 25, 2019, there were 278 holders of record of our common stock. A substantially greater number of shareholders hold our common stock in street name , or as beneficial holders whose shares are held in the name of banks, brokers, or other financial institutions.

Issuer Purchases of Equity Securities

The following table provides information regarding our repurchases of common stock during the three months 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 Program	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Program
October 1, 2018 through October 31, 2018		$		$ 176,587,000
November 1, 2018 through November 30, 2018				176,587,000
December 1, 2018 through December 31, 2018				176,587,000
Total		$		

In fiscal 2005, our board approved a stock repurchase program authorizing us, as market and business conditions warrant, to acquire our common stock and periodically authorize additional funds for the program, with the intention of using existing cash and cash equivalents to fund these repurchases. In February 2018, the board approved the repurchase of up to $200.0 million of our common stock in place of the remaining purchase amounts previously authorized. As of December 31, 2018, the maximum remaining amount authorized for purchase under the stock repurchase program was approximately $176.6 million.

There is no guarantee as to the exact number of shares we will repurchase. Repurchased shares are returned to the status of authorized but unissued shares of common stock. In March 2005, our board approved a plan under Rule 10b5-1 of the Securities Exchange Act of 1934 to facilitate the repurchase of shares of common stock under the existing stock repurchase program. Under our Rule 10b5-1 plan, we have delegated authority over the timing and amount of repurchases to an independent broker who does not have access to inside information about the Company. Rule 10b5-1 allows us, through the independent broker, to purchase shares at times when we ordinarily would not be in the market because of self-imposed trading blackout periods, such as the time immediately preceding the end of the fiscal quarter through a period of three business days following our quarterly earnings release.

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Stock Performance Graph and Cumulative Total Return

The following table shows a line-graph presentation comparing cumulative stockholder return on an indexed basis with a broad equity market index and either a nationally-recognized industry standard or an index of peer companies selected by us. We selected the S&P 500 Index and the NASDAQ Electronic Components Index for comparison.

The graph above assumes that a $100 investment was made in our common stock and each index on December 31, 2013, and that all dividends were reinvested. Also included are the respective investment returns based upon the stock and index values as of the end of each year during such five-year period. The information was provided by Zacks Investment Research, Inc. of Chicago, Illinois.

The stock performance graph disclosure above is not considered filed with the SEC under the Securities and Exchange Act of 1934, as amended, and is not incorporated by reference in any past or future filing by us under the Securities Exchange Act of 1934, as amended, or the Securities Act of 1933, as amended, unless specifically referenced.

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ITEM 6. SELECTED FINANCIAL DATA

The following selected financial data has been derived from our consolidated financial statements (in thousands, except per share data). This data should be read together with Item 7, Management s Discussion and Analysis of Financial Condition and Results of Operations , and the consolidated financial statements and related notes included elsewhere in this annual report. The financial information below is not necessarily indicative of the results of future operations. Future results could differ materially from historical results due to many factors, including those discussed in Item 1A, Risk Factors.

	Years Ended December 31,				
	2018 (1)	2017 (2)	2016 (3)	2015 (4)	2014 (5)
Income Statement Data:					
Total revenues	$ 1,009,780	$ 1,024,191	$ 1,005,701	$ 1,045,977	$ 1,016,149
Net income	68,921	5,135	129,535	85,436	67,560
Earnings per share:					
Basic	$ 0.59	$ 0.04	$ 1.10	$ 0.73	$ 0.59
Diluted	$ 0.59	$ 0.04	$ 1.09	$ 0.72	$ 0.58
Shares used in computing earnings per share:					
Basic	116,057	118,059	117,533	117,465	114,798
Diluted	117,632	119,444	118,847	118,919	116,771

	December 31,				
	2018 (1)	2017	2016 (3)	2015 (4)	2014 (5)
Balance Sheet Data:					
Working capital	$ 269,857	$ 100,039	$ 31,625	$ (2,360)	$ (4,672)
Total assets	2,122,455	1,861,639	1,902,295	1,975,788	1,830,172
Current portion of debt (6)	20,767	17,786	90,323	89,710	81,108
Debt (long-term portion) (6)(7)	658,602	668,356	656,063	845,639	795,194
Stockholders equity	1,048,231	764,597	754,917	654,400	581,405

(1) The consolidated balance sheet and statement of operations for the year ended December 31, 2018, reflects the application of Accounting Standards Update (ASU) 2014-09, *Revenue from Contracts with Customers* (codified as ASC 606) as discussed in Note 2, *Revenue,* in the Notes to Consolidated Financial Statements, including a cumulative adjustment of $244.0 million to retained earnings.

(2) The consolidated statement of operations for the year ended December 31, 2017, reflects the Baldwin Hackett & Meeks, Inc. (BHMI) judgment. We recorded $46.7 million in general and administrative expense and $1.4 million in interest expense, as discussed in Note 14, *Commitments and Contingencies*, in the Notes to Consolidated Financial Statements.

(3) The consolidated balance sheet and statement of operations for the year ended December 31, 2016, reflects the sale of CFS assets and liabilities as discussed in Note 3, *Divestiture*, in the Notes to Consolidated Financial Statements.

(4) The consolidated balance sheet and statement of operations for the year ended December 31, 2015, includes the acquisition of PAY.ON AG and its subsidiaries (PAY.ON).

(5) The consolidated balance sheet and statement of operations for the year ended December 31, 2014, includes the acquisition of Retail Decisions Europe Limited and Retail Decisions, Inc. (collectively ReD).

(6) During the year ended December 31, 2018, we issued $400.0 million in senior notes due August 15, 2026. We used the net proceeds of these senior notes to redeem our outstanding $300.0 million senior notes due 2020, which we originally entered in to during the year ended

December 31, 2013. During the year ended December 31, 2015, we increased the Revolving Credit Facility by $181.0 million to fund the acquisition of PAY.ON and related transaction expenses. During the year ended December 31, 2014, we increased the

Term Credit Facility by $150.0 million to fund the acquisition of ReD. In addition, we drew a net additional $44.0 million on our Revolving Credit Facility during the year ended December 31, 2014, partially used to fund the acquisition of ReD and the related transaction costs. See Note 5, *Debt,* in the Notes to Consolidated Financial Statements for further discussion.

(7) During the year ended December 31, 2012, we financed a five-year license agreement for certain internally-used software for $14.8 million with annual payments through April 2016. During the year ended December 31, 2015, we financed multiple three-year license agreements for certain internally-used software for a total value of $20.4 million with payments due through November 2018. Of these amounts at December 31, 2016, $9.0 million remained outstanding with $7.3 million included in other current liabilities and $1.7 million included in other non-current liabilities in our consolidated balance sheet. At December 31, 2017, $1.9 million remained outstanding with $1.5 million included in other current liabilities and $0.4 million included in other non-current liabilities in our consolidated balance sheet. During the year ended December 31, 2018, we financed certain multi-year license agreements for internally-used software for $11.9 million with annual payments through June 2023. Of these amounts at December 31, 2018, $9.4 million remained outstanding, with $2.5 million and $6.9 million included in other current liabilities and other noncurrent liabilities, respectively, in our consolidated balance sheet.

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

Overview

ACI Worldwide, the Universal Payments (UP) company, powers electronic payments for more than 5,100 organizations around the world. More than 1,000 of the largest financial institutions and intermediaries, as well as thousands of leading merchants globally, rely on ACI to execute $14 trillion each day in payments and securities. In addition, thousands of organizations utilize our EBPP services. Through our comprehensive suite of solutions, we deliver real-time, immediate payments capabilities, and enable a complete omni-channel payments experience.

Our products are sold and supported through distribution networks covering three geographic regions the Americas, EMEA, and Asia/Pacific. Each distribution network has its own globally coordinated sales force and supplements its sales force with independent reseller and/or distributor networks. Our products and solutions are used globally by banks, financial intermediaries, merchants and corporates, such as third-party electronic payment processors, payment associations, switch interchanges and a wide range of transaction-generating endpoints, including ATMs, merchant point-of-sale (POS) terminals, bank branches, mobile phones, tablets, corporations, and Internet commerce sites. Accordingly, our business and operating results are influenced by trends such as information technology spending levels, the growth rate of electronic payments, mandated regulatory changes, and changes in the number and type of customers in the financial services industry. Our products are marketed under the ACI Worldwide, ACI Universal Payment, and ACI UP brands.

We derive a majority of our revenues from domestic operations and believe we have large opportunities for growth in international markets as well as continued expansion domestically in the United States. Refining our global infrastructure is a critical component of driving our growth. We have launched a globalization strategy which includes elements intended to streamline our supply chain and maximize expertise in several geographic locations to support a growing international customer base and competitive needs. We utilize our Irish subsidiaries to manage certain of our intellectual property rights and to oversee and manage certain international product development and commercialization efforts. We increased our SaaS and PaaS capabilities with a data center in Ireland allowing our SaaS and PaaS solutions to be more-broadly offered in the European market. We also continue to grow centers of expertise in Timisoara, Romania and Pune and Bangalore in India, as well as key operational centers such as Cape Town, South Africa and in multiple locations in the United States.

Key trends that currently impact our strategies and operations include:

Increasing electronic payment transaction volumes. Electronic payment volumes continue to increase around the world, taking market share from traditional cash and check transactions. In their World Payments Report, Capgemini predicts that non-cash transaction volumes will grow in volume at an annual rate of 12.7%, from 482.5 billion in 2016 to 876.4 in 2021, with varying growth rates based on the type of payment and part of the world. We leverage the growth in transaction volumes through the licensing of new systems to customers whose older systems cannot handle increased volume and through the sale of capacity upgrades to existing customers.

Adoption of real-time payments. Customer expectations, from both consumers and corporate, are driving the payments world to more real-time delivery. In the U.K., payments sent through the traditional ACH multi-day batch service can now be sent through the Faster Payments service giving almost immediate access to the funds, and this is being considered and implemented in several countries including Australia and the United States. In the U.S. market, National Automated Clearinghouse Association (NACHA) implemented phase 2 of Same Day ACH in September 2017. Corporate customers expect real-time information on the status of their payments instead of waiting for an end of-day report. Regulators expect banks to be monitoring key measures like liquidity in real time. ACI s focus has always been on the real-time execution of transactions and delivery of information through real-time tools, such as dashboards, so our experience will be valuable in addressing this trend.

Increasing competition. The electronic payments market is highly competitive and subject to rapid change. Our competition comes from in-house information technology departments, third-party electronic payment processors, and third-party software companies located both within and outside of the United States. Many of these companies are significantly larger than us and have significantly greater financial, technical, and marketing resources. As electronic payment transaction volumes increase, third-party processors tend to provide competition to our solutions, particularly among customers that do not seek to differentiate their electronic payment offerings or are eliminating banks from the payments service, reducing the need for our solutions. As consolidation in the financial services industry continues, we anticipate that competition for those customers will intensify.

Adoption of cloud technology. To leverage lower-cost computing technologies, some banks, financial intermediaries, merchants and corporates are seeking to transition their systems to make use of cloud technology. Our investments provide us the grounding to deliver cloud capabilities in the future. Market sizing data from Ovum indicates that spend on SaaS and PaaS payment systems is growing faster than spend on installed applications.

Electronic payments fraud and compliance. As electronic payment transaction volumes increase, organized criminal organizations continue to find ways to commit a growing volume of fraudulent transactions using a wide range of techniques. Banks, financial intermediaries, merchants and corporates continue to seek ways to leverage new technologies to identify and prevent fraudulent transactions and other attacks such as denial of service attacks. Due to concerns with international terrorism and money laundering, banks and financial intermediaries in particular are being faced with increasing scrutiny and regulatory pressures. We continue to see opportunity to offer our fraud detection solutions to help customers manage the growing levels of electronic payments fraud and compliance activity.

Adoption of smartcard technology. In many markets, card issuers are being required to issue new cards with embedded chip technology, with the liability shift having gone into effect in 2015 in the United States. Chip-based cards are more secure, harder to copy, and offer the opportunity for multiple functions on one card (e.g., debit, credit, electronic purse, identification, health records, etc.). This results in greater card-not-present fraud (e.g., fraud at eCommerce sites).

Single Euro Payments Area (SEPA). The SEPA, primarily focused on the European economic community and the U.K., is designed to facilitate lower costs for cross-border payments and reduce timeframes for settling electronic payment transactions. The transition to SEPA payment mechanisms will drive more volume to these

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systems with the potential to cause banks to review the capabilities of the systems supporting these payments. Our Retail Payments and Real-Time Payments solutions facilitate key functions that help banks and financial intermediaries address these mandated regulations.

European Payment Service Directive (PSD2). PSD2, which was ratified by the European Parliament in 2015, required member states to implement new payments regulations in 2018. The XS2A provision effectively creates a new market opportunity where banks in European Union member countries must provide open API standards to customer data, thus allowing authorized third-party providers to enter the market.

Financial institution consolidation. Consolidation continues on a national and international basis, as financial institutions seek to add market share and increase overall efficiency. Such consolidations have increased, and may continue to increase, in their number, size, and market impact as a result of recent economic conditions affecting the banking and financial industries. There are several potential negative effects of increased consolidation activity. Continuing consolidation of financial institutions may result in a smaller number of existing and potential customers for our products and services. Consolidation of two of our customers could result in reduced revenues if the combined entity were to negotiate greater volume discounts or discontinue use of certain of our products. Additionally, if a non-customer and a customer combine and the combined entity decides to forego future use of our products, our revenue would decline. Conversely, we could benefit from the combination of a non-customer and a customer when the combined entity continues use of our products and, as a larger combined entity, increases its demand for our products and services. We tend to focus on larger financial institutions as customers, often resulting in our solutions being the solutions that survive in the consolidated entity.

Global vendor sourcing. Global and regional banks, financial intermediaries, merchants and corporates are aiming to reduce the costs in supplier management by picking suppliers who can service them across all their geographies instead of allowing each country operation to choose suppliers independently. Our global footprint from both a customer and a delivery perspective enable us to be successful in this global sourced market. However, projects in these environments tend to be more complex and therefore of higher risk.

Electronic payments convergence. As electronic payment volumes grow and pressures to lower overall cost per transaction increase, banks and financial intermediaries are seeking methods to consolidate their payments processing across the enterprise. We believe that the strategy of using SOA to allow for re-use of common electronic payment functions, such as authentication, authorization, routing and settlement, will become more common. Using these techniques, banks and financial intermediaries will be able to reduce costs, increase overall service levels, enable one-to-one marketing in multiple bank channels, leverage volumes for improved pricing and liquidity, and manage enterprise risk. Our product strategy is, in part, focused on this trend, by creating integrated payment functions that can be re-used by multiple bank channels, across both the consumer and wholesale bank. While this trend presents an opportunity for us, it may also expand the competition from third-party electronic payment technology and service providers specializing in other forms of electronic payments. Many of these providers are larger than us and have significantly greater financial, technical and marketing resources.

Mobile banking and payments. There is a growing demand for the ability to carry out banking services or make payments using a mobile phone. Recent statistics from Javelin Strategy & Research, a subsidiary of Greenwich Associates, show that 50% of adults in the United States use their phone for mobile banking. The use of phones for mobile banking is expected to grow to 81% in 2020. Our customers have been making use of existing products to deploy mobile banking, mobile payments, and mobile commerce solutions for their customers in many countries. In addition, ACI has invested in mobile products of our own and via partnerships to support mobile functionality in the marketplace.

Electronic bill payment and presentment. EBPP encompasses all facets of bill payment, including biller direct, where customers initiate payments on biller websites, the consolidator model, where customers initiate payments on a financial institution s website, and walk-in bill payment, as one might find in a convenience store. The EBPP market continues to grow as consumers move away from traditional forms of paper-based payments. Nearly three out of four (73%) online payments are made at the billers sites rather than through banking websites, up 11% since 2010. The biller-direct solutions are seeing strong growth as billers migrate these services to outsourcers, such as ACI, from legacy systems built in house. We believe that EBPP remains ripe for outsourcing, as a significant amount of biller-direct transactions are still processed in house. As billers seek to manage costs and improve efficiency, we believe that they will continue to look to third-party EBPP vendors that can offer a complete solution for their billing needs.

Several other factors related to our business may have a significant impact on our operating results from year to year. For example, the accounting rules governing the timing of revenue recognition are complex and it can be difficult to estimate when we will recognize revenue generated by a given transaction. Factors such as creditworthiness of the customer and timing of transfer of control or acceptance of our products may cause revenues related to sales generated in one period to be deferred and recognized in later periods. For arrangements in which services revenue is deferred, related direct and incremental costs may also be deferred. Additionally, while the majority of our contracts are denominated in the U.S. dollar, a substantial portion of our sales are made, and some of our expenses are incurred, in the local currency of countries other than the United States. Fluctuations in currency exchange rates in a given period may result in the recognition of gains or losses for that period.

We continue to seek ways to grow through organic sources, partnerships, alliances, and acquisitions. We continually look for potential acquisitions designed to improve our solutions breadth or provide access to new markets. As part of our acquisition strategy, we seek acquisition candidates that are strategic, capable of being integrated into our operating environment, and accretive to our financial performance.

Divestiture

Community Financial Services

On March 3, 2016, we completed the sale of our CFS related assets and liabilities to Fiserv for $200.0 million. The sale of CFS, which was not strategic to our long-term strategy, was part of the Company s ongoing efforts to expand as a provider of software products and SaaS-based and PaaS-based solutions facilitating real-time electronic and eCommerce payments for large banks, financial intermediaries, merchants and corporates worldwide. The sale included employee agreements and customer contracts as well as technology assets and intellectual property.

For the year ended December 31, 2016, we recognized a net after-tax gain of $93.4 million on sale of assets to Fiserv.

Backlog

Backlog is comprised of:

Committed Backlog, which includes (1) contracted revenue that will be recognized in future periods (contracted but not recognized) from software license fees, maintenance fees, services fees, and SaaS and PaaS fees specified in executed contracts (including estimates of variable consideration if required under ASC 606) and included in the transaction price for those contracts, which includes deferred revenue and amounts that will be invoiced and recognized as revenue in future periods and (2) estimated future revenues from software license fees, maintenance fees, services fees, and SaaS and PaaS fees specified in executed contracts.

Renewal Backlog, which includes estimated future revenues from assumed contract renewals to the extent we believe recognition of the related revenue will occur within the corresponding backlog period.

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The adoption of ASC 606 resulted in the following key changes to backlog:

- The introduction of a U.S. GAAP requirement to measure and disclose revenue allocated to remaining performance obligations.
- A shift in license revenue from Committed Backlog to Renewal Backlog due to the acceleration of license revenue recognition and a corresponding change in the renewal assumptions used to estimate Renewal Backlog.
- An adjustment to the amount of license revenue included in Renewal Backlog due to the introduction of the significant financing component concept.

We have historically included assumed renewals in backlog estimates based upon automatic renewal provisions in the executed contract and our historic experience with customer renewal rates.

Our 60-month backlog estimates are derived using the following key assumptions:

- License arrangements are assumed to renew at the end of their committed term or under the renewal option stated in the contract at a rate consistent with historical experience. If the license arrangement includes extended payment terms, the renewal estimate is adjusted for the effects of a significant financing component.
- Maintenance fees are assumed to exist for the duration of the license term for those contracts in which the committed maintenance term is less than the committed license term.
- SaaS and PaaS arrangements are assumed to renew at the end of their committed term at a rate consistent with our historical experiences.
- Foreign currency exchange rates are assumed to remain constant over the 60-month backlog period for those contracts stated in currencies other than the U.S. dollar.
- Our pricing policies and practices are assumed to remain constant over the 60-month backlog period.

In computing our 60-month backlog estimate, the following items are specifically not taken into account:

- Anticipated increases in transaction, account, or processing volumes by our customers.
- Optional annual uplifts or inflationary increases in recurring fees.
- Services engagements, other than SaaS and PaaS arrangements, are not assumed to renew over the 60-month backlog period.
- The potential impact of consolidation activity within our markets and/or customers.

We review our customer renewal experience on an annual basis. The impact of this review and subsequent update may result in a revision to the renewal assumptions used in computing the 60-month backlog estimates. In the event a significant revision to renewal assumptions is determined to be necessary, prior periods will be adjusted for comparability purposes.

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The following table sets forth our 60-month backlog estimate, by reportable segment, as of December 31, 2018; September 30, 2018; June 30, 2018; March 31, 2018; and December 31, 2017 (in millions). Dollar amounts reflect foreign currency exchange rates as of each period end. We included our 60-month backlog estimate without the application of ASC 606. This is a non-GAAP financial measure that is being presented to provide comparability across accounting periods. We believe this measure provides useful information to investors and others in understanding and evaluating our financial performance.

	As Reported	**Without Application of ASC 606**	**As Reported**	**Without Application of ASC 606**	**As Reported**	**Without Application of ASC 606**	**As Reported**	**Without Application of ASC 606**	**December 31, 2017**
	December 31, 2018		**September 30, 2018**		**June 30, 2018**		**March 31, 2018**		
ACI On Premise	$ 1,875	$ 1,712	$ 1,775	$ 1,645	$ 1,830	$ 1,681	$ 1,874	$ 1,709	$ 1,700
ACI On Demand	2,299	2,298	2,401	2,400	2,472	2,472	2,513	2,512	2,404
Total	$ 4,174	$ 4,010	$ 4,176	$ 4,045	$ 4,302	$ 4,153	$ 4,387	$ 4,221	$ 4,104

	As Reported	**Without Application of ASC 606**	**As Reported**	**Without Application of ASC 606**	**As Reported**	**Without Application of ASC 606**	**As Reported**	**Without Application of ASC 606**	**December 31, 2017**
	December 31, 2018		**September 30, 2018**		**June 30, 2018**		**March 31, 2018**		
Committed	$ 1,832	$ 2,066	$ 1,760	$ 2,015	$ 1,769	$ 2,022	$ 1,879	$ 2,138	$ 2,062
Renewal	2,342	1,944	2,416	2,030	2,533	2,131	2,508	2,083	2,042
Total	$ 4,174	$ 4,010	$ 4,176	$ 4,045	$ 4,302	$ 4,153	$ 4,387	$ 4,221	$ 4,104

Estimates of future financial results require substantial judgment and are based on several assumptions, as described above. These assumptions may turn out to be inaccurate or wrong for reasons outside of management s control. For example, our customers may attempt to renegotiate or terminate their contracts for many reasons, including mergers, changes in their financial condition or general changes in economic conditions in the customer s industry or geographic location. We may also experience delays in the development or delivery of products or services specified in customer contracts, which may cause the actual renewal rates and amounts to differ from historical experiences. Changes in foreign currency exchange rates may also impact the amount of revenue recognized in future periods. Accordingly, there can be no assurance that amounts included in backlog estimates will generate the specified revenues or that the actual revenues will be generated within the corresponding 60-month period. Additionally, because certain components of Committed Backlog and all of Renewal Backlog estimates are operating metrics, the estimates are not required to be subject to the same level of internal review or controls as contracted but not recognized Committed Backlog.

Results of Operations

The following tables present the consolidated statements of operations as well as the percentage relationship to total revenues of items included in our Consolidated Statements of Operations (in thousands):

Year Ended December 31, 2018, Compared to Year Ended December 31, 2017

	2018				2017	
	Amount	% of Total Revenue	$ Change vs 2017	% Change vs 2017	Amount	% of Total Revenue
Revenues:						
Software as a service and platform as a service	$ 433,025	43%	$ 7,453	2%	$ 425,572	42%
License	280,556	28%	(12,568)	-4%	293,124	29%
Maintenance	219,145	22%	(2,926)	-1%	222,071	22%
Services	77,054	8%	(6,370)	-8%	83,424	8%
Total revenues	1,009,780	100%	(14,411)	-1%	1,024,191	100%
Operating expenses:						
Cost of revenue	430,351	43%	(21,935)	-5%	452,286	44%
Research and development	143,630	14%	6,709	5%	136,921	13%
Selling and marketing	117,881	12%	9,996	9%	107,885	11%
General and administrative	107,422	11%	(45,610)	-30%	153,032	15%
Depreciation and amortization	84,585	8%	(4,842)	-5%	89,427	9%
Total operating expenses	883,869	88%	(55,682)	-6%	939,551	92%
Operating income	125,911	12%	41,271	49%	84,640	8%
Other income (expense):						
Interest expense	(41,530)	-4%	(2,517)	6%	(39,013)	-4%
Interest income	11,142	1%	10,578	1876%	564	0%
Other, net	(3,724)	0%	(1,105)	42%	(2,619)	0%
Total other income (expense)	(34,112)	-3%	6,956	-17%	(41,068)	-4%
Income before income taxes	91,799	9%	48,227	111%	43,572	4%
Income tax expense	22,878	2%	(15,559)	-40%	38,437	4%
Net income	$ 68,921	7%	$ 63,786	1242%	$ 5,135	1%

Revenues

Total revenue for the year ended December 31, 2018, decreased $14.4 million, or 1%, as compared to the same period in 2017.

The application of ASC 606 resulted in a $2.5 million decrease in total revenue for the year ended December 31, 2018. Total revenue was $3.7 million higher for the year ended December 31, 2018, compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, total revenue for the year ended December 31, 2018, decreased $15.6 million, or 2%, compared to the same period in 2017, primarily as the result of a decrease in license, maintenance and services revenue, partially offset by an increase in SaaS and PaaS revenue.

Software as a Service (SaaS) and Platform as a Service (PaaS) Revenue

The Company s SaaS arrangements allow customers to use certain software solutions (without taking possession of the software) in a single-tenant cloud environment on a subscription basis. The Company s PaaS arrangements allow customers to use certain software solutions (without taking possession of the software) in a multi-tenant cloud environment on a subscription or consumption basis. Included in SaaS and PaaS revenue are fees paid by our customers for use of our Biller solutions. Biller-related fees may be paid by our clients or directly by their customers and may be a percentage of the underlying transaction amount, a fixed fee per executed transaction or a monthly fee for each customer enrolled. SaaS and PaaS costs include payment card interchange fees, the amounts payable to banks and payment card processing fees, which are included in cost of revenue in the accompanying consolidated statements of operations. All revenue from SaaS and PaaS arrangements that does not qualify for treatment as a distinct performance obligation, which includes set-up fees, implementation or customization services, and product support services, are included in SaaS and PaaS revenue.

SaaS and PaaS revenue increased $7.5 million, or 2%, during the year ended December 31, 2018, as compared to the same period in 2017. The application of ASC 606 resulted in a $0.9 million increase in total SaaS and PaaS revenue for the year ended December 31, 2018. Total SaaS and PaaS revenue was $1.8 million higher for the year ended December 31, 2018, compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, total SaaS and PaaS revenue for the year ended December 31, 2018, increased $4.7 million, or 1%, compared to the same period in 2017, which is primarily attributable to new customers adopting our SaaS and PaaS offerings and existing customers adding new functionality or increasing transaction volumes.

License Revenue

Customers purchase the right to license ACI software under multi-year, time-based software license arrangements that vary in length but are generally five years. Under these arrangements the software is installed at the customer s location (i.e. on-premise). Within these agreements are specified capacity limits typically based on customer transaction volume. ACI employs measurement tools that monitor the number of transactions processed by customers and if contractually specified limits are exceeded, additional fees are charged for the overage. Capacity overages may occur at varying times throughout the term of the agreement depending on the product, the size of the customer, and the significance of customer transaction volume growth. Depending on specific circumstances, multiple overages or no overages may occur during the term of the agreement.

Included in license revenue are license and capacity fees that are payable at the inception of the agreement or annually (initial license fees). License revenue also includes license and capacity fees payable quarterly or monthly due to negotiated customer payment terms (monthly license fees). Under ASC 606 the Company recognizes revenue in advance of billings for software license arrangements with extended payment terms and adjusted for the effects of the financing component, if significant. Under ASC 605 the Company recognized revenue for those same software license arrangements as the fees became due and payable.

Total license revenue decreased $12.6 million, or 4%, during the year ended December 31, 2018, as compared to the same period in 2017. The application of ASC 606 resulted in a $0.8 million decrease in total license revenue for the year ended December 31, 2018. Total license revenue was $0.9 million higher for the year ended December 31, 2018, compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, total license revenue for the year ended December 31, 2018, decreased $12.7 million, or 4%, compared to the same period in 2017.

The decrease in total license revenue was primarily driven by the timing and relative size of license and capacity events during the year ended December 31, 2018, as compared to the same period in 2017.

Maintenance Revenue

Maintenance revenue includes standard and premium maintenance and any post contract support fees received from customers for the provision of product support services.

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Maintenance revenue decreased $2.9 million, or 1%, during the year ended December 31, 2018, as compared to the same period in 2017. The application of ASC 606 resulted in a $2.0 million decrease in total maintenance revenue for the year ended December 31, 2018. Total maintenance revenue was $1.2 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, total maintenance revenue for the year ended December 31, 2018, decreased $2.1 million, or 1%, compared to the same period in 2017.

Services Revenue

Services revenue includes fees earned through implementation services and other professional services. Implementation services include product installations, product configurations, and custom software modifications (CSMs). Other professional services include business consultancy, technical consultancy, on-site support services, CSMs, product education, and testing services. These services include new customer implementations as well as existing customer migrations to new products or new releases of existing products.

Services revenue decreased $6.4 million, or 8%, during the year ended December 31, 2018, as compared to the same period in 2017. The application of ASC 606 resulted in a $0.5 million decrease in total services revenue for the year ended December 31, 2018. Total services revenue was $0.3 million lower for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of certain foreign currencies weakening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, total services revenue for the year ended December 31, 2018, decreased $5.5 million, or 7%, compared to the same period in 2017. During the year ended December 31, 2017, we completed or neared completion of several large, complex projects that resulted in recognition of services revenue as the work was performed and the projects were completed. The number and magnitude of such projects was lower during the year ended December 31, 2018.

Operating Expenses

Total operating expenses for the year ended December 31, 2018, decreased $55.7 million, or 6%, as compared to the same period in 2017.

During the year ended December 31, 2017, there was $46.7 million of expense recorded related to the BHMI judgment. The application of ASC 606 resulted in a $7.5 million increase in total operating expenses for the year ended December 31, 2018, primarily due to differences in the timing of expense recognition for sales commissions. Total operating expenses were $3.0 million higher for the year ended December 31, 2018, compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of the BHMI judgment, applying ASC 606, and foreign currency, total operating expenses for the year ended December 31, 2018, decreased $19.5 million, or 2%, compared to the same period in 2017, primarily because of lower cost of revenue and depreciation and amortization expenses, partially offset by higher research and development, selling and marketing, and general and administrative expenses.

Cost of Revenue

Cost of revenue includes costs to provide SaaS and PaaS services, third-party royalties, amortization of purchased and developed software for resale, the costs of maintaining our software products, as well as the costs required to deliver, install, and support software at customer sites. SaaS and PaaS service costs include payment card interchange fees, amounts payable to banks, and payment card processing fees. Maintenance costs include the efforts associated with providing the customer with upgrades, 24-hour help desk, post go-live (remote) support, and production-type support for software that was previously installed at a customer location. Service costs include human resource costs and other incidental costs such as travel and training required for both pre go-live and post go-live support. Such efforts include project management, delivery, product customization and implementation, installation support, consulting, configuration, and on-site support.

Cost of revenue decreased $21.9 million, or 5%, during the year ended December 31, 2018, compared to the same period in 2017. Cost of revenue was $0.8 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of foreign currency, cost of revenue decreased $22.7 million, or 5%, for the year ended December 31, 2018, as compared to the same period in 2017, primarily due to lower personnel and related costs of $29.5 million, partially offset by a $6.8 million increase in payment card interchange and processing fees.

Research and Development

Research and development (R&D) expenses are primarily human resource costs related to the creation of new products, improvements made to existing products as well as compatibility with new operating system releases and generations of hardware.

R&D expense increased $6.7 million, or 5%, during the year ended December 31, 2018, as compared to the same period in 2017. R&D expense was $0.5 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of foreign currency, R&D expense increased $6.2 million, or 5%, for the year ended December 31, 2018, as compared to the same period in 2017, primarily due to an increase in personnel and related expenses.

Selling and Marketing

Selling and marketing includes both the costs related to selling our products to current and prospective customers as well as the costs related to promoting the Company, its products and the research efforts required to measure customers future needs and satisfaction levels. Selling costs are primarily the human resource and travel costs related to the effort expended to license our products and services to current and potential clients within defined territories and/or industries as well as the management of the overall relationship with customer accounts. Selling costs also include the costs associated with assisting distributors in their efforts to sell our products and services in their respective local markets. Marketing costs include costs incurred to promote the Company and its products, perform or acquire market research to help the Company better understand impending changes in customer demand for and of our products, and the costs associated with measuring customers opinions toward the Company, our products and personnel.

Selling and marketing expense increased $10.0 million, or 9%, during the year ended December 31, 2018, as compared to the same period in 2017. The application of ASC 606 resulted in a $7.5 million increase in selling and marketing expense for the year ended December 31, 2018, as compared to the same period in 2017. Selling and marketing expense was $0.8 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, selling and marketing expense increased $1.7 million, or 2%, for the year ended December 31, 2018, as compared to the same period in 2017, due to an increase in personnel and related expenses as the result of an increase in total bookings.

General and Administrative

General and administrative expenses are primarily human resource costs including executive salaries and benefits, personnel administration costs, and the costs of corporate support functions such as legal, administrative, human resources, and finance and accounting.

General and administrative expense decreased $45.6 million, or 30%, during the year ended December 31, 2018, as compared to the same period in 2017. During the year ended December 31, 2017, there was $46.7 million of general and administrative expense recorded related to the BHMI judgment. General and administrative expenses were $0.4 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to

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the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of the BHMI judgment and foreign currency, general and administrative expense increased $0.7 million, or 1%, for the year ended December 31, 2018, as compared to the same period in 2017, primarily due to an increase in personnel and related expenses.

Depreciation and Amortization

Depreciation and amortization decreased $4.8 million, or 5%, during the year ended December 31, 2018, as compared to the same period in 2017. Depreciation and amortization was $0.6 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of foreign currency, depreciation and amortization decreased $5.5 million, or 6%, for the year ended December 31, 2018, as compared to the same period in 2017.

Other Income and Expense

Interest expense for the year ended December 31, 2018, increased $2.5 million, or 6%, as compared to the same period in 2017, primarily due to the write-off of $1.7 million of deferred debt issuance costs from the redemption of our 6.375% Senior Notes due 2020 (the 2020 Notes), as well as higher interest rates on the Term Credit Facility during 2018.

Interest income includes the portion of software license fees paid by customers under extended payment terms that is attributed to the significant financing component. Interest income for the year ended December 31, 2018, increased $10.6 million, as compared to the same period in 2017, primarily due to the impact of adopting and applying ASC 606. Excluding the impact of adopting and applying ASC 606, interest income was flat.

Other, net consists of foreign currency loss and other non-operating items. Foreign currency loss for the years ended December 31, 2018 and 2017, was $3.7 million and $2.6 million, respectively.

Income Taxes

On December 22, 2017, the Tax Cuts and Jobs Act (Tax Act) was signed into U.S. Law. In December 2017, the SEC staff issued Staff Accounting Bulletin No. 118, *Income Tax Accounting Implications of the Tax Cuts and Jobs Act* (SAB 118), which allowed us to record provisional amounts during a measurement period not to extend beyond one year of the enactment date. As of December 31, 2018, we have completed our accounting for the tax effects of the enactment of the Tax Act. Refer to Note 13, *Income Taxes*, in the Notes to Consolidated Financial Statements in Part IV, Item 15 of this Form 10-K for further discussion.

The effective tax rates for the years ended December 31, 2018 and 2017, were approximately 25% and 88%, respectively. Our effective tax rates vary from our federal statutory rates due to operating in multiple foreign countries where we apply foreign tax laws and rates which differ from those we apply to the income generated from our domestic operations. Of the foreign jurisdictions in which we operate, our December 31, 2018, effective rate was most impacted by our operations in Ireland and Luxembourg, and our December 31, 2017, effective tax rate was most impacted by our operations in Ireland, South Africa, and the United Kingdom. Excluding the impact of the Tax Act, the effective tax rate for the year ended December 31, 2018, was increased by the expensing of withholding taxes that cannot be credited against the recipient s tax liability in the country of residence. Excluding the impact of the Tax Act, the effective tax rate for the year ended December 31, 2017, was increased by the inclusion of certain foreign earnings in our U.S. tax return, offset by the tax benefit from foreign operations that are taxed at lower rates than the domestic rate.

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Year Ended December 31, 2017, Compared to Year Ended December 31, 2016

	2017				2016	
	Amount	% of Total Revenue	$ Change vs 2016	% Change vs 2016	Amount	% of Total Revenue
Revenues:						
Software as a service and platform as a service	$ 425,572	42%	$ 14,283	3%	$ 411,289	41%
Initial license fees (ILFs)	215,002	21%	11,846	6%	203,156	20%
Monthly license fees (MLFs)	78,122	8%	7,812	11%	70,310	7%
License	293,124	29%	19,658	7%	273,466	27%
Maintenance	222,071	22%	(11,405)	-5%	233,476	23%
Services	83,424	8%	(4,046)	-5%	87,470	9%
Total revenues	1,024,191	100%	18,490	2%	1,005,701	100%
Operating expenses:						
Cost of revenue	452,286	44%	7,372	2%	444,914	44%
Research and development	136,921	13%	(32,979)	-19%	169,900	17%
Selling and marketing	107,885	11%	(10,197)	-9%	118,082	12%
General and administrative	153,032	15%	39,415	35%	113,617	11%
Gain on sale of CFS assets		0%	151,463	100%	(151,463)	-15%
Depreciation and amortization	89,427	9%	(94)	0%	89,521	9%
Total operating expenses	939,551	92%	154,980	20%	784,571	78%
Operating income	84,640	8%	(136,490)	-62%	221,130	22%
Other income (expense):						
Interest expense	(39,013)	-4%	1,171	-3%	(40,184)	-4%
Interest income	564	0%	34	6%	530	0%
Other, net	(2,619)	0%	(6,724)	-164%	4,105	0%
Total other income (expense)	(41,068)	-4%	(5,519)	16%	(35,549)	-4%
Income before income taxes	43,572	4%	(142,009)	-77%	185,581	18%
Income tax expense	38,437	4%	(17,609)	-31%	56,046	6%
Net income	$ 5,135	1%	$ (124,400)	-96%	$ 129,535	13%

Revenues

Total revenue for the year ended December 31, 2017, increased $18.5 million, or 2%, as compared to the same period in 2016. The increase is the result of a $19.7 million, or 7%, increase in license revenue and a $14.3 million, or 3%, increase in SaaS and PaaS revenue, partially offset by an $11.4 million, or 5%, decrease in maintenance revenue, and a $4.1 million, or 5%, decrease in services revenue.

The CFS divestiture resulted in a $15.4 million decrease in total revenue for the year ended December 31, 2017, as compared to the same period in 2016. Total revenue was $5.0 million higher for the year ended December 31, 2017, compared to the same period in 2016 due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, total revenue for the year ended December 31, 2017, increased $28.9 million, or 3%, compared to the same period in 2016 primarily as a result of increases in license and SaaS and PaaS revenue partially offset by decreases in maintenance and services revenue.

SaaS and PaaS Revenue

SaaS and PaaS revenue increased $14.3 million, or 3%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in a $13.5 million decrease in SaaS and PaaS revenue

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during the year ended December 31, 2017. The impact of foreign currencies on SaaS and PaaS revenue during the year ended December 31, 2017, was neutral. Excluding the impact of CFS, total SaaS and PaaS revenue for year ended December 31, 2017, increased $27.8 million, or 7%, compared to the same period in 2016, which is primarily attributable to new customers adopting our SaaS and PaaS-based offerings and existing customers adding new functionality or increasing transaction volumes.

Initial License Revenue

Initial license revenue includes license and capacity revenues that do not recur on a monthly or quarterly basis. Included in initial license revenue are license and capacity fees that are recognizable at the inception of the agreement and license and capacity fees that are recognizable at interim points during the term of the agreement, including those that are recognizable annually due to negotiated customer payment terms.

Initial license revenue increased $11.8 million, or 6%, during the year ended December 31, 2017, as compared to the same period in 2016. Initial license revenue was $4.5 million higher for year ended December 31, 2017, compared to the same period in 2016 due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of foreign currency, initial license revenue for the year ended December 31, 2017, increased $7.3 million, or 4%, compared to the same period in 2016.

The increase in initial license revenue was primarily driven by an increase in non-capacity-related license revenue of $18.5 million partially offset by a decrease in capacity-related license revenue of $11.3 million during the year ended December 31, 2017, compared to the same period in 2016. The changes in non-capacity-related and capacity-related license revenue were attributable to the timing and relative size of license renewal arrangements that were signed and capacity events that occurred during the year ended December 31, 2017, as compared to the same period in 2016.

Monthly License Revenue

Monthly license revenue is license and capacity revenue that is paid monthly or quarterly due to negotiated customer payment terms as well as initial license and capacity fees that are recognized as revenue ratably over an extended period.

Monthly license revenue increased $7.8 million, or 11%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in decreased monthly license revenue of $0.4 million during the year ended December 31, 2017. Total monthly license revenue was $0.4 million lower for the year ended December 31, 2017, compared to the same period in 2016 due to the impact of certain foreign currencies weakening against the U.S. dollar. Excluding the impact of CFS and foreign currency, monthly license revenue for the year ended December 31, 2017, increased $8.5 million, or 12%, compared to the same period in 2016.

The increase in monthly license revenue is primarily attributable to the timing and relative size of license renewal arrangements that were signed during the years ended December 31, 2016 and 2017.

Maintenance Revenue

Maintenance revenue decreased $11.4 million, or 5%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in decreased maintenance revenue of $0.4 million during the year ended December 31, 2017. Total maintenance revenue was $0.3 million higher for the year ended December 31, 2017, as compared to the same period in 2016 due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, total maintenance revenue for the year ended December 31, 2017, decreased $11.3 million, or 5%, compared to the same period in 2016.

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The decrease in maintenance revenue is primarily attributable to the recognition of cumulative deferred maintenance revenue for certain customer contracts due to meeting required revenue recognition criteria during the year ended December 31, 2016, and certain customers electing to cancel premium maintenance prior to the year ended December 31, 2017. These decreases were partially offset by maintenance revenue from sales of licensed products to new and existing customers prior to and during the year ended December 31, 2017.

Services Revenue

Services revenue decreased $4.1 million, or 5%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in decreased services revenue of $1.1 million during the year ended December 31, 2017. Total services revenue was $0.6 million higher for the year ended December 31, 2017, as compared to the same period in 2016 due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, total services revenue for the year ended December 31, 2017, decreased $3.5 million, or 4%, compared to the same period in 2016.

During the year ended December 31, 2016, we completed or neared completion of several large, complex projects that resulted in recognition of services revenue as the work was performed and the projects were completed. The number and magnitude of such projects was lower during the year ended December 31, 2017. Additionally, our customers continue to transition from on-premise to on-demand software solutions. Services work performed in relation to our on-demand software solutions is recognized over a longer service period and is classified as SaaS and PaaS revenue.

Operating Expenses

Total operating expenses during the year ended December 31, 2017, increased $3.5 million as compared to the same period in 2016, excluding the gain on sale of CFS assets.

The CFS divestiture resulted in a $15.2 million decrease in total operating expenses for the year ended December 31, 2017, compared to the same period in 2016. In the year ended December 31, 2017, there was $46.7 million of expense recorded in relation to the BHMI judgment. Total operating expenses were $2.1 million higher for the year ended December 31, 2017, compared to the same period in 2016, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS, the BHMI judgment, and foreign currency, operating expenses decreased $30.1 million, or 3%, for the year ended December 31, 2017, compared to the same period in 2016, principally reflecting decreases in research and development expense and selling and marketing expense, partially offset by an increase in cost of revenue, general and administrative expense, and depreciation and amortization expense.

Cost of Revenue

Cost of revenue increased $7.4 million, or 2%, during the year ended December 31, 2017, compared to the same period in 2016. The CFS divestiture resulted in a decrease of $10.4 million in cost of revenue for the year ended December 31, 2017. Cost of revenue was approximately $0.2 million higher due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, cost of revenue increased $17.6 million, or 4%, for the year ended December 31, 2017, compared to the same period in 2016, primarily due to a $19.8 million increase in payment card interchange and processing fees.

Research and Development

Research and development expense decreased $33.0 million, or 19%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in a decrease of $1.6 million in research and development expense for the year ended December 31, 2017. Research and development expenses were $1.0 million higher for the year ended December 31, 2017, compared to the same period in 2016, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, research and development expenses decreased $32.4 million, or 19%, for the year ended December 31, 2017, compared to the same period in 2016, primarily due to a decrease in personnel and related expenses, including a $12.3 million decrease in stock-based compensation. Research and development costs were also lower due to a $4.1 million increase in net deferred expenses and a $2.5 million decrease in third-party contractor costs.

Selling and Marketing

Selling and marketing expense decreased $10.2 million, or 9%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in a decrease of $1.6 million in selling and marketing expense for the year ended December 31, 2017. Selling and marketing expense was $0.1 million higher for the year ended December 31, 2017, as compared to the same period in 2016, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, selling and marketing expense decreased $8.7 million, or 7%, for the year ended December 31, 2017, compared to the same period in 2016, primarily due to a decrease in personnel and related expenses as a result of a decrease in new bookings and a $4.0 million decrease in stock-based compensation expense.

General and Administrative

General and administrative expense increased $39.4 million, or 35%, during the year ended December 31, 2017, as compared to the same period in 2016. For the year ended December 31, 2017, $46.7 million of expense was recorded in relation to the BHMI judgment. The CFS divestiture resulted in a decrease in general and administrative expenses of $1.0 million for the year ended December 31, 2017. General and administrative expense was approximately $0.6 million higher for the year ended December 31, 2017, as compared to the same period in 2016, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS, the BHMI judgment, and foreign currency, general and administrative expense decreased $6.9 million, or 6%, for the year ended December 31, 2017, compared to the same period in 2016.

Gain on Sale of CFS Assets

On March 3, 2016, we completed the sale of our CFS related assets and liabilities to Fiserv for $200.0 million and recognized a pre-tax gain of $151.5 million for the year ended December 31, 2016.

Depreciation and Amortization

Depreciation and amortization decreased $0.1 million during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in a $0.6 million decrease in depreciation and amortization for the year ended December 31, 2017. Depreciation and amortization expense were approximately $0.2 million higher for the year ended December 31, 2017, as compared to the same period in 2016, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, depreciation and amortization expense increased $0.3 million for the year ended December 31, 2017, compared to the same period in 2016.

Other Income and Expense

Interest expense for the year ended December 31, 2017, decreased $1.2 million, or 3%, as compared to the same period in 2016 primarily due to lower comparative debt balances. Interest income was flat year over year.

Other, net consists of foreign currency gain (loss). Foreign currency gain (loss) for the years ended December 31, 2017 and 2016, were a $2.6 million loss and a $4.1 million gain, respectively.

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Income Taxes

On December 22, 2017, the Tax Act was signed into U.S. law, which made broad and complex changes to the U.S. tax code affecting 2017 and later years. On December 22, 2017, the SEC staff issued SAB 118, providing guidance on accounting for the tax effects of the Tax Act. SAB 118 provides a measurement period that should not extend beyond one year from the Tax Act enactment date for companies to complete the accounting under ASC 740, *Income Taxes*.

The Tax Act reduced the U.S. federal corporate income tax rate from 35% to 21%, effective January 1, 2018. We recorded a $15.0 million provisional tax charge for the year ended December 31, 2017, resulting from remeasuring net deferred tax assets and liabilities. We also recorded a $20.9 million provisional tax charge for the year ended December 31, 2017, related to a one-time transition tax on certain unremitted foreign earnings as required by the Tax Act.

The effective tax rates for the years ended December 31, 2017 and 2016, were approximately 88% and 30%, respectively. The effective tax rates vary from our federal statutory rates due to operating in multiple foreign countries where we apply foreign tax laws and rates which differ from those we apply to the income generated from our domestic operations. Of the foreign jurisdictions in which we operate, our December 31, 2017 and 2016, effective tax rates were most impacted by our operations in Ireland, South Africa, and the United Kingdom. Excluding the impact of the Tax Act, the effective tax rate for the year ended December 31, 2017, was increased by the inclusion of certain foreign earnings in our U.S. tax return, offset by the tax benefit from foreign operations that are taxed at lower rates than the domestic rate, The effective tax rate for the year ended December 31, 2016, was increased by the inclusion of certain foreign earnings in our U.S. tax return, offset by the tax benefit from foreign operations that are taxed at lower rates than the domestic rate. The effective tax rate for the year ended December 31, 2016, was also reduced by net release of $9.0 million in valuation allowance primarily related to U.S. foreign tax credits.

Segment Results

We report financial performance based on our segments, ACI On Premise and ACI On Demand, and analyze Segment Adjusted EBITDA as a measure of segment profitability.

Our Chief Executive Officer is also our chief operating decision maker, or CODM. The CODM, together with other senior management personnel, focus their review on consolidated financial information and the allocation of resources based on operating results, including revenues and Segment Adjusted EBITDA, for each segment, separate from corporate operations.

ACI On Premise serves customers who manage their software on site. These on-premise customers use the Company s software to develop sophisticated solutions, which are often part of a larger system located and managed at the customer specified site. These customers require a level of control and flexibility that ACI On Premise solutions can offer, and they have the resources and expertise to take a lead role in managing these solutions.

ACI On Demand serves the needs of banks, merchants and corporates who use payments to facilitate their core business. These on-demand solutions are maintained and delivered through the cloud via our global data centers and are available in either a single-tenant environment, SaaS offerings, or in a multi-tenant environment, PaaS offerings.

Revenue is attributed to the reportable segments based upon the product sold and mechanism for delivery to the customer. Expenses are attributed to the reportable segments in one of three methods, (1) direct costs of the segment, (2) labor costs that can be attributed based upon time tracking for individual products, or (3) costs that are allocated. Allocated costs are generally marketing and sales related activities as well as information technology and facilities related expense for which multiple segments benefit. The Company also allocates certain depreciation costs to the segments.

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Segment Adjusted EBITDA is the measure reported to the CODM for purposes of making decisions on allocating resources and assessing the performance of the Company s segments and, therefore, Segment Adjusted EBITDA is presented in conformity with ASC 280, *Segment Reporting*. Segment Adjusted EBITDA is defined as earnings (loss) from operations before interest, income tax expense (benefit), depreciation and amortization (EBITDA) adjusted to exclude stock-based compensation, and net other income (expense). During the first quarter of 2018, we changed the presentation of our segment measure of profit and loss. As a result, the 2017 and 2016 segment disclosures have been recast to conform with the 2018 presentation.

Corporate and unallocated expenses consists of the corporate overhead costs that are not allocated to reportable segments. These overhead costs relate to human resources, finance, legal, accounting, merger and acquisition activity, and other costs that are not considered when management evaluates segment performance.

The following is selected financial data for the Company s reportable segments for the periods indicated (in thousands):

	Years Ended December 31,		
	2018	**2017**	**2016**
Revenues			
ACI On Premise	$ 576,755	$ 598,590	$ 591,252
ACI On Demand	433,025	425,601	399,033
Corporate and other			15,416
Total revenue	$ 1,009,780	$ 1,024,191	$ 1,005,701
Segment Adjusted EBITDA			
ACI On Premise	$ 323,902	$ 347,094	$ 312,188
ACI On Demand	12,015	(1,832)	(2,624)
Depreciation and amortization	(97,350)	(102,224)	(103,454)
Stock-based compensation expense	(20,360)	(13,683)	(43,613)
Corporate and unallocated expenses	(92,296)	(144,715)	58,633
Interest, net	(30,388)	(38,449)	(39,654)
Other, net	(3,724)	(2,619)	4,105
Income before income taxes	$ 91,799	$ 43,572	$ 185,581
Depreciation and amortization			
ACI On Premise	$ 11,634	$ 13,094	$ 14,581
ACI On Demand	31,541	34,171	29,385
Corporate	54,175	54,959	59,488
Total depreciation and amortization	$ 97,350	$ 102,224	$ 103,454
Stock-based compensation expense			
ACI On Premise	$ 4,348	$ 2,234	$ 6,894
ACI On Demand	4,338	2,230	6,876
Corporate and other	11,674	9,219	29,843
Total stock-based compensation expense	$ 20,360	$ 13,683	$ 43,613

ACI On Premise Segment Adjusted EBITDA decreased $23.2 million for the year ended December 31, 2018, compared to the same period in 2017. The application of ASC 606 resulted in a $3.8 million decrease in Segment Adjusted EBITDA. Excluding the impact of applying ASC 606, ACI On Premise Segment Adjusted EBITDA decreased $19.4 million primarily due to a $18.5 million decrease in revenue and a $1.6 million increase in operating expenses.

ACI On Demand Segment Adjusted EBITDA increased $13.8 million for the year ended December 31, 2018, compared to the same period in 2017. The application of ASC 606 resulted in a $3.6 million decrease in Segment Adjustment EBITDA. Excluding the impact of applying ASC 606, ACI On Demand Segment Adjusted EBITDA increased $17.5 million primarily due to a $6.5 million increase in revenues and a $11.4 million decrease in operating expenses.

ACI On Premise Segment Adjusted EBITDA increased $34.9 million for the year ended December 31, 2017, compared to the same period in 2016, primarily due to a $19.7 million increase in license revenue, partially offset by a $11.4 million decrease in maintenance revenue, and a $27.7 million decrease in operating expenses.

ACI On Demand Segment Adjusted EBITDA increased $0.8 million for the year ended December 31, 2017, compared to the same period in 2016, primarily due to a $26.6 million increase in revenue, offset by a $25.9 million increase in operating expenses.

Corporate and unallocated expenses included 1) the BHMI judgment of $46.7 million recognized during the year ended December 31, 2017, and 2) revenue and operating income and the gain on sale of CFS assets and liabilities of $15.4 million and $151.7 million, respectively, recognized during the year ended December 31, 2016.

Liquidity and Capital Resources

General

Our primary liquidity needs are: (i) to fund normal operating expenses; (ii) to meet the interest and principal requirements of our outstanding indebtedness; and (iii) to fund acquisitions, capital expenditures and lease payments. We believe these needs will be satisfied using cash flow generated by our operations, cash and cash equivalents, and available borrowings under our revolving credit facility.

Available Liquidity

The following table sets forth our available liquidity for the periods indicated (in thousands):

	December 31,	
	2018	**2017**
Cash and cash equivalents	$ 148,502	$ 69,710
Availability under revolving credit facility	500,000	498,000
Total liquidity	$ 648,502	$ 567,710

The increase in total liquidity is primarily attributable to positive operating cash flows of $183.9 million, offset by repurchases of common stock of $54.5 million and $43.9 million of payments to purchase property and equipment and software and distribution rights.

Cash and cash equivalents consist of highly liquid investments with original maturities of three months or less. As of December 31, 2018, we had $148.5 million in cash and cash equivalents, of which $80.8 million was held by our foreign subsidiaries. If these funds were needed for our operations in the U.S., we may potentially be required to pay foreign and U.S. state income taxes to repatriate these funds. As of December 21, 2018, we considered only the earnings in our Indian foreign subsidiaries to be indefinitely reinvested. We consider the earnings of all other foreign entities to be no longer indefinitely reinvested. In additional to the Indian foreign earnings, we are also permanently reinvested for outside book/tax basis difference related to foreign subsidiaries. These outside basis differences could reverse through sales of the foreign subsidiaries, as well as various other events, none of which are considered probable as of December 31, 2018.

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Cash Flows

The following table sets forth summary cash flow data for the periods indicated (in thousands).

	Years Ended December 31,		
	2018	**2017**	**2016**
Net cash provided by (used in):			
Operating activities	$ 183,932	$ 146,197	$ 99,830
Investing activities	(45,360)	(54,414)	129,633
Financing activities			