SINGULAR FOCUS
MULTIPLE DIMENSIONS

2019 ANNUAL REPORT

Since 1997, Tyler Technologies' **singular focus** has been providing software and technology services to the public sector. While this remains our focus, 2019 was a year that highlighted and amplified the **multiple dimensions** of our growing company.

We serve multiple levels of public sector clients, from local to national. The 2019 acquisition of MicroPact added federal clients such as NASA and the Department of Justice to our extensive roster of municipalities, counties, states and other government entities.

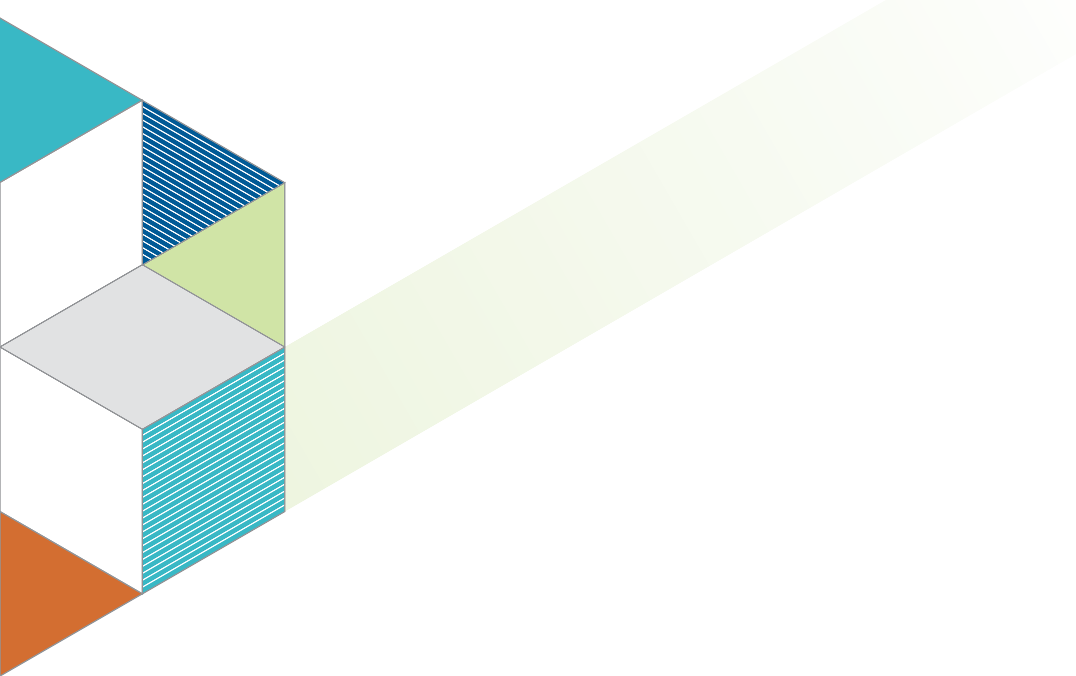
We engage with multiple levels of technology, from back-office systems of record that feed, access, and aggregate data, to process integration with workflows across systems, to the applications that provide better access to government for community residents. We provide end-to-end software and services options designed to accommodate each client's unique situation, whether they're moving from manual processes or already engaged in advanced digital workflow.

We deliver solutions in multiple ways. From locally installed, client-hosted systems to secure, reliable cloud-based offerings, we facilitate hosting environments that work best for our clients.

We envision a dynamic future. Our vision of helping our clients create connected communities – where data, processes, and people work together to make communities safer, smarter, and more responsive – is multilayered, with a long-term roadmap for connecting data between departments and agencies and across jurisdictions and geographical boundaries.

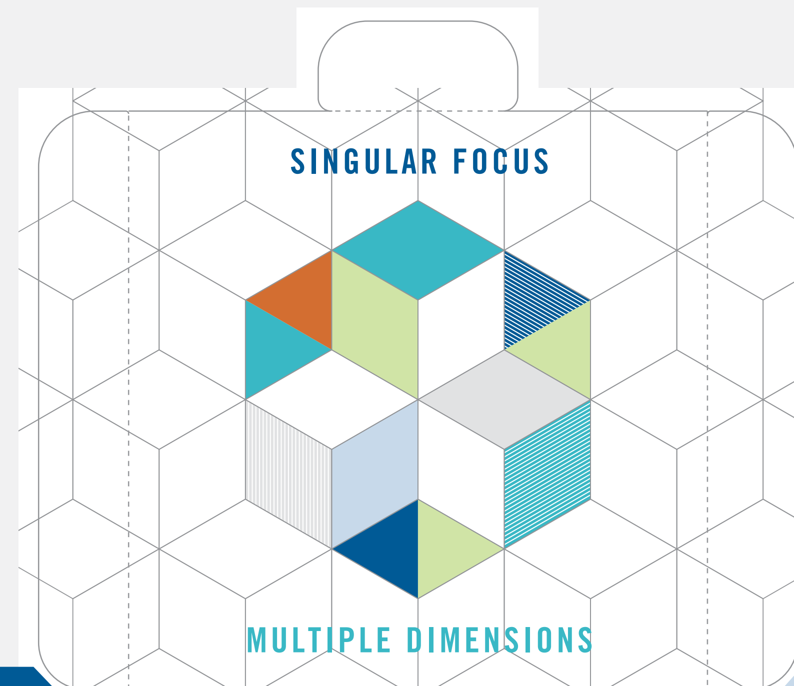
Finally, **we are accountable** to multiple stakeholders, including public servants, community residents, our employees, and our shareholders, and we take our responsibilities to each of these groups very seriously.

We empower the people who serve the public in multiple ways every day.



The integrated software and technology services Tyler provides to the public sector help make government more responsive to the people it serves.

At Tyler Technologies, our **singular focus** is on providing powerful software and information technology to the public sector. Our successful growth is a direct result of our ability to consistently deliver on this mission with **multiple dimensions** of solutions.



Expanding Our Market in the Public Sector

Municipal
District
County
State
Federal
International

Serving a Range of Stakeholders

Public Servants
Community Residents
Employees
Shareholders

Empowering Greater Client Performance

Performance Optimization
Citizen Engagement
Operational Intelligence
Financial Insights
Analysis & Visualization

Reaching New Levels of Success

$1.09B GAAP Revenues in 2019

16.2% Revenue Growth Over 2018

33 Consecutive Quarters of Double-Digit Growth

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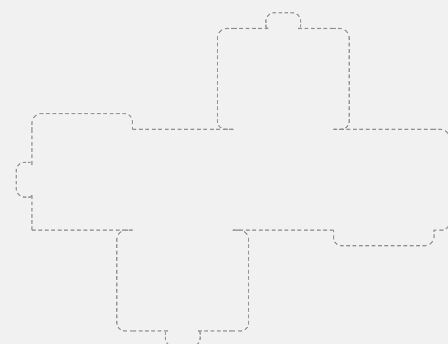
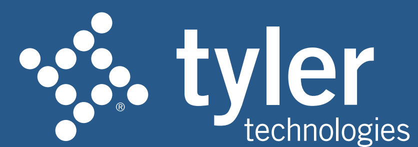
2 Separate cube at perforations, fold, and assemble into cube.





To Our Fellow Shareholders

A MESSAGE FROM PRESIDENT & CEO LYNN MOORE JR.

In 2019, Tyler Technologies achieved another year of double-digit growth and strong financial results, with significant acquisitions, powerful research and development investments, and the major milestone of realizing more than $1 billion in revenues for the first time. Our continued success validates our strategy of a singular focus of serving the mission-critical needs of the public sector, backed by a strong balance sheet and strategic investments that bolster our market leadership. This singular focus is executed through multiple dimensions of products and services, technologies, and markets served.

33

consecutive quarters of double-digit growth

28.6%

increase in R&D investment

$254.7M

cash provided by operations

"One notable win was the largest contract in Tyler history... valued at approximately $85 million."

Becoming a Billion Dollar Company

In 2019, Tyler achieved total GAAP revenues of $1.086 billion, an increase of 16.2% from 2018. The fourth quarter of 2019 was our 33rd consecutive quarter of double-digit revenue growth. Non-GAAP revenue increased to $1.091 billion, a 16.1% increase. In addition, organic growth accelerated in each of the last three quarters of the year.

GAAP net income for 2019 was $146.5 million, or $3.65 per diluted share, down 0.6%. The decline is primarily due to higher amortization of intangible assets related to acquisitions. Non-GAAP net income for the year was $212.6 million, or $5.30 per diluted share, a 10.3% increase.

In 2019, cash provided from operations rose 1.8% from 2018 to $254.7 million; free cash flow declined 4.5%. Our backlog at year's end was $1.46 billion, up 16.9% from the previous year's record level.

Strong Win Rates

Win rates in 2019 were solid across all our solution suites. One notable win was the largest contract in Tyler history: a 10-year software-as-a-service (SaaS) arrangement with the state of North Carolina for our Odyssey® courts suite and e-filing services, valued at approximately $85 million and our 15th statewide Odyssey contract. Another major Odyssey SaaS subscription with Bexar County, Texas, was valued at $20 million.

Other prominent 2019 wins include:

City of Stockton, California
A $9.9 million contract with Tyler solutions, including Munis® ERP, Tyler EAM™ (Enterprise Asset Management), ExecuTime™, and Socrata®

District of Columbia
A $7.7 million SaaS arrangement for Odyssey court case management

Guilford County, North Carolina
A $5 million contract for Munis ERP

Union County Public Schools, North Carolina
A $4.3 million SaaS arrangement for Munis ERP

Minneapolis, Minnesota
A $3.3 million SaaS contract for iasWorld Tax™

Berks County, Pennsylvania
A $2.9 million contract for iasWorld Tax

Cleveland, Ohio, Municipal Courts
A $2.8 million arrangement for Odyssey court case management

Ramsay County, Minnesota
A $2.5 million contract with Tyler solutions, including iasWorld Tax and iasWorld Public Access™

Broken Arrow, Oklahoma
A $1.8 million deal with Tyler solutions, including Munis, Tyler EAM, ExecuTime, and Socrata Open Finance™

The Shift to the Cloud

As the landmark North Carolina and Bexar County contracts mentioned above suggest, we are seeing a continuing shift to preferences for our SaaS model as opposed to our licensed, on-premises model.

In 2019, for the first time, subscription-based arrangements made up a majority of our new software contract value – 63%. Of our software revenue, $296 million was from subscriptions and $531 million from license and maintenance arrangements.

Although the ongoing shift to subscription arrangements creates a near-term headwind to revenue growth, it provides a long-term opportunity for significantly higher revenues over the life of a client relationship. Bookings growth in 2019 of 32.3% was strong, as we signed 1,109 new software contracts in 2019, with 54% being subscription arrangements.

Going forward, Tyler remains committed to meeting our clients' software needs, whether their preference is for SaaS or on-premises solutions.

"In 2019, for the first time, subscription-based arrangements made up a majority of our new software contract values."

SOFTWARE REVENUES

$296M

subscription revenue

$531M

license & maintenance revenue

NEW CLOUD CONTRACTS

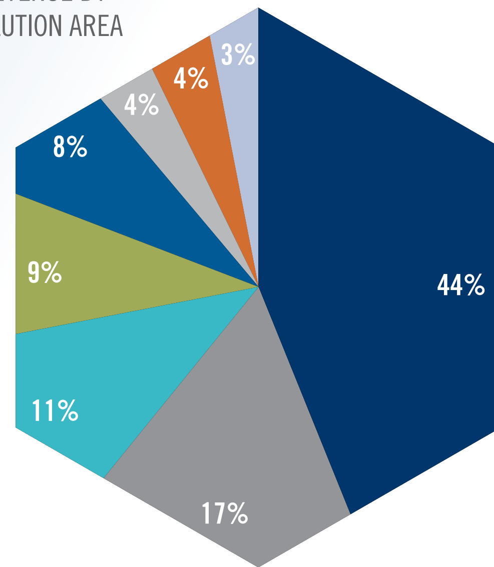
63%

of total contract value of new software arrangements, up from 41% in 2018

Accelerating Our Move to the Cloud Through a New Strategic Partnership

To more efficiently accommodate our public sector clients who desire public-cloud-based solutions, Tyler entered into a strategic collaboration agreement with Amazon Web Services (AWS) in the fourth quarter of 2019. The agreement deepens our existing relationship, leveraging the AWS cloud to lay the groundwork for the future of cloud services for the public sector. As Tyler continues to evolve its applications in response to our clients' needs, this collaboration will allow clients to deliver better experiences for citizens and further enable governments to use data as a strategic asset in the design, management and delivery of programs.

REVENUE BY SOLUTION AREA



- ERP/Financial: 44%
- Courts & Justice: 17%
- Public Safety: 11%
- Appraisal & Tax: 9%
- Platform Technologies*: 8%
- K-12 Schools: 4%
- Civic Services: 4%
- Land & Vital Records: 3%

*Includes Socrata and MicroPact revenue

Strategic Acquisitions

As our 11 acquisitions in the past three years demonstrate, Tyler is always ready to build value by opportunistically acquiring strategic assets that broaden our capabilities, strengthen our competitive position, and expand our addressable market.

2019 acquisitions include:

MicroPact, which augments our product solutions with a versatile, low-code development platform, positions us in new practice areas, and presents opportunities to expand across new markets, including the federal space.

MyCivic™, which elevates our citizen-facing solutions by enabling clients to provide a single app for citizens to interact with their local government in multiple ways.

Courthouse Technologies, which enhances our existing offerings for courts with a SaaS jury management systems solution.

Growth-Focused Research and Development

In 2019, we saw our second consecutive year of increasing R&D investment. Our total R&D spend in 2019 grew by 28.6% to $81.3 million. We devoted our increased R&D dollars broadly across our solutions suites, adding new features and applications that will meet the evolving needs of our clients, solidify our market leadership, and drive future growth.

Though our increased R&D investment has created a short-term headwind to margin expansion, we believe the long-term results that new and enhanced products will realize in the market in the years ahead will strengthen our ability to compete and succeed. As we move into 2020, we will continue to invest strategically as opportunities arise; however, we expect R&D growth to moderate over time, expanding more in line with revenue growth.

Maintaining a Strong Balance Sheet

We finished 2019 with an extraordinarily strong balance sheet, giving us tremendous flexibility to take advantage of opportunities to build shareholder value – whether through internal investments, acquisitions, or stock repurchases. As of December 31, 2019, Tyler Technologies had zero debt, $314 million in cash and investments, and $400 million in available liquidity from our new revolving credit facility.

0
debt

$314M
in cash and investments

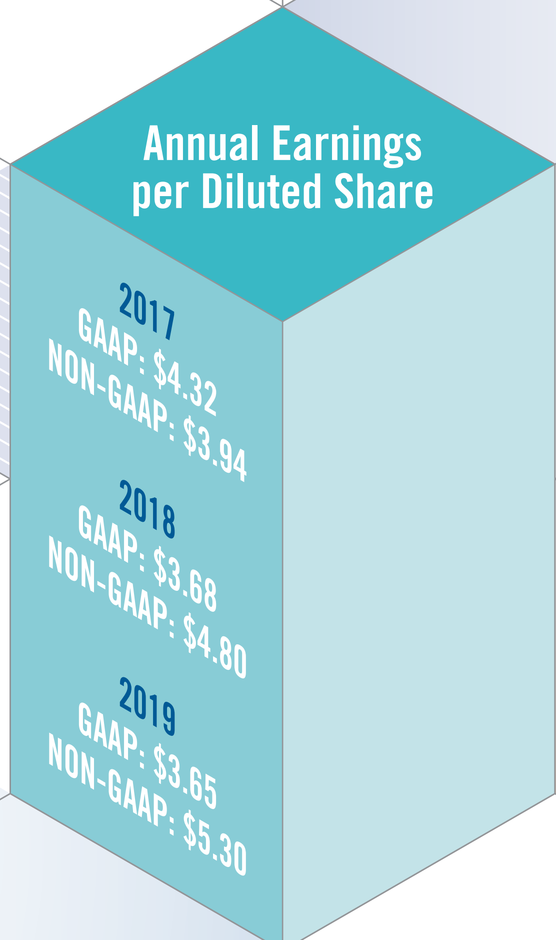
$400M
in available liquidity from our new revolving credit facility

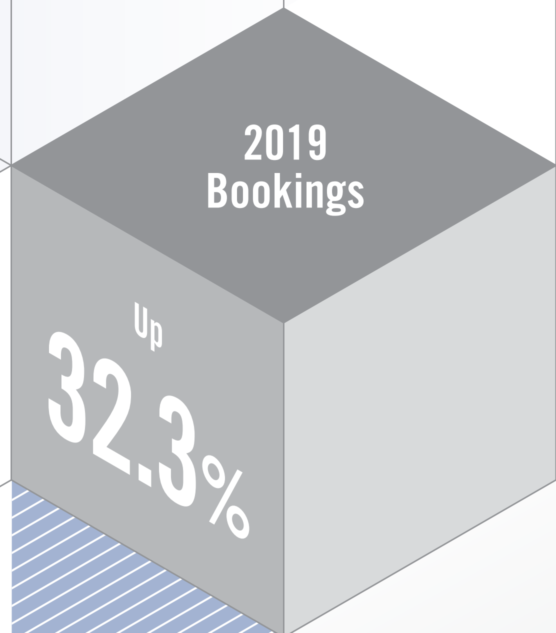
Looking Ahead

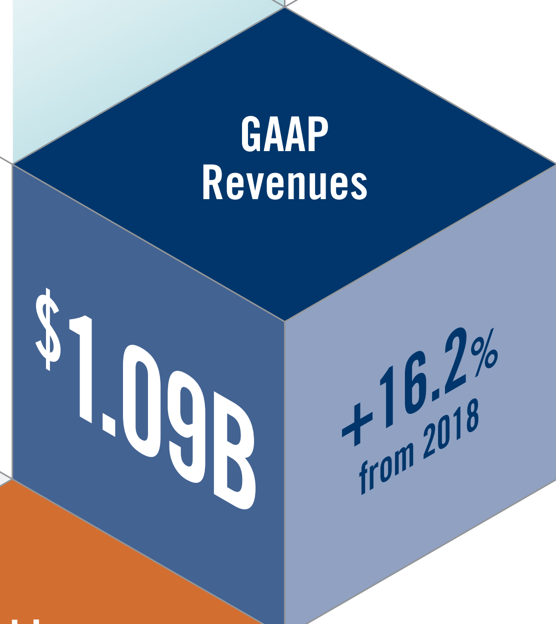
As I complete my first full year as Tyler's CEO, I'm honored to work each day with such a talented and dedicated team. This was a year of milestones for Tyler, and we pause here to celebrate them – and the Tyler team members who make these milestones possible – as we remain focused on finding new ways to serve the public sector even more effectively in the years ahead.

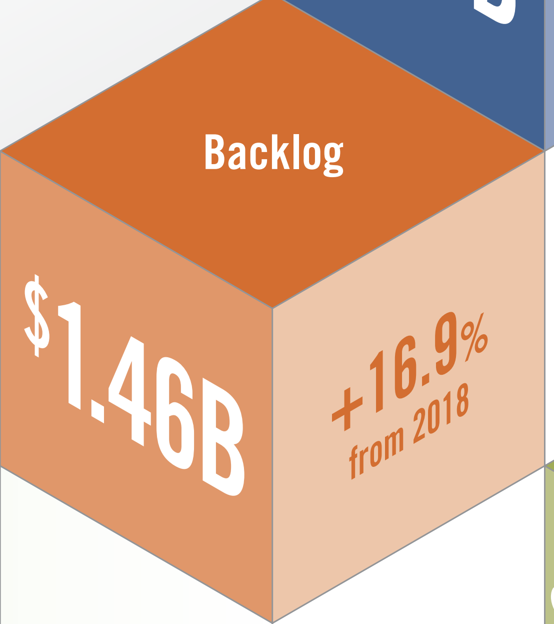
H. Lynn Moore, Jr.
President & Chief Executive Officer
February 18, 2020

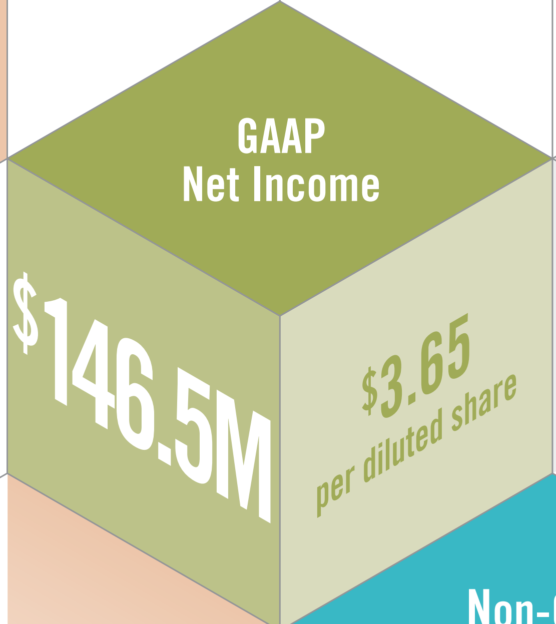
2019 Financial Highlights

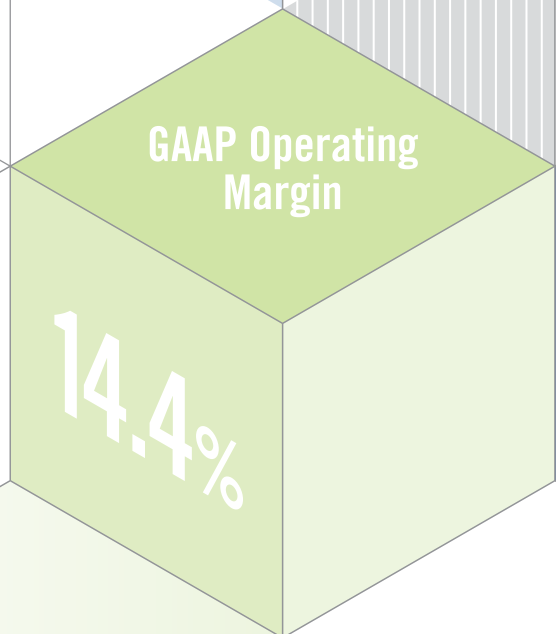


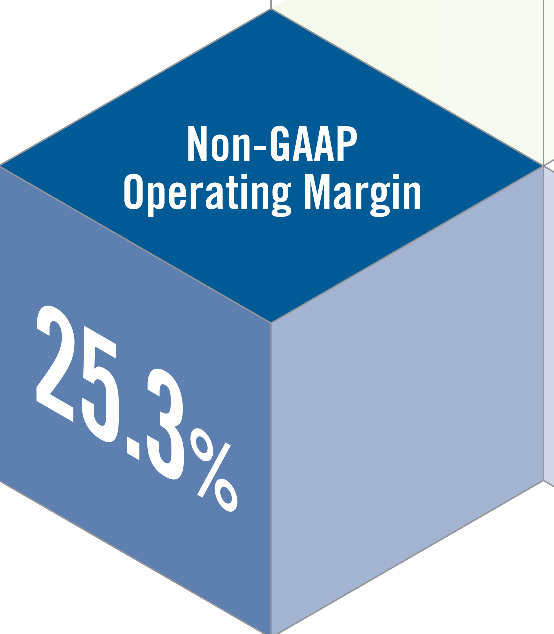


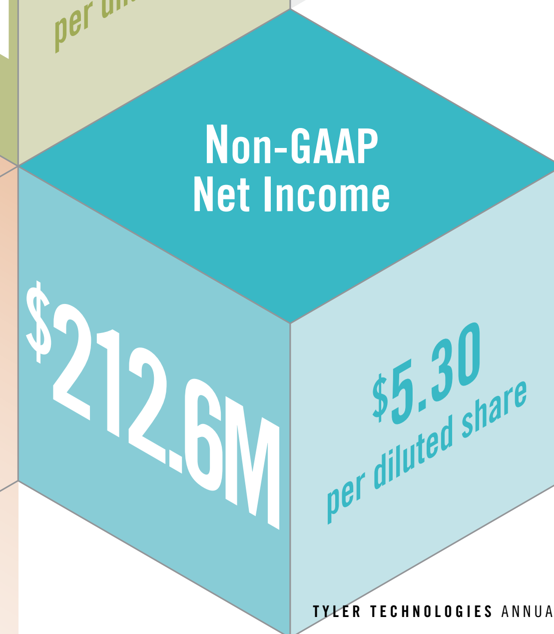












Reaching New Heights

A YEAR OF MILESTONES

IN 2019, TYLER TECHNOLOGIES REACHED SEVERAL MAJOR MILESTONES:

REVENUES
$1.09B

R&D INVESTMENT
$81M

NUMBER OF TEAM MEMBERS
5,500

SINGLE CONTRACT VALUE
$85M
for NC Courts Deal

TYLER CONNECT CONFERENCE ATTENDANCE
6,868

The annual Tyler Connect conference, with former President George W. Bush as featured speaker, saw record attendance in 2019.

A Singular Focus, a Solid Foundation

Tyler Technologies is the largest software company focused exclusively on serving the public sector. Our financial strength, deep expertise, and breadth of solutions have provided the foundation for steady growth and market leadership.

SERVING AT THE

CITY LEVEL

MAKING DATA SHARING MORE COMPLETE IN ST. PETE

The city of St. Petersburg, Florida, is working with Tyler to build on the success of its Socrata-powered StPeteStat open data portal. StPeteStat is expanding from 12 to 18 city departments, enabling them to use dynamic, real-time data to improve program performance and service delivery, informing mission-critical decisions about water, planning, code compliance and more. The portal also allows the public to see how the city is responding to common constituent issues.

3,500
City employees

270,000
Residents

18
City departments with StPeteStat

Average time to conduct city fire inspections

Before StPeteStat:
103 days

After StPeteStat:
4 days

Saint Petersburg

Dimensions of Experience

With decades of experience exclusively focused on the public sector, Tyler is a stable presence in a fragmented market. The fact is, we know the public sector like no one else.

Of our 5,500+ team members, 1 out of 3 has worked in the public sector.

Tyler has successfully completed 26K+ implementations, across 10K+ locations.

We have public sector clients in all 50 states plus Canada, the Caribbean, Australia, Europe, and other international locations.

Moreover, Tyler offers the widest range of solutions for the public sector, including:

- Appraisal & Tax
- Civic Services
- Corrections
- Courts & Justice
- Cybersecurity
- Data & Insights
- ERP Financial
- Health & Human Services
- Land & Official Records
- Public Safety
- Regulatory
- School Financial
- Student Information
- Student Transportation

Clients appreciate both the depth of our experience and the breadth of our solutions. Indeed, our client retention rate is 98%.

Tyler Corporate Officers and Operational Leadership

The Human Dimension

Tyler cares about our people.

We were voted a *Best Place to Work* at locations around the country in 2019, including in the State of Maine, in Troy, Michigan, and in Washington, D.C. Also in 2019, Tyler was named to *Forbes* Best Midsized Employers list and to *Forbes* Best Employers for Diversity as well.

Our people care about their communities.

Tyler employees support many local community efforts. Examples include supporting families in need, feeding the hungry, and funding STEM education for at-risk children.

In 2019, our employees volunteered 4,000+ hours in community service, and fundraised over $30,000.

Tyler employees also donated:
- 10,000+ pairs of socks for the homeless
- 1,000+ pounds of non-perishable food for low-income, homeless or other in-need individuals
- 500+ pounds of dog food for pets in need
- Hundreds of holiday gifts for underprivileged youths
- Hundreds of meals for low income, homeless or other in-need individuals

As a company, Tyler supports community causes.

Over the past five years, Tyler Foundation charitable contributions have totaled $1.27M.

In 2019, the company's efforts included Tyler Foundation's $372,500 in monetary donations, including disaster relief.

Also in 2019, Tyler donated both software and time to *Both Ends Believing*, Tyler's nonprofit partner benefiting children in institutional care.

100 travel-sized toiletry bags were made out of a recycled banner from the Tyler Connect 2019 user conference, filled with essentials donated by employees, and donated to the Genesis Women's Shelter in Dallas.

LIVE FROM LUBBOCK COUNTY

Tyler is helping Lubbock County, Texas, become a connected community by overhauling many of its legacy software systems with our sophisticated public safety, civil process, ERP, and court case management solutions. In 2019, Lubbock County went live with a range of interconnected solutions from Tyler, including our New World™ Enterprise CAD (computer-aided dispatch), Mobile Messenger™, and mobility solutions. Phase 2 will include New World Enterprise RMS (record management system) and Field Reporting™. In subsequent phases, additional Tyler solutions will be implemented.

278.8K
Residents

~1,300
County employees

Additional Tyler solutions for Lubbock County include:
Brazos™
SoftCode™
Odyssey
Munis

Adding Dimensions, Investing in the Future

Tyler's market leadership puts us in a unique position to take a long-term view on how to serve our public sector clients in better and broader ways in the years ahead, while we continue to grow. Tyler builds shareholder value through investments in research and development that allow us to improve and expand our solutions; through strategic acquisitions that broaden our capabilities and expand our addressable markets; and by the opportunistic repurchasing of Tyler stock.

Deepening Our Capabilities Through Acquisitions

2018 Acquisitions

Socrata
Sage Data Security
CaseloadPRO™
MobileEyes™
SceneDoc™

2019 Acquisitions

MicroPact
MyCivic
Courthouse Technologies

2019 Acquisition Details

Acquired:
February 2019

Investment:
$4M

Expertise:
Citizen engagement applications

Added dimension:
One app that lets citizens interact with local government in myriad ways

Acquired:
February 2019

Investment:
$195M

Expertise:
Case management and business process management software

Added dimension:
New ability to serve federal and health and human services clients

Acquired:
October 2019

Investment:
$20M

Expertise:
Jury management systems

Added dimension:
Leverages Tyler's existing courts and justice sales organization and client base

Developing New Dimensions Through R&D

R&D Investment

2nd consecutive year of record R&D investment

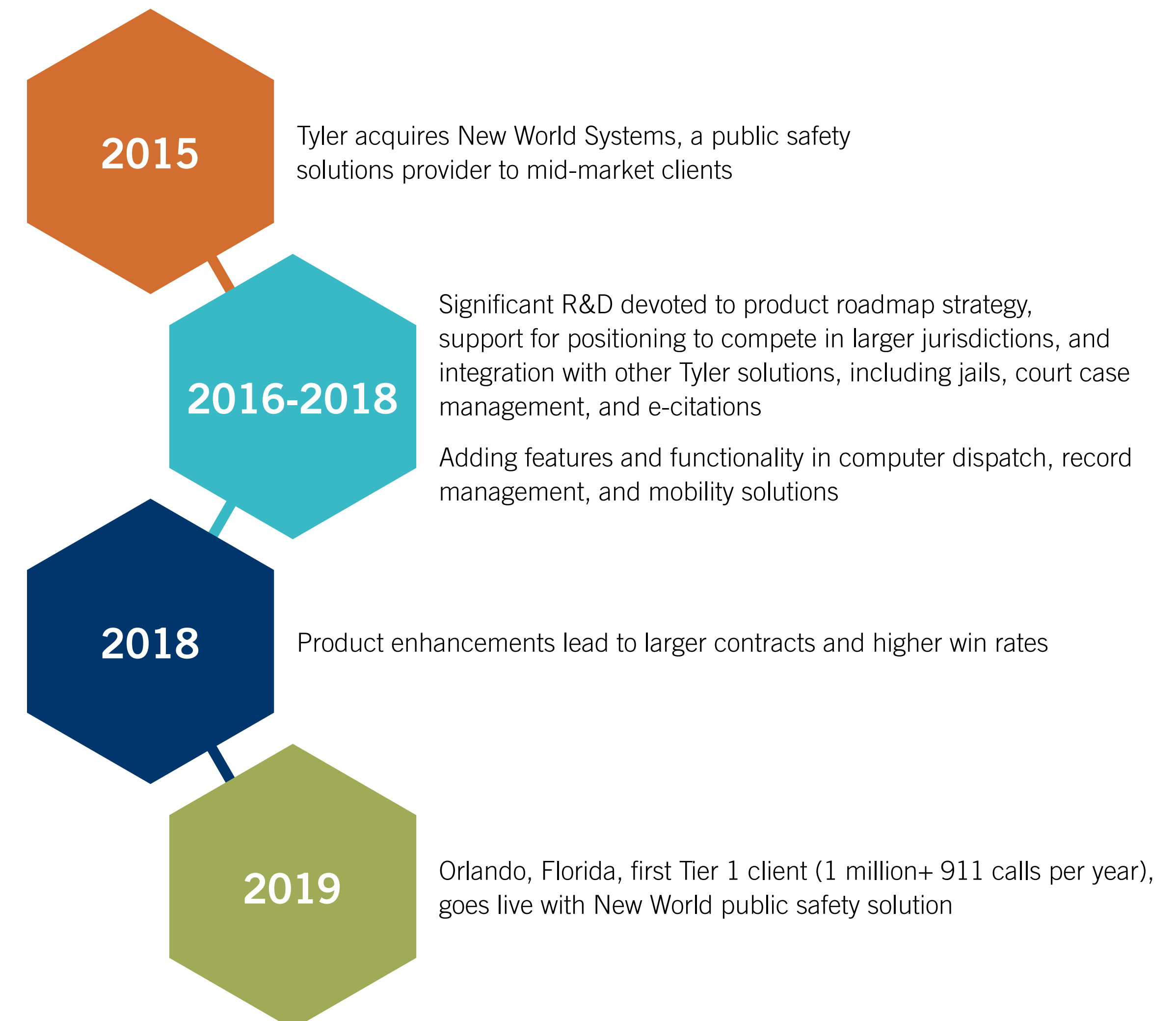
Tyler's 2019 R&D investment was:

- Focused across all product suites
- Oriented toward long-term growth
- Improving existing products
- Developing new products
- Integrating products from acquired companies
- Broadening our addressable market

Tyler employs 1,100 software engineers, whose skills contribute to the strength of the company's R&D efforts.

Tyler's R&D investments span all our solutions, including those optimized for schools and public safety.

R&D Impact Snapshot



SERVING AT THE

STATE LEVEL

HELPING NORTH CAROLINA CREATE ORDER IN THE COURTS

Tyler is helping the state of North Carolina build a "virtual courthouse," an electronic statewide court system that leverages technology to provide greater access to the courts for all North Carolinians. In Tyler's largest SaaS deal to date, a 10-year arrangement valued at $85 million, Tyler is delivering several solutions from our Odyssey suite to the North Carolina Administrative Office of the Courts and North Carolina Judicial Branch.

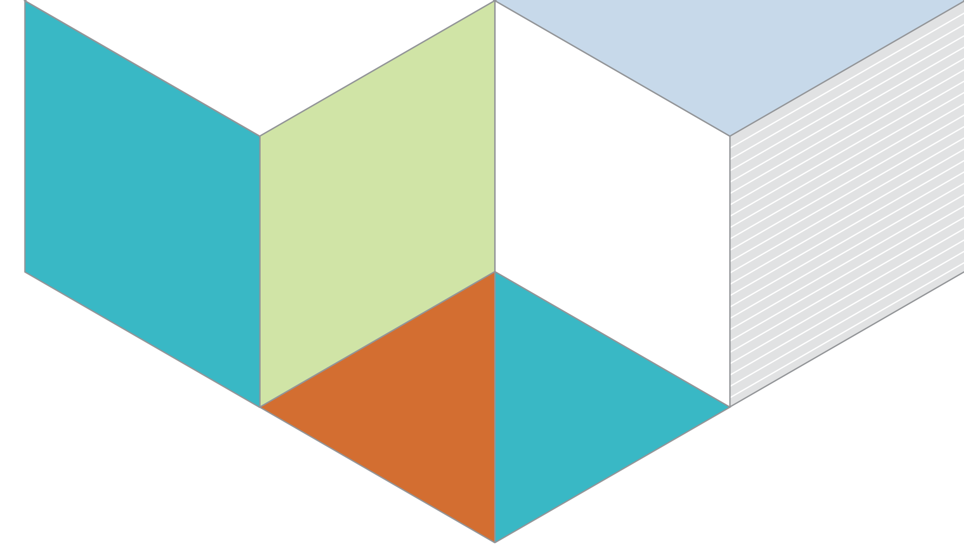
10M
State residents

The **15th**
statewide Odyssey agreement

Benefits include:

- Statewide e-filing
- Paperless processes
- Automated workflows
- Online access to judicial system

North Carolina



Moving Closer to Truly Connected Communities

Our vision is to help create connected communities that use technology to seamlessly connect data, people, and processes across department and geographic boundaries. Realizing this vision depends on a digital infrastructure of multi-layered, cloud-based solutions, and requires state-of-the-art security, systems, and protocols.

Connecting Through Technology

We have continued work on Tyler's citizen portal, a single point for digital services for community residents from their local governments. Using a single login and a shared profile provided by **Tyler Identity™**, citizens receive personalized experiences that span jurisdictional and geographic boundaries, either from the web or a mobile device. Citizens can sign up to receive notifications via SMS or email when bills are due or licenses need renewing, when important events are happening in their city, or when issues are impacting their neighborhood. A shared shopping cart and checkout experience make it easy to securely transact business with their local government.

Tyler's Virtual Court™ application will help citizens stay connected to their government on their schedule. Rather than go to the courthouse to deal with a traffic ticket, constituents can now have their case adjudicated online from the comfort of their home or business. Using integrated video conferencing and document sharing, defendants can work with a judge and clerk in real time, online, from the web or a mobile device. Any resulting fines and fees can be paid immediately using the online payment system provided by the application.

The **Tyler Nexus™** initiative simplifies processes commonly executed by local governments by connecting related business functions required in public administration. By sharing data and streamlining processes across previously siloed departments, clients are able to more efficiently manage important services that citizens expect. The Nexus initiative has brought focus and improved connections between **Munis**, **EnerGov™**, and **Tyler EAM**, offering seamless connections in critical processes such as streamlined citizen engagement, integrated asset management, and comprehensive collections functions. Additionally, the Nexus initiative has prioritized development efforts that support the land development process by bringing together recording, tax, and planning and permitting to support data sharing in typically distinct areas of city and county government. In addition to streamlining workflow across Tyler products, the Nexus initiatives continue to drive innovation and new development efforts such as **Tyler Hub™**, Tyler Identity and **Socrata** applications, all designed to enhance usability and unify client experience across products.

The **Tyler Alliance™** initiative continues to make progress on our 'dispatch-to-disposition' goals for data and process sharing. Investments in **Tyler Corrections™** provide a link between the **New World** public safety suite of dispatch and records applications and **Tyler Supervision™** and **Odyssey** applications, seamlessly sharing data and business processes across these typically siloed departments and domains.

Tyler is also investing in connecting data and insights products with all Tyler solution areas, creating analytical capabilities across public safety, appraisal and tax, and ERP domains that help promote better data-driven decision making. Built on the **Socrata** platform, these out-of-the-box solutions can be deployed quickly and easily and provide users with a data- and visualization-rich experience that helps them focus on improved outcomes in policing, property taxes, and financial management areas.

In addition to a company-wide development effort supporting our Connected Communities vision, developers continue to engineer and enhance our core applications. These include features to help clients manage assets, optimize performance, and improve the user experience. We also continue to better position our products for cloud-friendly implementations.

In connected communities, data can be quickly shared and acted upon for public good.

SERVING AT THE

FEDERAL LEVEL

HELPING A NEW AIR FORCE JUSTICE SYSTEM TAKE OFF

Acquired by Tyler in 2019, MicroPact has strong relationships with local, state, and federal clients, including the United States Air Force. The USAF reached go-live in 2019 for the Air Force Justice Information System (AFJIS), a single platform to collect and manage the data associated with law enforcement at its bases around the world. The core of AFJIS is MicroPact's Entellitrak® case management platform, which allows the USAF to conduct criminal justice activities more efficiently and effectively with the most modern criminal data reporting system in the Department of Defense.

260+
USAF personnel have had AFJIS training conducted by Tyler in the system's first few months

25K
USAF personnel will be trained by partners who complete the Tyler training

AFJIS will help the USAF:

Conduct investigations

Track data on people in custody

Deploy data analytics on criminal activity

Forming Powerful Partnerships

Cloud-based solutions can provide a number of benefits for public sector clients, including always up-to-date technology, continuous delivery, and business continuity in the event of natural disaster or other unexpected events.

As we see a clear trend in increasing client preference for cloud solutions, Tyler's cloud strategy continues to evolve in response to market forces and client needs.

To support cloud-based public sector solutions going forward, Tyler announced our strategic collaboration with Amazon Web Services (AWS) in 2019.

Our agreement with AWS provides an enhanced framework for ongoing development, training and collaboration. We will be able to provide even stronger service to our clients, as we support next-generation applications with superior scalability, resiliency and security.

Use of the cloud is creating new opportunities for citizens to connect with their government.

Supporting Security

Ransomware, cyberattacks and other security threats are on the rise for the public sector.

In 2019, to better address growing public sector security needs, we introduced Tyler Cybersecurity™, formerly Sage Data Security (acquired in 2018).

Tyler Cybersecurity offers the public sector:
· Tyler Detect™, our managed threat detection service
· Program development
· Education and training
· Technology testing and assessment
· Advisory services
· Digital forensics

Securing Our Solutions

With a constantly changing landscape of cybersecurity challenges, Tyler takes a continual improvement approach to managing product security, including its cloud-based applications. Tyler has a full-time application security team dedicated to continuously reviewing and enhancing the security posture of Tyler's products. Tyler uses enterprise-level dynamic and static security scanning tools as part of our software development lifecycle. In addition to scanning tools, Tyler's application security team executes manual assessments on Tyler products using a testing methodology based upon the OWASP (Open Web Application Security Project) Testing Framework.

Focusing Our Efforts

Tyler consolidated its security efforts under a newly organized Information Security Office in 2019 to monitor internal security infrastructure, improve processes, and consult with product security teams.

Security measures can be organized into four major categories of control:

1. **Administrative** Information security begins when a company organizes itself to emphasize security and ensure human resource processes are in place to help facilitate security. Tyler's human resource practices are designed and implemented to support the security of company and client data.
2. **Physical Access** The time-tested basics of locked doors and physically secure facilities should not be overlooked in favor of relying only on technology. Tyler invests in secure data centers and associated practices.
3. **Logical Access** Tyler's software is designed and built with authentication, authorization, and accountability in mind. The software includes robust controls to secure access to client data.
4. **Secure Architecture** Tyler's secure network architecture hosts solutions that are secured through a layered series of barriers and monitoring tools that are designed to detect and defeat unauthorized attempts to reach client data. Tyler administers multiple controls through secure portals for clients, managed coding practices, source code controls, applied industry standards, and continual review and monitoring.

Applying Standards

Local governments are increasingly adopting more rigorous security standards such as FedRAMP, even though FedRAMP standards were developed by and for federal implementations. Two Tyler solutions meet stringent FedRAMP federal security assessment, authorization, and continuous monitoring standards for cloud products used by federal agencies:
· Socrata, a data and insights solution
· Entellitrak, a case management solution

While FedRAMP requirements were intended for federal contracts, both of these Tyler products are available to clients at all levels of government.

Tyler is vigilant about security in all areas of our business.

SERVING AT THE

INTERNATIONAL LEVEL

New Providence

UNCOMMON EXPERTISE FOR THE COMMONWEALTH OF THE BAHAMAS

With our CLT Appraisal Services™, Tyler is helping the Ministry of Finance for the Government of the Bahamas and its Real Property Tax Valuation Unit update property values to ensure equitable taxation for owners. This new $7.2 million agreement builds on the past success of Tyler's work in the commonwealth, which included collecting images and verifying property data on more than 68,000 parcels located on the island of New Providence, the most populous island and home of the capital of the Bahamas. The commonwealth is also using our iasWorld® appraisal and tax administration software across all islands.

395K Residents

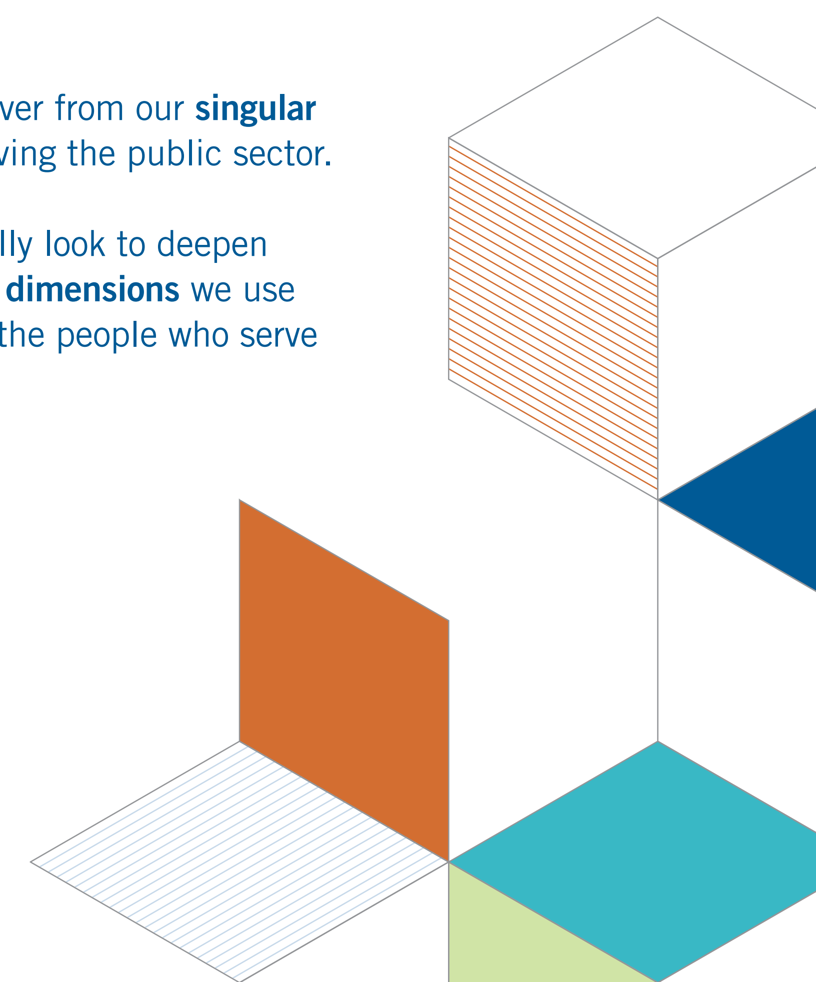
6.6K properties have been reappraised in a pilot project on the island of New Providence in preparation to reappraise all residential and commercial properties on the island.

35M properties in the U.S. and abroad have been appraised by Tyler's CLT Appraisal Services.

For Tyler, our most important partnership is with our public sector clients, allowing us to work together to make government more responsive to citizens everywhere.

We never waver from our **singular focus** on serving the public sector.

We continually look to deepen the **multiple dimensions** we use to empower the people who serve the public.



2019 Financial Information

Reconciliation of GAAP to NON-GAAP Financial Measures (Unaudited)

(In thousands, except per share data)	2019	2018	2017	2016	2015
RECONCILIATION OF NON-GAAP TOTAL REVENUES					
GAAP total revenues	$1,086,427	$935,282	$840,899	$759,880	$591,022
Non-GAAP adjustments:					
Add: Write-downs of acquisition-related deferred revenue	4,557	4,000	663	15,063	3,186
Add: Amortization of acquired leases	372	426	444	444	37
Non-GAAP total revenues	$1,091,356	$939,708	$842,006	$775,387	$594,245
RECONCILIATION OF NON-GAAP GROSS PROFIT AND MARGIN					
GAAP gross profit	$ 516,900	$439,578	$399,377	$359,188	$277,187
Non-GAAP adjustments:					
Add: Write-downs of acquisition-related deferred revenue	4,557	4,000	663	15,063	3,186
Add: Amortization of acquired leases	372	426	444	444	37
Add: Share-based compensation expense included in cost of revenues	15,002	13,588	9,415	6,548	3,380
Add: Amortization of acquired software	30,642	22,972	21,686	22,235	4,440
Non-GAAP gross profit	$ 567,473	$480,564	$431,585	$403,478	$288,230
GAAP gross margin	47.6%	47.0%	47.5%	47.3%	46.9%
Non-GAAP gross margin	52.0%	51.1%	51.3%	52.0%	48.5%
RECONCILIATION OF NON-GAAP OPERATING INCOME AND MARGIN					
GAAP operating income	$ 156,367	$152,492	$162,758	$137,656	$108,043
Non-GAAP adjustments:					
Add: Write-downs of acquisition-related deferred revenue	4,557	4,000	663	15,063	3,186
Add: Amortization of acquired leases	372	426	444	444	37
Add: Share-based compensation expense	59,967	52,740	37,348	29,747	20,182
Add: Employer portion of payroll tax related to employee stock transactions	1,745	1,412	1,102	1,001	1,506
Add: Acquisition-related costs	1,142	-	-	-	5,875
Add: Amortization of acquired software	30,642	22,972	21,686	22,235	4,440
Add: Amortization of customer and trade name intangibles	21,445	16,217	13,381	13,202	5,905
Non-GAAP adjustments subtotal	$ 119,870	$ 97,767	$ 74,624	$ 81,692	$ 41,131
Non-GAAP operating income	$ 276,237	$250,259	$237,382	$219,348	$149,174
GAAP operating margin	14.4%	16.3%	19.4%	18.1%	18.3%
Non-GAAP operating margin	25.3%	26.6%	28.2%	28.3%	25.1%
RECONCILIATION OF NON-GAAP NET INCOME AND EARNINGS PER SHARE					
GAAP net income	$ 146,527	$147,462	$169,571	$113,701	$ 64,869
Non-GAAP adjustments:					
Add: Total non-GAAP adjustments to operating income	119,870	97,767	74,624	81,692	41,131
Less: Tax impact related to non-GAAP adjustments	(53,819)	(52,464)	(89,440)	(56,045)	(13,318)
Non-GAAP net income	$ 212,578	$192,765	$154,755	$139,348	$ 92,682
GAAP earnings per diluted share	$ 3.65	$ 3.68	$ 4.32	$ 2.92	$ 1.77
Non-GAAP earnings per diluted share	$ 5.30	$ 4.80	$ 3.94	$ 3.58	$ 2.54
DETAIL OF SHARE-BASED COMPENSATION EXPENSE					
Cost of software services, maintenance and subscriptions	$ 15,002	$ 13,588	$ 9,415	$ 6,548	$ 3,380
Selling, general and administrative expenses	44,965	39,152	27,933	23,199	16,802
Total share-based compensation expense	$ 59,967	$ 52,740	$ 37,348	$ 29,747	$ 20,182

Stock Market Data

Our common stock is traded on the New York Stock Exchange under the symbol "TYL." At December 31, 2019, we had approximately 1,215 shareholders of record. Most of our shareholders hold their shares in street name; therefore, there are substantially more than 1,215 beneficial owners of our common stock.

The following table shows, for the calendar periods indicated, the high and low sales price per share of our common stock as reported on the New York Stock Exchange.

		High	Low
2018	First Quarter	$ 214.33	$ 176.93
	Second Quarter	240.35	201.91
	Third Quarter	252.47	219.59
	Fourth Quarter	246.62	173.26
2019	First Quarter	$ 217.89	$ 176.27
	Second Quarter	233.15	203.77
	Third Quarter	265.00	217.19
	Fourth Quarter	301.39	245.00

We did not pay any cash dividends in 2019 or 2018. Our bank credit agreement contains restrictions on the payment of cash dividends. We intend to retain earnings for use in the operation and expansion of our business and do not anticipate paying a cash dividend in the foreseeable future.

Selected Financial Data

Years Ended December 31,	2019 (a)	2018	2017 (b), (c)	2016 (b)	2015
(In thousands, except per share data)					
STATEMENT OF OPERATIONS DATA:					
Revenues	$1,086,427	$ 935,282	$ 840,899	$ 759,880	$ 591,022
Cost and expenses:					
Cost of revenues	569,527	495,704	441,522	400,692	313,835
Selling, general and administrative expenses	257,746	207,605	175,914	165,176	133,317
Research and development expense	81,342	63,264	47,324	43,154	29,922
Amortization of customer and trade name intangibles	21,445	16,217	13,381	13,202	5,905
Operating income	156,367	152,492	162,758	137,656	108,043
Other income, net	3,471	3,378	698	(1,998)	381
Income before income taxes	159,838	155,870	163,456	135,658	108,424
Income tax (benefit) provision (c)	13,311	$ 8,408	$ (6,115)	$ 21,957	$ 43,555
Net income	146,527	147,462	169,571	113,701	64,869
Net earnings per diluted share	$ 3.65	$ 3.68	$ 4.32	$ 2.92	$ 1.77
Weighted average diluted shares	40,105	40,123	39,246	38,961	36,552
STATEMENT OF CASH FLOWS DATA:					
Cash flows provided by operating activities	$ 254,720	$ 250,203	$ 195,755	$ 191,859	$ 134,327
Cash flows used by investing activities	(245,015)	(238,255)	(85,395)	(50,720)	(398,459)
Cash flows (used) provided by financing activities	88,698	(63,595)	39,415	138,075	91,052
BALANCE SHEET DATA:					
Total assets	$2,191,614	$1,790,963	$1,611,351	$1,378,502	$1,356,570
Revolving line of credit	—	—	—	10,000	66,000
Shareholders' equity	1,617,058	1,324,846	1,191,736	934,540	858,857

(a) Reflects the impact of the adoption of Accounting Standards Update ("ASU") ASU No. 2016-02, Leases ("Topic 842") in fiscal year 2019. Refer to Note - 1 "Summary of Significant Accounting Policies" for further discussion.

(b) Reflects the impact of the adoption of ASU No. 2014-09, Revenue from Contracts with Customers in fiscal year 2018.

(c) 2017 includes the significant impact of the enactment of the Tax Cuts and Jobs Act ("Tax Act"). The most significant impact of the Tax Act to us is the reduction in the U.S. federal corporate income tax rate from 35% to 21%. The impact of the rate reduction on our 2017 income tax provision is a $26.0 million tax benefit due to the remeasurement of deferred tax assets and liabilities.

FORWARD-LOOKING STATEMENTS

In addition to historical information, this Annual Report contains forward-looking statements. The forward-looking statements are made in reliance upon safe harbor provisions of the Private Securities Litigation Reform Act of 1995. The forward-looking statements are subject to certain risks and uncertainties that could cause actual results to differ materially from those reflected in the forward-looking statements. Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect management's opinion only as of the date hereof. We undertake no obligation to revise or publicly release the results of any revisions to these forward-looking statements. Readers should carefully review the risk factors described in documents we file from time to time with the Securities and Exchange Commission.

When used in this Annual Report, the words "believes," "expects," "anticipates," "foresees," "forecasts," "estimates," "plans," "intends," "continues," "may," "will," "should," "projects," "might," "could" or other similar words or phrases are intended to identify forward-looking statements. Similarly, statements that describe our business strategy, outlook, objectives, plans, intentions or goals also are forward-looking statements.

OVERVIEW

General

We provide integrated information management solutions and services for the public sector, with a focus on local governments. We develop and market a broad line of software products and services to address the IT needs of cities, counties, schools and other local government entities. In addition, we provide professional IT services to our clients, including software and hardware installation, data conversion, training and for certain clients, product modifications, along with continuing maintenance and support for clients using our systems. We also provide subscription-based services such as software as a service ("SaaS"), which primarily utilize the Tyler private cloud, and electronic document filing solutions ("e-filing"), which simplify the filing and management of court related documents. Revenues for e-filing are derived from transaction fees and, in some cases, fixed fee arrangements. Other transaction-based fees primary relate to online payment services. We also provide property appraisal outsourcing services for taxing jurisdictions.

Our products generally automate eight major functional areas: (1) financial management and education, (2) courts and justice, (3) public safety, (4) property appraisal and tax, (5) planning, regulatory and maintenance, (6) land and vital records management, (7) data and insights and (8) case management and business process management. We report our results in two segments. The Enterprise Software ("ES") segment provides public sector entities with software systems and services to meet their information technology and automation needs for mission-critical "back-office" functions such as: financial management and education, courts and justice, public safety, planning, regulatory and maintenance, land and vital records management, data and insights and case management and business management processes. The Appraisal and Tax ("A&T") segment provides systems and software that automate the appraisal and assessment of real and personal property as well as property appraisal outsourcing services for local governments and taxing authorities. Property appraisal outsourcing services include: the physical inspection of commercial and residential properties; data collection and processing; computer analysis for property valuation; preparation of tax rolls; community education; and arbitration between taxpayers and the assessing jurisdiction.

Our total employee count increased to 5,368 at December 31, 2019, from 4,525 at December 31, 2018.

For the twelve months ended December 31, 2019, total revenues increased 16% compared to the prior year. Excluding the impact of acquisitions, total revenues increased 8% compared to prior year. Revenues from acquisitions contributed 8% of growth for the twelve months ended December 31, 2019.

Subscriptions revenue grew 34% for the twelve months ended December 31, 2019, due to a gradual shift toward cloud-based, software as a service business, as well as continued strong growth in our e-filing revenues from courts and other transaction-based revenues. Excluding the impact of acquisitions, subscriptions revenue increased 26% for the twelve months ended December 31, 2019.

Our backlog at December 31, 2019 was $1.46 billion, a 17% increase from last year.

Recent Acquisitions

On October 30, 2019, we acquired certain assets of Courthouse Technologies, Ltd ("CHT"), an industry-leading provider of jury management systems that offers a fully integrated, end-to-end software-as-a-service (SaaS) solution to manage all facets of juror management, from source list generation to juror processing and payment. The total purchase price was approximately $20.5 million of which $19.1 million was paid in cash and approximately $1.4 million was accrued for working capital and indemnity holdbacks, subject to certain post-closing adjustments.

On February 28, 2019, we acquired all of the capital stock of MP Holdings Parent, Inc. dba MicroPact ("MicroPact"), a leading provider of commercial off-the-shelf ("COTS") solutions, including Entellitrak, a low-code application development platform for case management and business process management used extensively in the public sector. The total purchase price, net of cash acquired of $2.0 million, was approximately $202.2 million consisting of $198.2 million paid in cash and accrued contingent consideration of $6.0 million, subject to the achievement of certain financial performance objectives.

On February 1, 2019, we acquired all the assets of Civic, LLC ("MyCivic"), a company that provides software solutions to connect communities. The total purchase price was $3.7 million in cash.

As of December 31, 2019, the purchase price allocations for MicroPact and MyCivic are complete. As of December 31, 2019, the purchase price allocation for CHT is not yet complete, therefore the preliminary valuation estimates of fair value assumed at the acquisition date including intangible assets, receivables and deferred revenue are subject to change as the valuation is finalized.

The operating results of all 2019 acquisitions are included with the operating results of the Enterprise Software segment since their date of acquisition. Revenues from MicroPact included in Tyler's results of operations totaled approximately $63.0 million and the net loss was approximately $98,000 for the twelve months ended December 31, 2019. The impact of the MyCivic and CHT acquisitions, individually and in the aggregate, on our operating results, assets and liabilities is not material.

Our balance sheet as of December 31, 2019, reflects the allocation of the purchase price to the assets acquired based on their fair value at the date of each acquisition. The fair value of the assets and liabilities acquired are based on valuations using Level III, unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

We monitor and analyze several key performance indicators in order to manage our business and evaluate our financial and operating performance. These indicators include the following:

Revenues — We derive our revenues from five primary sources: sale of software licenses and royalties; subscription-based arrangements; software services; maintenance; and appraisal services. Subscriptions and maintenance are considered recurring revenue sources and comprised approximately 67% of our revenue in 2019. The number of new SaaS clients and the number of existing clients who convert from our traditional software arrangements to our SaaS model are a significant driver to our business, together with new software license sales and maintenance rate increases. In addition, we also monitor our customer base and churn as we historically have experienced very low customer turnover. During 2019, based on our number of customers, turnover was approximately 2%.

Cost of Revenues and Gross Margins — Our primary cost component is personnel expenses in connection with providing software implementation, subscription-based services, maintenance and support, and appraisal services to our clients. We can improve gross margins by controlling headcount and related costs and by expanding our revenue base, especially from those products and services that produce incremental revenue with minimal incremental cost, such as software licenses and royalties, subscription-based services, and maintenance and support. Our appraisal projects are cyclical in nature, and we often employ appraisal personnel on a short-term basis to coincide with the life of a project. As of December 31, 2019, our total employee count increased to 5,368 from 4,525 at December 31, 2018.

Selling, General and Administrative ("SG&A") Expenses — The primary components of SG&A expenses are administrative and sales personnel salaries and commissions, share-based compensation expense, marketing expense, rent and professional fees. Sales commissions typically fluctuate with revenues and share-based compensation expense generally increases as the market price of our stock increases. Other administrative expenses tend to grow at a slower rate than revenues.

Liquidity and Cash Flows — The primary driver of our cash flows is net income. Uses of cash include acquisitions, capital investments in property and equipment and discretionary purchases of treasury stock. Our working capital needs are fairly stable throughout the year with the significant components of cash outflows being payment of personnel expenses offset by cash inflows representing collection of accounts receivable and cash receipts from clients in advance of revenue being earned. In recent years, we have also received significant amounts of cash from employees exercising stock options and contributing to our Employee Stock Purchase Plan.

Balance Sheet — Cash, accounts receivable and days sales outstanding and deferred revenue balances are important indicators of our business.

Adoption of New Lease Accounting Standard

We adopted Topic 842 using the transition method that allows us to initially apply the guidance at the adoption date of January 1, 2019, and recognized a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. We used the package of practical expedients that allows us to not reassess: (1) lease classification for any expired or existing leases and (2) initial direct costs for any expired or existing leases. We did not elect to use the hindsight application for evaluating the life of lease arrangements. The impact of adoption is reflected in the financial information herein. For additional details, see Note 1 - "Summary of Significant Accounting Policies" to our consolidated financial statements in this report.

The impact of Topic 842 on our consolidated balance sheet beginning January 1, 2019, included the recognition of right-of-use ("ROU") assets and lease liabilities for operating leases, while our accounting for finance leases remained substantially unchanged. We had no finance leases prior to the adoption of Topic 842 and currently do not have any.

Recent Accounting Guidance not yet Adopted

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses*, ("ASU 2016-13"). ASU 2016-13 changes the impairment model for most financial assets and certain other instruments, including trade and other receivables, held-to-maturity debt securities and loans, and requires entities to use a new forward-looking expected loss model that will result in the earlier recognition of allowance for losses. This update is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted for a fiscal year beginning after December 15, 2018, including interim periods within that fiscal year. Entities will apply the standard's provisions as a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is adopted. We will adopt the new standard in the first quarter of 2020 and believe the impact on our consolidated financial statements and results of operations will not be material.

Outlook

The local government software market continues to be active, and our backlog at December 31, 2019 reached $1.46 billion, a 17% increase from last year. We expect to continue to achieve solid growth in revenue and earnings. With our strong financial position and cash flow, we plan to continue to make significant investments in product development to better position us to continue to expand our addressable market and strengthen our competitive position in the public sector software market over the long term.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

Our discussion and analysis of financial condition and results of operations is based upon our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States ("GAAP"). The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets and liabilities at the date of the financial statements, the reported amounts of revenues, cost of revenues and expenses during the reporting period, and related disclosure of contingencies. The Notes to the Financial Statements included as part of this Annual Report describe our significant accounting policies used in the preparation of the financial statements. Significant items subject to such estimates and assumptions include the application of the progress toward completion methods of revenue recognition, estimated standalone selling price ("SSP") for distinct performance obligations, the carrying amount and estimated useful lives of intangible assets, determination of share-based compensation expense and valuation allowance for receivables. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We believe the following critical accounting policies require significant judgments and estimates used in the preparation of our financial statements.

Revenue Recognition. We earn revenue from software licenses, royalties, subscription-based services, software services, post-contract customer support ("PCS" or "maintenance"), hardware, and appraisal services. Revenue is recognized upon transfer of control of promised products or services to customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. We determine revenue recognition through the following steps:

- Identification of the contract, or contracts, with a customer
- Identification of the performance obligations in the contract
- Determination of the transaction price
- Allocation of the transaction price to the performance obligations in the contract
- Recognition of revenue when, or as, we satisfy a performance obligation

Most of our software arrangements with customers contain multiple performance obligations that range from software licenses, installation, training, and consulting to software modification and customization to meet specific customer needs (services), hosting, and PCS. For these contracts, we account for individual performance obligations separately when they are distinct. We evaluate whether separate performance obligations can be distinct or should be accounted for as one performance obligation. Arrangements that include software services, such as training or installation, are evaluated to determine whether the customer can benefit from the services either on their own or together with other resources readily available to the customer and whether the services are separately identifiable from other promises in the contract. Many of our software arrangements involve "off-the-shelf" software. We recognize the revenue allocable to "off-the-shelf" software licenses and specified upgrades at a point in time when control of the software license transfers to the customer, unless the software is not considered distinct. We consider off-the-shelf software to be distinct when it can be added to an arrangement with minor changes in the underlying code, it can be used by the customer for the customer's purpose upon installation, and remaining services such as training are not considered highly interdependent or highly interrelated to the product's functionality.

For arrangements that involve significant production, modification or customization of the software, or where software services are otherwise not considered distinct, we recognize revenue over time by measuring progress-to-completion. We measure progress-to-completion primarily using labor hours incurred as it best depicts the transfer of control to the customer which occurs as we incur costs on our contracts. These arrangements are often implemented over an extended period and occasionally require us to revise total cost estimates. Amounts recognized in revenue are calculated using the progress-to-completion measurement after giving effect to any changes in our cost estimates. Changes to total estimated contract costs, if any, are recorded in the period they are determined. Estimated losses on uncompleted contracts are recorded in the period in which we first determine that a loss is apparent. When software services are distinct, the fee allocable to the service element is recognized over the time we perform the services and is billed on a time and material or milestones basis.

Subscription-based services consist of revenues derived from SaaS arrangements, which primarily utilize the Tyler private cloud, and electronic filing transactions. Revenue from subscription-based services is generally recognized over time on a ratable basis over the contract term, beginning on the date that our service is made available to the customer. For SaaS arrangements, we evaluate whether the customer has the contractual right to take possession of our software at any time during the hosting period without significant penalty and whether the customer can feasibly maintain the software on the customer's hardware or enter into another arrangement with a third-party to host the software. We allocate contract value to each performance obligation of the arrangement that qualifies for treatment as a distinct element based on estimated SSP. We recognize SaaS arrangements ratably over the term of the arrangement, which range from one to ten but are typically for a period of three to five years. For software services associated with certain SaaS arrangements, we have concluded that the services are not distinct, and we recognize the revenue ratably over the remaining contractual period once we have provided the customer access to the software. We record amounts that have been invoiced in accounts receivable and in deferred revenue or revenues, depending on whether the revenue recognition criteria have been met.

The transaction price is allocated to the separate performance obligations on a relative SSP basis. We determine the SSP based on our overall pricing objectives, taking into consideration market conditions and other factors, including the value of our contracts, the applications sold, customer demographics, and the number and types of users within our contracts. We use a range of amounts to estimate SSP when we sell each of the products and services separately and need to determine whether there is a discount to be allocated based on the relative SSP of the various products and services. In instances where SSP is not directly observable, such as when we do not sell the product or service separately, we determine SSP using the expected cost-plus margin approach. Revenue is recognized net of allowances for sales adjustments and any taxes collected from customers, which are subsequently remitted to governmental authorities.

Typically, the structure of our arrangements does not give rise to variable consideration. However, in those instances whereby variable consideration exists, we include in our estimates additional revenue for variable consideration when we believe we have an enforceable right, the amount can be estimated reliably and its realization is probable.

We maintain allowances for doubtful accounts, which are provided at the time the revenue is recognized. Since most of our customers are domestic governmental entities, we rarely incur a loss resulting from credit risk associated with the inability of a customer to make required payments. Events or changes in circumstances that indicate that the carrying amount for the allowances for doubtful accounts may require revision include, but are not limited to, deterioration of a customer's financial condition, failure to manage our customer's expectations regarding the scope of the services to be delivered, and defects or errors in new versions or enhancements of our software products. The allowance for doubtful accounts reflects our best estimate of probable losses inherent in the accounts receivable balance. We determine the allowance based on known troubled accounts, historical experience, and other currently available evidence.

In connection with certain of our contracts, we have recorded retentions receivable or unbilled receivables consisting of costs and estimated profit in excess of billings as of the balance sheet date. Many of the contracts which give rise to unbilled receivables at a given balance sheet date are subject to billings in the subsequent accounting period. We review unbilled receivables and related contract provisions to ensure we are justified in recognizing revenue prior to billing the customer and that we have objective evidence which allows us to recognize such revenue. In addition, we have a sizable amount of deferred revenue, which represents billings in excess of revenue earned. The majority of this liability consists of maintenance billings for which payments are made in advance and the revenue is ratably earned over the maintenance period, generally one year. We also have deferred revenue for those contracts in which we receive a deposit and the conditions in which to record revenue for the service or product have not been met. On a periodic basis, we review by customer the detail components of our deferred revenue to ensure our accounting remains appropriate.

Intangible Assets and Goodwill. Our business acquisitions typically result in the creation of goodwill and other intangible asset balances, and these balances affect the amount and timing of future period amortization expense, as well as expense we could possibly incur as a result of an impairment charge. The cost of acquired companies is allocated to identifiable tangible and intangible assets based on estimated fair value, with the excess allocated to goodwill. Accordingly, we have a significant balance of acquisition date intangible assets, including software, customer related intangibles, trade name, leases and goodwill. These intangible assets (other than goodwill) are amortized over their estimated useful lives. We currently have no intangible assets with indefinite lives other than goodwill.

We assess goodwill for impairment annually as of April 1st, or more frequently whenever events or changes in circumstances indicate its carrying value may not be recoverable. We begin with the qualitative assessment of whether it is more likely than not that a reporting unit's fair value is less than its carrying value before applying the quantitative assessment described below. When testing goodwill for impairment quantitatively, we first compare the fair value of each reporting unit with its carrying amount. If the carrying amount of a reporting unit exceeds its fair value, a second step is performed to measure the amount of potential impairment. In the second step, we compare the implied fair value of reporting unit goodwill with the carrying amount of the reporting unit's goodwill. If the carrying amount of reporting unit goodwill exceeds the implied fair value of that goodwill, an impairment loss is recognized. The fair values calculated in our impairment tests are determined using discounted cash flow models involving several assumptions. The assumptions that are used are based upon what we believe a hypothetical marketplace participant would use in estimating fair value. We base our fair value estimates on assumptions we believe to be reasonable but that are unpredictable and inherently uncertain. We evaluate the reasonableness of the fair value calculations of our reporting units by comparing the total of the fair value of all of our reporting units to our total market capitalization. Our annual goodwill impairment analysis, which we performed qualitatively during the second quarter of 2019, did not result in an impairment charge. During 2019, we did not identify any triggering events that would require an update to our annual impairment review.

All intangible assets (other than goodwill) are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of other intangible assets is measured by comparison of the carrying amount to estimated undiscounted future cash flows. The assessment of recoverability or of the estimated useful life for amortization purposes will be affected if the timing or the amount of estimated future operating cash flows is not achieved. Such indicators may include, among others: a significant decline in expected future cash flows; a sustained, significant decline in stock price and market capitalization; a significant adverse change in legal factors or in the business climate; unanticipated competition; and reductions in growth rates. In addition, products, capabilities, or technologies developed by others may render our software products obsolete or non-competitive. Any adverse change in these factors could have a significant impact on the recoverability of goodwill or other intangible assets. During 2019, we did not identify any triggering events that would indicate that the carrying amount of our intangible assets may not be recoverable.

Management's Discussion and Analysis of Financial Condition and Results of Operations

Share-Based Compensation. We have a stock incentive plan that provides for the grant of stock options, restricted stock units and performance stock units to key employees, directors and non-employee consultants. We estimate the fair value of share-based awards on the date of grant. Share-based compensation expense includes the estimated effects of forfeitures, which will be adjusted over the requisite service period to the extent actual forfeitures differ or are expected to differ from such estimates. Changes in estimated forfeitures are recognized in the period of change and will also impact the amount of expense to be recognized in future periods. Forfeiture rate assumptions are derived from historical data.

We estimate stock price volatility at the date of grant based on the historical volatility of our common stock. Estimated option life is determined using the weighted-average period the stock options are expected to be outstanding based primarily on the options' vesting terms, remaining contractual life and the employees' expected exercise based on historical patterns. Determining the appropriate fair-value model and calculating the fair value of share-based awards at the grant date requires considerable judgment, including estimating stock price volatility, expected option life and forfeiture rates.

ANALYSIS OF RESULTS OF OPERATIONS AND OTHER

The following discussion compares the historical results of operations on a basis consistent with GAAP for the years ended December 31, 2019, 2018 and 2017:

	Percentage of Total Revenues		
Years Ended December 31,	2019	2018	2017
Revenues			
Software licenses and royalties	9.2%	10.0%	10.3%
Subscriptions	27.3	23.6	20.5
Software services	19.6	20.5	21.5
Maintenance	39.6	41.1	42.6
Appraisal services	2.2	2.3	3.0
Hardware and other	2.1	2.5	2.1
Total revenues:	100.0	100.0	100.0
Operating expenses:			
Cost of software licenses, royalties and acquired software:	3.2	2.9	3.0
Cost of software services, maintenance and subscriptions	46.2	46.9	46.1
Cost of appraisal services	1.4	1.5	1.9
Cost of hardware and other	1.6	1.7	1.5
Selling, general and administrative expenses	23.7	22.2	20.9
Research and development expense	7.5	6.8	5.6
Amortization of customer and trade name intangibles	2.0	1.7	1.6
Operating income	14.4	16.3	19.4
Other income, net	0.3	0.4	0.1
Income before income taxes	14.7	16.7	19.5
Income tax (benefit) provision	1.2	0.9	(0.7)
Net income	13.5%	15.8%	20.2%

2019 COMPARED TO 2018

Revenues

On February 28, 2019, we acquired all of the capital stock of MicroPact, a leading provider of COTS solutions, including Entellitrak, a low-code application development platform for case management and business process management used extensively in the public sector. The following table details revenue for MicroPact for the period presented as of December 31, 2019, which is included in our consolidated statements of income from the date of acquisition:

	2019
Revenues	
Software licenses and royalties:	$ 8,737
Subscriptions	7,472
Software services	18,143
Maintenance	28,642
Appraisal services	—
Hardware and other	24
Total revenues:	$ 63,018

On October 30, 2019, we acquired certain assets of CHT, an industry-leading provider of jury management systems that offers a fully integrated, end-to-end SaaS solution to manage all facets of juror management, from source list generation to juror processing and payment. On February 1, 2019, we acquired all the assets of MyCivic, a company that provides software solutions to connect communities. The impact of the CHT and MyCivic acquisitions on our operating results is not considered material, individually and in the aggregate, and is not included in the table above. The results of the MicroPact, CHT and MyCivic acquisitions are included with the operating results of the ES segment from their dates of acquisition. For comparative purposes, we have provided explanations for changes in operations to exclude results of operations for these acquisitions noting the exclusion.

Software licenses and royalties.

The following table sets forth a comparison of our software licenses and royalties revenue for the years ended December 31:

			Change	
($ in thousands)	2019	2018	$	%
ES	$ 92,567	$ 83,735	$ 8,832	11 %
A&T	7,638	9,706	(2,068)	(21)
Total software licenses and royalties revenue	$100,205	$ 93,441	$ 6,764	7 %

Excluding the impact of acquisitions, software licenses and royalties revenue decreased 2% compared to prior year. The decline was primarily due to a shift in the mix of new software contracts toward more subscription agreements compared to the prior year. Our total new contract value mix in 2019, was approximately 37% perpetual software license arrangements and approximately 63% subscription-based arrangements compared to total new contract value mix in 2018, of approximately 59% perpetual software license arrangements and approximately 41% subscription-based arrangements.

Although the mix of new contracts between subscription-based and perpetual license arrangements may vary from quarter to quarter and year to year, we expect our longer-term software license growth rate to be negatively impacted by a growing number of customers choosing our subscription-based options, rather than purchasing the software under a traditional perpetual software license arrangement. Subscription-based arrangements result in lower software license revenue in the initial year as compared to perpetual software license arrangements but generate higher overall revenue over the term of the contract.

Subscriptions.

The following table sets forth a comparison of our subscriptions revenue for the years ended December 31:

			Change	
($ in thousands)	2019	2018	$	%
ES	$ 285,092	$ 210,740	$ 74,352	35%
A&T	11,260	9,807	1,453	15
Total subscription revenue	$ 296,352	$ 220,547	$ 75,805	34%

Subscription-based revenue primarily consists of revenue derived from our SaaS arrangements, which generally utilize the Tyler private cloud. As part of our subscription-based services, we also provide electronic document filing solutions ("e-filing") that simplify the filing and management of court related documents for courts and law offices. E-filing revenue is derived from transaction fees and fixed fee arrangements.

Excluding the results of acquisitions, subscription-based revenue increased 26% compared to 2018. New SaaS clients as well as existing clients who converted to our SaaS model provided the majority of the subscription revenue increase. In 2019, we added 596 new SaaS clients and 78 existing clients elected to convert to our SaaS model. Also, e-filing services contributed approximately $7.0 million of the subscription revenue increase in 2019. The increase in e-filing revenue is attributed to new e-filing clients, as well as increased volumes as the result of several existing clients mandating e-filing.

Software services.

The following table sets forth a comparison of our software services revenue for the years ended December 31:

			Change	
($ in thousands)	2019	2018	$	%
ES	$ 185,892	$ 166,921	$ 18,971	11%
A&T	27,169	24,348	2,821	12
Total software services revenue	$ 213,061	$ 191,269	$ 21,792	11%

Software services revenue primarily consists of professional services billed in connection with implementing our software, converting client data, training client personnel, custom development activities and consulting. New clients who purchase our proprietary software licenses or subscriptions generally also contract with us to provide for the related software services. Existing clients also periodically purchase additional training, consulting and minor programming services. Excluding the results of acquisitions, software services revenue grew 0.4% compared to the prior year period. The slight increase is due to higher new contract volume and the addition of professional services staff to grow our capacity to deliver backlog. Excluding employees added with acquisitions, our implementation and support staff has grown by 232 employees since December 31, 2018.

Maintenance.

The following table sets forth a comparison of our maintenance revenue for the years ended December 31:

			Change	
($ in thousands)	2019	2018	$	%
ES	$ 405,063	$ 359,904	$ 45,159	13%
A&T	25,255	24,617	638	3
Total maintenance revenue	$ 430,318	$ 384,521	$ 45,797	12%

We provide maintenance and support services for our software products and certain third-party software. Excluding the results of acquisitions, maintenance revenue grew 4% compared to the prior year. Maintenance and support revenue increased mainly due to growth in our installed customer base from new software license sales as well as annual maintenance rate increases, partially offset by clients converting from on-premises license arrangements to SaaS.

Appraisal services.

The following table sets forth a comparison of our appraisal services revenue for the years ended December 31:

($ in thousands)	2019	2018	Change $	Change %
ES	$ —	$ —	$ —	—%
A&T	23,479	21,846	1,633	7
Total appraisal services revenue	$ 23,479	$ 21,846	$ 1,633	7%

In 2019, appraisal services revenue increased 7% compared to the prior year primarily due to the addition of several new revaluation contracts started during the second quarter of 2019. The appraisal services business is somewhat cyclical and driven in part by statutory revaluation cycles in various states.

Cost of Revenues and Gross Margins

The following table sets forth a comparison of the key components of our cost of revenues for the years ended December 31:

($ in thousands)	2019	2018	Change $	Change %
Software licenses and royalties	$ 3,938	$ 3,802	$ 136	4%
Acquired software	30,642	22,972	7,670	33
Software services, maintenance and subscriptions	502,138	438,923	63,215	14
Appraisal services	15,337	14,299	1,038	7
Hardware and other	17,472	15,708	1,764	11
Total cost of revenues	$ 569,527	$ 495,704	$ 73,823	15%

The following table sets forth a comparison of gross margin percentage by revenue type for the years ended December 31:

Gross margin percentage	2019	2018	Change
Software licenses, royalties and acquired software	65.5%	71.3%	(5.8)%
Software services, maintenance and subscriptions	46.6	44.9	1.7
Appraisal services	34.7	34.5	0.2
Hardware and other	24.1	33.6	(9.5)
Overall gross margin	47.6%	47.0%	0.6 %

Software licenses, royalties and acquired software. Cost of software licenses, royalties and acquired software is primarily comprised of amortization expense for acquired software and third-party software costs. We do not have any direct costs associated with royalties. The gross margin decrease of 5.8% is due to an increase in amortization expense for acquired software resulting from acquisitions completed in the last half of 2018 and in 2019.

Software services, maintenance and subscriptions. Cost of software services, maintenance and subscriptions primarily consists of personnel costs related to installation of our software, conversion of client data, training client personnel and support activities and various other services such as custom client development and on-going operation of SaaS and e-filing arrangements. In 2019, the software services, maintenance and subscriptions gross margin increased 1.7% compared to the prior year. Excluding employees added through acquisitions, our implementation and support staff has grown by 232 employees since December 31, 2018 as we accelerated hiring to ensure that we are well-positioned to deliver our current backlog and anticipated new business. Costs related to maintenance and various other services such as SaaS and e-filing typically grow at a slower rate than related revenue due to leverage in the utilization of support and maintenance staff and economies of scale.

Appraisal services. Appraisal services revenue comprised approximately 2.2% of total revenue. The appraisal services gross margin increased 0.2% compared to 2018 due to ramp up of several new revaluation projects during second quarter 2019.

Our 2019 blended gross margin slightly increased 0.6% compared to 2018. Our overall gross margin increase is attributed to a higher revenue mix for subscription revenues compared to the prior year period resulting in an increase in incremental margin related to software services, maintenance and subscriptions. Costs related to maintenance and various other services such as SaaS and e-filing typically grow at a slower rate than related revenue due to leverage in the utilization of support and maintenance staff and economies of scale. The increase in overall margins are partially offset by lower margins from software licenses, in part due to lower software license revenue and higher amortization expense for acquired software resulting from acquisitions.

Selling, General and Administrative Expenses

Selling, general and administrative ("SG&A") expenses consist primarily of salaries, employee benefits, travel, share-based compensation expense, commissions and related overhead costs for administrative and sales and marketing employees, as well as, professional fees, trade show activities, advertising costs and other marketing related costs. The following table sets forth a comparison of our SG&A expenses for the years ended December 31:

($ in thousands)	2019	2018	Change $	Change %
Selling, general and administrative expenses	$ 257,746	$ 207,605	$ 50,141	24%

SG&A as a percentage of revenue was 23.7% in 2019 compared to 22.2% in 2018. SG&A expense increased approximately 24% compared to the prior year period. In 2019, our operating results include $19.9 million of SG&A expenses for MicroPact from the date of acquisition. The remaining SG&A expense increase is mainly due to compensation cost related to increased staff levels, higher stock compensation expense and increased commission expense as a result of higher sales. Excluding employees added with acquisitions, we added 81 employees mainly to our sales and finance teams since December 31, 2018. In addition, our 2019 stock compensation expense rose $5.8 million, mainly due to increases in our stock price over recent years.

Research and Development Expense

Research and development expense consists primarily of salaries, employee benefits and related overhead costs associated with new product development. The following table sets forth a comparison of our research and development expense for the years ended December 31:

			Change	
($ in thousands)	2019	2018	$	%
Research and development expense	$ 81,342	$ 63,264	$ 18,078	29%

Research and development expense increased 29% in 2019 compared to the prior year period, mainly due to a number of new Tyler product development initiatives across our product suites, including increased investments in research and development at recently acquired businesses. To support these initiatives, our research and development staff has grown by 153 since December 31, 2018.

Amortization of Customer and Trade Name Intangibles

Acquisition intangibles are comprised of the excess of the purchase price over the fair value of net tangible assets acquired that is allocated to acquired software, leases and customer and trade name intangibles. The remaining excess purchase price is allocated to goodwill that is not subject to amortization. Amortization expense related to acquired software is included with cost of revenues, while amortization expense of customer and trade name intangibles is recorded as operating expense. The estimated useful lives of both customer and trade name intangibles range from five to 25 years. The following table sets forth a comparison of amortization of customer and trade name intangibles for the years ended December 31:

			Change	
($ in thousands)	2019	2018	$	%
Amortization of customer and trade name intangibles	$ 21,445	$ 16,217	$ 5,228	32%

Amortization of customer and trade name intangibles increased due to the impact of intangibles added with several acquisitions completed in 2018 and 2019.

Estimated annual amortization expense relating to customer and trade name acquisition intangibles, excluding acquired software for which the amortization expense is recorded as cost of revenues, for the next five years and thereafter is as follows (in thousands):

2020	$ 21,357
2021	21,237
2022	20,747
2023	20,673
2024	20,121
Thereafter	135,264

Amortization expense relating to acquired leases will be recorded as a reduction to hardware and other revenue and is expected to be $525,000 in 2020, $525,000 in 2021, $525,000 in 2022, $525,000 in 2023, $525,000 in 2024 and $512,000 thereafter.

Management's Discussion and Analysis of Financial Condition and Results of Operations

Other

The following table sets forth a comparison of other income, net for the years ended December 31:

			Change	
($ in thousands)	2019	2018	$	%
Other income, net	$ 3,471	$ 3,378	$ 93	3%

Other income is comprised of interest income from invested cash net of interest expense and non-usage and other fees associated with our revolving credit agreement. Other income, net, increased compared to the prior period due to increased interest income from higher levels of cash and investments resulting from cash generated in the current year offset by increased interest expense from new debt outstanding during the current year under our credit agreement.

Income Tax Provision

The following table sets forth a comparison of our income tax provision for the years ended December 31:

			Change	
($ in thousands)	2019	2018	$	%
Income tax provision (benefit)	$13,311	$ 8,408	$ 4,903	58%
Effective income tax rate	8.3%	5.4%		

The increase in the income tax provision and the effective income tax rate in 2019 compared to the prior year is primarily due to lower excess tax benefits from stock option exercises in 2019. Stock option exercise activity in 2019 generated excess tax benefits of $29.8 million, while stock option exercise activity in 2018 generated $32.5 million excess tax benefits. In addition, the 2018 income tax provision contains a tax benefit of $1.8 million resulting from the remeasurement of deferred tax assets and liabilities associated with the enactment of the 2017 Tax Act which reduced the statutory U.S. federal corporate income tax rate from 35% to 21%. Excluding the impact of the excess tax benefits and the Tax Act, our income tax provision and effective tax rate in 2019 would have been $43.1 million and 27.0% and in 2018, would have been $42.6 million and 27.4%, respectively.

The effective income tax rates in both 2019 and 2018 differed from the United States federal statutory corporate income tax rate of 21% due to state income taxes, the research tax credit, non-deductible share-based compensation expense, disqualifying incentive stock option dispositions, and other non-deductible business expenses.

2018 COMPARED TO 2017

Revenues

Software licenses and royalties.

The following table sets forth a comparison of our software licenses and royalties revenue for the years ended December 31:

($ in thousands)	2018	2017	Change $	Change %
ES	$ 83,735	$ 78,338	$ 5,347	7%
A&T	9,706	7,854	1,852	24
Total software licenses and royalties revenue	$ 93,441	$ 86,242	$ 7,199	8%

Software license and royalties revenue increased 8% compared to the prior year. The majority of this growth was due to an active marketplace as the result of generally positive local government economic conditions, as well as our increasingly strong competitive position, which we attribute in part to our investment in product development in recent years. An increase in the number of larger contracts related to our planning, regulatory and maintenance solutions and public safety solutions also contributed to the growth in license revenue.

Although the mix of new contracts between subscription-based and perpetual license arrangements may vary from quarter to quarter and year to year, we expect our longer-term software license growth rate to be negatively impacted by a growing number of customers choosing our subscription-based options, rather than purchasing the software under a traditional perpetual software license arrangement. Subscription-based arrangements result in lower software license revenue in the initial year as compared to perpetual software license arrangements but generate higher overall revenue over the term of the contract. Our new client mix in 2018 was approximately 47% selecting perpetual software license arrangements and approximately 53% selecting subscription-based arrangements compared to a client mix in 2017 of approximately 53% selecting perpetual software license arrangements and approximately 47% selecting subscription-based arrangements.

Subscriptions.

The following table sets forth a comparison of our subscriptions revenue for the years ended December 31:

($ in thousands)	2018	2017	Change $	Change %
ES	$ 210,740	$ 164,317	$ 46,423	28%
A&T	9,807	7,859	1,948	25
Total subscriptions revenue	$ 220,547	$ 172,176	$ 48,371	28%

Subscription-based revenue primarily consists of revenue derived from our SaaS arrangements, which generally utilize the Tyler private cloud. As part of our subscription-based services, we also provide electronic document filing solutions ("e-filing") that simplify the filing and management of court related documents for courts and law offices. E-filing revenue is derived from transaction fees and fixed fee arrangements. Excluding the results of acquisitions, subscription-based revenue increased 21% compared to 2017.

New SaaS clients as well as existing clients who converted to our SaaS model provided the majority of the subscription revenue increase. In 2018, we added 410 new SaaS clients and 97 existing clients elected to convert to our SaaS model. Also, e-filing services contributed approximately $6.2 million of the subscription revenue increase in 2018. The increase in e-filing revenue is attributed to new e-filing clients, as well as increased volumes as the result of several existing clients mandating e-filing. The acquisition of Socrata, which primarily has a subscription revenue model, also contributed to the increase in subscription revenues.

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Software services.

The following table sets forth a comparison of our software services revenue for the years ended December 31:

($ in thousands)	2018	2017	Change $	Change %
ES	$ 166,921	$ 161,245	$ 5,676	4%
A&T	24,348	19,215	5,133	27
Total software services revenue	$ 191,269	$ 180,460	$ 10,809	6%

Software services revenue primarily consists of professional services billed in connection with implementing our software, converting client data, training client personnel, custom development activities and consulting. New clients who purchase our proprietary software licenses generally also contract with us to provide for the related software services. Existing clients also periodically purchase additional training, consulting and minor programming services. Excluding the results of acquisitions, software services revenue grew 3% compared to the prior year period. This growth is due to a higher level of new software sales, through both our license and subscription models.

Maintenance.

The following table sets forth a comparison of our maintenance revenue for the years ended December 31:

($ in thousands)	2018	2017	Change $	Change %
ES	$ 359,904	$ 337,701	$ 22,203	7%
A&T	24,617	21,618	2,999	14
Total maintenance revenue	$ 384,521	$ 359,319	$ 25,202	7%

We provide maintenance and support services for our software products and certain third-party software. Maintenance revenue grew 7% compared to the prior year. Maintenance and support revenue increased mainly due to growth in our installed customer base from new software license sales as well as annual maintenance rate increases.

Appraisal services.

The following table sets forth a comparison of our appraisal services revenue for the years ended December 31:

($ in thousands)	2018	2017	Change $	Change %
ES	$ —	$ —	$ —	— %
A&T	21,846	25,023	(3,177)	(13)
Total appraisal services revenue	$ 21,846	$ 25,023	$ (3,177)	(13)%

In 2018, appraisal services revenue decreased 13% compared to the prior year primarily due to the successful completion of several large revaluation projects in mid-2017. The appraisal services business is somewhat cyclical and driven in part by statutory revaluation cycles in various states

COST OF REVENUES AND GROSS MARGINS

The following table sets forth a comparison of the key components of our cost of revenues for the years ended December 31:

($ in thousands)	2018	2017	Change $	Change %
Software licenses and royalties	$ 3,802	$ 3,321	$ 481	14%
Acquired software	22,972	21,686	1,286	6
Software services, maintenance and subscriptions	438,923	387,634	51,289	13
Appraisal services	14,299	16,286	(1,987)	(12)
Hardware and other	15,708	12,595	3,113	25
Total cost of revenues	$495,704	$441,522	$ 54,182	12%

The following table sets forth a comparison of gross margin percentage by revenue type for the years ended December 31:

Gross margin percentage	2018	2017	Change
Software licenses, royalties and acquired software	71.3%	71.0%	0.3 %
Software services, maintenance and subscriptions	44.9	45.6	(0.7)
Appraisal services	34.5	34.9	(0.4)
Hardware and other	33.6	28.8	4.8
Overall gross margin	47.0%	47.5%	(0.5)%

Software licenses, royalties and acquired software. Cost of software licenses, royalties and acquired software is primarily comprised of amortization expense for acquired software and third-party software costs. We do not have any direct costs associated with royalties. The gross margin increase of 0.3% is due to higher software license revenues offset by an increase in amortization expense for acquired software attributed to new acquisitions completed in 2018.

Software services, maintenance and subscriptions. Cost of software services, maintenance and subscriptions primarily consists of personnel costs related to installation of our software, conversion of client data, training client personnel and support activities and various other services such as custom client development and on-going operation of SaaS and e-filing arrangements. In 2018, the software services, maintenance and subscriptions gross margin decreased 0.7% compared to the prior year. Excluding employees added through acquisitions, our implementation and support staff grew by 57 employees in 2018 as we accelerated hiring to ensure that we are well-positioned to deliver our current backlog and anticipated new business. Recognition of acquisition-related deferred revenue associated with subscriptions and maintenance also resulted in lower gross margins.

Appraisal services. Appraisal services revenue comprised approximately 2.3% of total revenue. The appraisal services gross margin decreased 0.4% compared to 2017 due to the reduction in higher margin projects substantially complete by early 2017 and lower volume of revenues in the current period to cover relatively fixed costs.

Our 2018 blended gross margin slightly decreased by 0.5% compared to 2017. Our overall gross margin decrease is mainly attributed to additions to our implementation staff and lower margin revenues from appraisal services, offset by improved margin on revenues from software licenses.

Selling, General and Administrative Expenses

The following table sets forth a comparison of selling, general and administrative expenses for the years ended December 31:

($ in thousands)	2018	2017	Change $	Change %
Selling, general and administrative expenses	$207,605	$175,914	$31,691	18%

SG&A as a percentage of revenue was 22.2% in 2018 compared to 20.9% in 2017. SG&A expense increased approximately 18% compared to the prior year period. In 2018, our operating results include $9.1 million of SG&A expenses for Socrata from the date of acquisition. The remaining SG&A expense increase is mainly due to compensation cost related to increased staff levels, higher stock compensation expense and increased commission expense as a result of higher sales. Excluding employees added with acquisitions, we added 47 employees mainly to our sales and finance teams since in 2018. In addition, our 2018 stock compensation expense rose $11.2 million, mainly due to increases in our stock price over the last few years.

Research and Development Expense

The following table sets forth a comparison of our research and development expense for the years ended December 31:

($ in thousands)	2018	2017	Change $	Change %
Research and development expense	$ 63,264	$ 47,324	$ 15,940	34%

Research and development expense increased 34% in 2018 compared to the prior year period, mainly due to a number of new Tyler product development initiatives across our product suites, including increased investments in research and development at recently acquired businesses. To support these initiatives, our research and development staff grew by 159 in 2018.

Amortization of Customer and Trade Name Intangibles

The following table sets forth a comparison of amortization of customer and trade name intangibles for the years ended December 31:

($ in thousands)	2018	2017	Change $	Change %
Amortization of customer and trade name intangibles	$16,217	$13,381	$ 2,836	21%

Amortization of customer and trade name intangibles increased due to the impact of intangibles added with several acquisitions completed in 2017 and 2018.

Other

The following table sets forth a comparison of other income, net for the years ended December 31:

			Change	
($ in thousands)	2018	2017	$	%
Other income, net	$ 3,378	$ 698	$ 2,680	384%

Other income is comprised of interest income from invested cash net of interest expense and non-usage and other fees associated with our revolving credit agreement. Other income, net, increased compared to the prior period due to increased interest income from significantly higher levels of cash and investments resulting from cash generated in the last year. We had no debt in 2018, as we repaid all borrowings under the revolving line of credit in January 2017.

Income Tax Provision (Benefit)

The following table sets forth a comparison of our income tax provision for the years ended December 31:

			Change	
($ in thousands)	2018	2017	$	%
Income tax provision (benefit)	$ 8,408	$ (6,115)	$ 14,523	(237)%
Effective income tax rate	5.4%	(3.7)%		

The increase in the income tax provision in 2018 is primarily due to the one-time tax benefit of $26.0 million recognized in the fourth quarter of 2017 resulting from the remeasurement of deferred tax assets and liabilities associated with the enactment of the Tax Act which reduced the statutory U.S. federal corporate income tax rate from 35% to 21%. The increase is somewhat offset by the decrease in statutory U.S. federal corporate income tax rate for 2018. In addition, excess tax benefits from stock option exercises were lower in 2018 as compared to the prior period. Stock option exercise activity in 2018 generated excess tax benefits of $32.5 million, while stock option exercise activity in 2017 generated $40.6 million excess tax benefits.

The increase in the effective income tax rate in 2018 compared to 2017 is also primarily attributable to the one-time tax benefit associated with the Tax Act recognized in 2017 and the decrease in excess tax benefits related to stock option exercises realized, offset by the decrease in statutory U.S. federal corporate income tax rate for 2018. Excluding the impact of the Tax Act and the excess tax benefits, our income tax provision and effective tax rate in 2018 would have been $42.6 million and 27.4% and in 2017, would have been $60.5 million and 37.0%, respectively.

The effective income tax rates in both 2018 and 2017 differed from the statutory United States federal corporate income tax rate of 21% and 35%, respectively, due to state income taxes, the research tax credit, non-deductible share-based compensation expense, disqualifying incentive stock option dispositions, and other non-deductible business expenses, and in 2017, the domestic production activities deduction.

FINANCIAL CONDITION AND LIQUIDITY

As of December 31, 2019, we had cash and cash equivalents of $232.7 million compared to $134.3 million at December 31, 2018. We also had $81.6 million invested in investment grade corporate bonds, municipal bonds and asset-backed securities as of December 31, 2019 compared to $97.7 million at December 31, 2018. These investments mature between 2020 through 2023 and we intend to hold these investments until maturity. Cash and cash equivalents consist of cash on deposit with several domestic banks and money market funds. As of December 31, 2019, we had no outstanding borrowings and no outstanding letters of credit. We believe our revolving line of credit, cash from operating activities, cash on hand and access to the credit markets provide us with sufficient flexibility to meet our long-term financial needs.

The following table sets forth a summary of cash flows for the years ended December 31:

($ in thousands)	2019	2018	2017
Cash flows provided (used) by:			
Operating activities	$ 254,720	$ 250,203	$ 195,755
Investing activities	(245,015)	(238,255)	(85,395)
Financing activities	88,698	(63,595)	39,415
Net increase (decrease) in cash and cash equivalents	$ 98,403	$ (51,647)	$ 149,775

Net cash provided by operating activities continues to be our primary source of funds to finance operating needs and capital expenditures. Other potential capital resources include cash on hand, public and private issuances of debt or equity securities, and bank borrowings. It is possible that our ability to access the capital and credit markets in the future may be limited by economic conditions or other factors. We currently believe that cash provided by operating activities, cash on hand and available credit are sufficient to fund our working capital requirements, capital expenditures, income tax obligations, and share repurchases for at least the next twelve months.

In 2019, operating activities provided cash of $254.7 million compared to $250.2 million in 2018. Operating activities that provided cash were primarily comprised of net income of $146.5 million, non-cash depreciation and amortization charges of $76.7 million and non-cash share-based compensation expense of $60.0 million. Working capital, excluding cash, increased approximately $35.5 million due to higher accounts receivable resulting from an increase in unbilled receivables attributed to revenues recognized prior to billings, higher accounts receivable related to annual maintenance and subscription billings, timing of income tax payments, and the deferred taxes associated with stock option activity during the period. These increases were offset by the growth in deferred revenue balances and timing of payments of payroll related taxes and vendor invoices.

In general, changes in the balance of deferred revenue are cyclical and primarily driven by the timing of our maintenance and subscription billings. Our renewal dates occur throughout the year, but our largest maintenance renewal cycles occur in the second and fourth quarters.

Days sales outstanding in accounts receivable were 117 days at December 31, 2019, compared to 111 days at December 31, 2018. The increase in our DSO is mainly due to an increase in unbilled receivables attributed to the increase in software license revenue for which we have recognized revenue at the point in time when the software is made available to the customer, but the billing has not yet been submitted to the customer. An increase in software services contracts accounted for using progress-to-completion method of revenue recognition in which the services are performed in one accounting period, but the billing normally occurs subsequently in another accounting period also contributed to the increase in DSO. Furthermore, our maintenance billing cycle typically peaks at its highest level in June and second highest level in December of each year and is followed by collections in the subsequent quarter. DSO is calculated based on quarter-end accounts receivable (excluding long-term receivables but including unbilled receivables) divided by the quotient of annualized quarterly revenues divided by 360 days.

Investing activities used cash of $245.0 million in 2019 compared to $238.3 million in 2018. We invested $54.7 million and received $70.8 million in proceeds from investment grade corporate bonds, municipal bonds and asset-backed securities with maturity dates ranging from 2020 through 2023. On February 28, 2019, we acquired all of the capital stock of MicroPact. The total purchase price, net of cash acquired of $2.0 million, was approximately $202.2 million, including $198.2 million paid in cash and accrued contingent consideration of $6.0 million at December 31, 2019. On February 1, 2019, we acquired all the assets of MyCivic for the total purchase price of $3.7 million paid in cash. On October 30, 2019, we acquired certain assets of CHT. The total purchase price was approximately $20.5 million of which $19.1 million was

paid in cash and approximately $1.4 million accrued for working capital and indemnity holdbacks, subject to certain post-closing adjustments. Approximately $37.2 million was invested in property and equipment, including $20.8 million related to real estate. In addition, approximately $4.8 million of software development was capitalized in 2019. The remaining additions were for computer equipment and furniture and fixtures in support of internal growth, particularly with respect to data centers supporting growth in our cloud-based offerings. These expenditures were funded from cash generated from operations.

In 2018, we invested $115.6 million and received $81.2 million in proceeds from investment grade corporate bonds, municipal bonds and asset-backed securities. Approximately $27.4 million was invested in property and equipment, primarily for computer equipment, furniture and fixtures in support of internal growth, particularly with respect to our cloud-based offerings. We paid $2.2 million for the expansion of existing buildings. On December 7, 2018, we acquired certain assets and intellectual property of SceneDoc, Inc., a company that provides mobile-first, SaaS field reporting for law enforcement agencies. The total purchase price was approximately $6.2 million in cash. On October 1, 2018, we acquired all of the equity interests of MobileEyes, a company that develops software to improve public safety by supporting fire prevention and suppression, emergency response, and structural safety. The total purchase price was approximately $5.3 million in cash. On August 31, 2018, we acquired all of the assets of CaseloadPRO, a company that provides a fully featured probation case management system. The purchase price of $9.3 million was paid in cash. On April 30, 2018, we acquired all of the capital stock of Socrata, a company that provides open data and data-as-a-service solutions including cloud-based data integration, visualization, analysis, and reporting solutions for state and local government agencies. The purchase price, net of cash acquired of $1.7 million, was $147.6 million paid in cash. On April 30, 2018, we acquired all of the equity interests of Sage, a cybersecurity company offering a suite of services that supports an entire cybersecurity lifecycle, including program development, education and training, technical testing, advisory services, and digital forensics. The total purchase price was $11.6 million paid in cash. These expenditures were funded from cash generated from operations.

Financing activities provided cash of $88.7 million in 2019 compared to cash used of $63.6 million in 2018. Financing activities in 2019 were primarily comprised of collections of $106.5 million from stock option exercises and employee stock purchase plan activity. We also purchased approximately 72,000 shares of our common stock for an aggregate purchase price of $14.3 million.

Financing activities used cash of $63.6 million in 2018 compared to cash provided of $39.4 million in 2017. Financing activities in 2018 were primarily comprised of collections of $83.0 million from stock option exercises and employee stock purchase plan activity. We also purchased approximately 781,000 shares of our common stock for an aggregate purchase price of $150.1 million, of which $3.5 million was accrued as of December 31, 2018.

In February 2019, our board of directors authorized the repurchase of an additional 1.5 million shares of Tyler common stock. The repurchase program, which was approved by our board of directors, was announced in October 2002, and was amended at various times from 2003 through 2019. As of February 19, 2020, we had remaining authorization to repurchase up to 2.6 million additional shares of our common stock. Our share repurchase program allows us to repurchase shares at our discretion. Market conditions influence the timing of the buybacks and the number of shares repurchased, as well as the volume of employee stock option exercises. Share repurchases are generally funded using our existing cash balances and borrowings under our credit facility and may occur through open market purchases and transactions structured through investment banking institutions, privately negotiated transactions and/or other mechanisms. There is no expiration date specified for the authorization and we intend to repurchase stock under the plan from time to time.

On September 30, 2019, we entered into a $400.0 million credit agreement (the "Credit Facility") with the various lenders party thereto and Wells Fargo Bank, National Association, as Administrative Agent. The Credit Facility provides for an unsecured revolving credit line of up to $400.0 million, including a $25.0 million sublimit for letters of credit. The Credit Facility matures on September 30, 2024. Borrowings under the Credit Facility may be used for general corporate purposes, including working capital requirements, acquisitions and share repurchases. Borrowings under the Credit Facility bear interest at a rate of either (1) Wells Fargo Bank's prime rate (subject to certain higher rate determinations) plus a margin of 0.125% to 0.75% or (2) the 30, 60, 90 or 180 day LIBOR rate plus a margin of 1.125% to 1.75%. As of December 31, 2019, our interest rate was 4.88% under the prime rate option or approximately 2.89% under the 30-day LIBOR option. The Credit Facility is secured by substantially all of our assets. The Credit Facility requires us to maintain certain financial ratios and other financial conditions and prohibits us from making certain investments, advances, cash dividends or loans, and limits incurrence of additional indebtedness and liens. As of December 31, 2019, we were in compliance with those covenants.

As of December 31, 2019, we had no outstanding borrowings and had unused borrowing capacity of $400.0 million under the Credit Facility. We paid interest of $1,750,000 in 2019, $770,000 in 2018, and $804,000 in 2017.

We paid income taxes, net of refunds received, of $21.3 million in 2019, $6.8 million in 2018, and $36.0 million in 2017. In 2019, we experienced significant stock option exercise activity that generated net tax benefits of $29.8 million and reduced tax payments accordingly. In 2018 and 2017, excess tax benefits were $32.5 million and $40.6 million, respectively.

We anticipate that 2020 capital spending will be between $36 million and $38 million, including approximately $9 million related to real estate and approximately $7 million of capitalized software development. We expect the majority of the other capital spending will consist of computer equipment and software for infrastructure replacements and expansion. Capital spending is expected to be funded from existing cash balances and cash flows from operations.

From time to time we engage in discussions with potential acquisition candidates. In order to pursue such opportunities, which could require significant commitments of capital, we may be required to incur debt or to issue additional potentially dilutive securities in the future. No assurance can be given as to our future acquisition opportunities and how such opportunities will be financed. We lease office facilities for use in our operations, as well as transportation and other equipment. Most of our leases are non-cancelable operating lease agreements and they expire from one year to eight years. Some of these leases include options to extend for up to 10 years.

Summarized in the table below are our obligations to make future payments under the Credit Facility and lease obligations at December 31, 2019 (in thousands):

	2020	2021	2022	2023	2024	Thereafter	Total
Revolving line of credit	$ —	$ —	$ —	$ —	$ —	$ —	$ —
Lease obligations	7,684	6,246	3,960	2,923	2,478	2,042	25,333
Total future payment obligations	$ 7,684	$ 6,246	$ 3,960	$ 2,923	$ 2,478	$ 2,042	$ 25,333

As of December 31, 2019, we do not have any off-balance sheet arrangements, guarantees to third-parties or material purchase commitments.

CAPITALIZATION

At December 31, 2019, our capitalization consisted of no outstanding borrowings and $1.6 billion of shareholders' equity.

QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

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

In 2019, our effective average interest rate for borrowings was 3.84%. As of December 31, 2019, our interest rate was 4.88% under the prime rate option or approximately 2.89% under the 30-day LIBOR option. Loans under the Credit Facility bear interest, at Tyler's option, at a per annum rate of either (1) Wells Fargo Bank's prime rate (subject to certain higher rate determinations) plus a margin of 0.125% to 0.75% or (2) the one-, two-, three-, or six-month LIBOR rate plus a margin of 1.125% to 1.75%.

As of December 31, 2019, we had no outstanding borrowings under the Credit Facility and therefore are not subject to any interest risk.

CONTROLS AND PROCEDURES.

Evaluation of Disclosure Controls and Procedures — We maintain disclosure controls and procedures (as defined in Rule 13a-15(e) of the Securities Exchange Act) designed to provide reasonable assurance that the information required to be disclosed by us in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. These include controls and procedures designed to ensure that this information is accumulated and communicated to our management, including our chief executive officer and chief financial officer, as appropriate to allow timely decisions regarding required disclosures. Management, with the participation of the chief executive officer and chief financial officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2019. Based on this evaluation, the chief executive officer and chief financial officer have concluded that our disclosure controls and procedures were effective as of December 31, 2019.

Management's Report on Internal Control Over Financial Reporting — Tyler's management is responsible for establishing and maintaining effective internal control over financial reporting as defined in Securities Exchange Act Rule 13a-15(f). Tyler's internal control over financial reporting is designed to provide reasonable assurance to Tyler's management and board of directors regarding the preparation and fair presentation of published financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

Management assessed the effectiveness of Tyler's internal control over financial reporting as of December 31, 2019. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). Based on our assessment, we concluded that, as of December 31, 2019, Tyler's internal control over financial reporting was effective based on those criteria.

Management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of MicroPact, which is included in our 2019 consolidated financial statements and constituted 11.5% of total assets as of December 31, 2019 and 5.8% of revenues for the year then ended.

Tyler's internal control over financial reporting as of December 31, 2019 has been audited by Ernst & Young LLP, the independent registered public accounting firm who also audited Tyler's financial statements. Ernst & Young's attestation report on Tyler's internal control over financial reporting appears on page 57 hereof.

Changes in Internal Control Over Financial Reporting — During the quarter ended December 31, 2019, there were no changes in our internal control over financial reporting, as defined in Securities Exchange Act Rule 13a-15(f), that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

To the Shareholders and the Board of Directors of Tyler Technologies, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Tyler Technologies, Inc. (the Company) as of December 31, 2019 and 2018, the related consolidated statements of comprehensive income, shareholders' equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 19, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

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

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

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Estimation of hours for certain progress-to-completion (POC) arrangements

Description of the Matter

As described in Note 1 "Summary of Significant Accounting Policies" to the consolidated financial statements under "Revenue Recognition," many of the Company's software arrangements involve "off-the-shelf" software. For arrangements that involve significant production, modification or customization of the software, or where software services are otherwise not considered distinct, the Company recognizes revenue over time based on a measurement of progress-to-completion (POC). The Company measures POC primarily using labor hours incurred, believing it best depicts the pattern of transfer of control to the customer, which occurs as the Company incurs costs on its contracts. Estimates of budgeted total hours for these arrangements requires management judgment.

Auditing management's estimates of total budgeted contract hours required additional audit effort due to the existence of management judgment required to make these estimates for arrangements that are completed over an extended period. These estimates require ongoing monitoring by management and may require revision over time.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company's process to review contract progress-to-date and total budgeted hours, inclusive of executed contract amendments and change orders.

To test the appropriateness of management's assessment of contract progress-to-date, our audit procedures included, among others, obtaining an understanding of any increase or decrease to budgeted hours via contract amendments or change orders, observing quarterly POC meetings where the Company discussed contract progress-to-date and evaluated the appropriateness of contract estimated hours to complete, reviewing signed Company attestations as to the contracts' progress toward completion, performing a sensitivity analysis to assess the impact of changes to the budgeted hours on the amount of revenue recognized, and performing an analysis of completed contracts to compare actual hours incurred upon completion to the original budget.

Accounting for the acquisition of MP Holdings Parent, Inc.

Description of the Matter

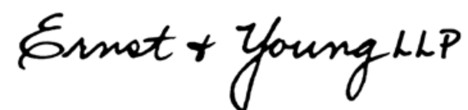
As described in Note 2 "Acquisitions" to the consolidated financial statements, the Company completed three acquisitions during 2019 for net consideration of $226.5 million. The most significant of these was the acquisition of MP Holdings Parent, Inc. (MicroPact) for net consideration of $202.2 million. The transactions were accounted for as business combinations.

Auditing the Company's accounting for the MicroPact acquisition was more complex due to the significant estimations used by management in determining the fair values of assets acquired and liabilities assumed, in particular the fair values of identified intangible assets of $136.1 million, the most significant of which consisted of customer relationships and developed technology, both of which utilize prospective financial information. The Company valued customer relationships using the multi-period excess earnings model. The significant assumptions used in this model included the attrition rate, weighted average cost of capital and existing customer growth. The Company valued the developed technology using the relief-from-royalty method. The significant assumptions used in this method included the obsolescence rate and weighted average cost of capital. The significant assumptions used in the valuation of the intangible assets are forward-looking and could be affected by future economic and market conditions.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of the Company's controls over its accounting for the MicroPact acquisition. For example, we tested controls over the recognition and measurement of consideration transferred, as well as management's review of the valuation methods and significant underlying assumptions for each identified intangible asset.

To test the estimated fair values of the acquired customer relationships and developed technology, we performed audit procedures that included, among others, evaluating the Company's selection of the valuation methodology, evaluating the significant assumptions used in the Company's valuation calculations and evaluating the completeness and accuracy of the underlying data supporting the significant assumptions. We involved our valuation specialists to assist with our evaluation of the methodology used by the Company and significant assumptions included in the fair value estimates. Additionally, we performed sensitivity analyses and compared significant assumptions to forecasts, the assumptions used to value similar assets in other acquisitions and to historical financial results of both the Company and the acquiree, among other procedures. We also evaluated the Company's acquisition and related purchase accounting disclosures included in Note 2 "Acquisitions".



We have served as the Company's auditor since 1966.

Dallas, Texas
February 19, 2020

To the Shareholders and the Board of Directors of Tyler Technologies, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Tyler Technologies, Inc.'s internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Tyler Technologies, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

As indicated in the accompanying Management's Report on Internal Control Over Financial Reporting, management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of MP Holdings Parent, Inc. (MicroPact), which is included in the 2019 consolidated financial statements of the Company and constituted 11.5% of total assets as of December 31, 2019 and 5.8% of total revenue for the year then ended. Our audit of internal control over financial reporting of the Company also did not include an evaluation of the internal control over financial reporting of MicroPact.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), consolidated balance sheets of the Company as of December 31, 2019 and 2018, the related consolidated statements of comprehensive income, shareholders' equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and our report dated February 19, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

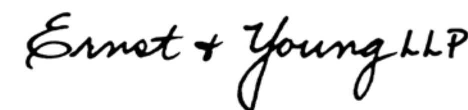
We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

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

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



Dallas, Texas
February 19, 2020

Consolidated Statements of Comprehensive Income

For the years ended December 31,	2019	2018	2017
(In thousands, except per share amounts)			
Revenues:			
Software licenses and royalties	$ 100,205	$ 93,441	$ 86,242
Subscriptions	296,352	220,547	172,176
Software services	213,061	191,269	180,460
Maintenance	430,318	384,521	359,319
Appraisal services	23,479	21,846	25,023
Hardware and other	23,012	23,658	17,679
Total revenues	1,086,427	935,282	840,899
Cost of revenues:			
Software licenses and royalties	3,938	3,802	3,321
Acquired software	30,642	22,972	21,686
Software services, maintenance and subscriptions	502,138	438,923	387,634
Appraisal services	15,337	14,299	16,286
Hardware and other	17,472	15,708	12,595
Total cost of revenues	569,527	495,704	441,522
Gross profit	516,900	439,578	399,377
Selling, general and administrative expenses	257,746	207,605	175,914
Research and development expense	81,342	63,264	47,324
Amortization of customer and trade name intangibles	21,445	16,217	13,381
Operating income	156,367	152,492	162,758
Other income, net	3,471	3,378	698
Income before income taxes	159,838	155,870	163,456
Income tax provision (benefit)	13,311	8,408	(6,115)
Net income	$ 146,527	$ 147,462	$ 169,571
Earnings per common share:			
Basic	$ 3.79	$ 3.84	$ 4.55
Diluted	$ 3.65	$ 3.68	$ 4.32

See accompanying notes.

Consolidated Balance Sheets

December 31,	2019	2018
(In thousands, except par value and share amounts)		
ASSETS		
Current Assets:		
Cash and cash equivalents	$ 232,682	$ 134,279
Accounts receivable (less allowance for losses and sales adjustments of $5,738 in 2019 and $4,647 in 2018)	374,089	298,912
Short-term investments	39,399	44,306
Prepaid expenses	24,717	33,258
Income tax receivable	6,482	4,697
Other current assets	2,328	3,406
Total current assets	679,697	518,858
Accounts receivable, long-term	22,432	16,020
Operating lease right-of-use assets	18,992	—
Property and equipment, net	171,861	155,177
Other assets:		
Goodwill	840,117	753,718
Other intangibles, net	378,914	276,852
Non-current investments and other assets	79,601	70,338
	$ 2,191,614	$ 1,790,963
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 14,977	$ 6,910
Accrued liabilities	75,234	66,480
Operating lease liabilities	6,387	—
Deferred revenue	412,495	350,512
Total current liabilities	509,093	423,902
Revolving line of credit	—	—
Deferred revenue, long-term	199	424
Deferred income taxes	48,442	41,791
Operating lease liabilities, long-term	16,822	—
Commitments and contingencies		
Shareholders' equity:		
Preferred stock, $10.00 par value; 1,000,000 shares authorized, none issued	—	—
Common stock, $0.01 par value; 100,000,000 shares authorized; 48,147,969 shares issued in 2019 and 2018	481	481
Additional paid-in capital	739,478	731,435
Accumulated other comprehensive loss, net of tax	(46)	(46)
Retained earnings	917,336	771,925
Treasury stock, at cost; 8,839,352 and 9,872,505 shares in 2019 and 2018, respectively	(40,191)	(178,949)
Total shareholders' equity	1,617,058	1,324,846
	$ 2,191,614	$ 1,790,963

See accompanying notes.

Consolidated Statements of Cash Flows

For the years ended December 31,	2019	2018	2017
(In thousands)			
Cash flows from operating activities:			
Net income	$ 146,527	$ 147,462	$ 169,571
Adjustments to reconcile net income to cash provided by operations:			
Depreciation and amortization	76,672	61,759	53,395
Share-based compensation expense	59,967	52,740	37,348
Provision for losses and sales adjustments - accounts receivable	1,636	(569)	2,031
Operating lease right-of-use assets - non cash	5,397	—	—
Deferred income tax benefit	(6,088)	(5,069)	(33,664)
Changes in operating assets and liabilities, exclusive of effects of acquired companies:			
Accounts receivable	(65,738)	(50,916)	(33,091)
Income tax receivable	(1,925)	6,642	(8,444)
Prepaid expenses and other current assets	(8,976)	(588)	(6,958)
Accounts payable	7,403	(2,416)	878
Operating lease liabilities	(6,113)	—	—
Accrued liabilities	1,516	(2,445)	6,050
Deferred revenue	44,442	43,603	8,639
Net cash provided by operating activities	254,720	250,203	195,755
Cash flows from investing activities:			
Additions to property and equipment	(37,236)	(27,424)	(43,057)
Purchase of marketable security investments	(54,742)	(115,625)	(59,779)
Proceeds from marketable security investments	70,796	81,205	28,786
Capitalized software development costs	(4,804)	—	—
Cost of acquisitions, net of cash acquired	(218,734)	(178,093)	(11,344)
(Increase) decrease in other	(295)	1,682	(1)
Net cash used by investing activities	(245,015)	(238,255)	(85,395)
Cash flows from financing activities:			
Decrease in net borrowings on revolving line of credit	—	—	(10,000)
Purchase of treasury shares	(17,786)	(146,553)	(7,474)
Proceeds from exercise of stock options	96,908	74,907	49,845
Contributions from employee stock purchase plan	9,576	8,051	7,044
Net cash provided (used) by financing activities	88,698	(63,595)	39,415
Net increase (decrease) in cash and cash equivalents	98,403	(51,647)	149,775
Cash and cash equivalents at beginning of period	134,279	185,926	36,151
Cash and cash equivalents at end of period	$ 232,682	$ 134,279	$ 185,926

See accompanying notes.

Consolidated Statements of Shareholders' Equity

For the years ended December 31, 2019, 2018 and 2017

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Retained Earnings	Treasury stock		Total Shareholders' Equity
	Shares	Amount				Shares	Amount	
(In thousands)								
Balance at December 31, 2016	48,148	$ 481	$ 556,663	$ (46)	$ 454,892	(11,382)	$ (77,449)	$ 934,541
Net income	—	—	—	—	$ 169,571	—	—	$ 169,571
Issuance of shares pursuant to stock compensation plan	—	—	28,174	—	—	1,113	21,671	49,845
Stock compensation	—	—	37,348	—	—	—	—	37,348
Issuance of shares pursuant to employee stock purchase plan	—	—	4,682	—	—	51	2,362	7,044
Treasury stock purchases	—	—	—	—	—	(44)	(6,613)	(6,613)
Balance at December 31, 2017	48,148	481	626,867	(46)	624,463	(10,262)	(60,029)	1,191,736
Net income	—	—	—	—	147,462	—	—	147,462
Issuance of shares pursuant to stock compensation plan	—	—	44,458	—	—	1,126	30,449	74,907
Stock compensation	—	—	52,740	—	—	—	—	52,740
Issuance of shares pursuant to employee stock purchase plan	—	—	7,370	—	—	45	681	8,051
Treasury stock purchases	—	—	—	—	—	(781)	(150,050)	(150,050)
Balance at December 31, 2018	48,148	481	731,435	(46)	771,925	(9,872)	(178,949)	1,324,846
Net income	—	—	—	—	146,527	—	—	146,527
Retained earnings adjustment-adoption of Topic 842 Leases, net of taxes	—	—	—	—	(1,116)	—	—	(1,116)
Exercise of stock options and vesting of restricted stock units	—	—	(52,833)	—	—	1,075	149,741	96,908
Employee taxes paid for withheld shares for taxes upon equity award	—	—	—	—	—	(23)	(5,361)	(5,361)
Stock compensation	—	—	59,967	—	—	—	—	59,967
Issuance of shares pursuant to employee stock purchase plan	—	—	909	—	—	53	8,667	9,576
Treasury stock purchases	—	—	—	—	—	(72)	(14,289)	(14,289)
Balance at December 31, 2019	48,148	$ 481	$ 739,478	$ (46)	$ 917,336	(8,839)	$ (40,191)	$1,617,058

See accompanying notes.

(Tables in thousands, except per share data)

(1) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

DESCRIPTION OF BUSINESS

We provide integrated software systems and related services for the public sector, with a focus on local governments. We develop and market a broad line of software solutions and services to address the information technology ("IT") needs primarily of cities, counties, schools and other local government entities. In addition, we provide professional IT services, including software and hardware installation, data conversion, training, and for certain customers, product modifications, along with continuing maintenance and support for customers using our systems. We also provide subscription-based services such as software as a service ("SaaS") arrangements, which primarily utilize the Tyler private cloud, and electronic document filing solutions ("e-filing"). In addition, we provide property appraisal outsourcing services for taxing jurisdictions.

PRINCIPLES OF CONSOLIDATION

The consolidated financial statements include our parent company and sixteen subsidiaries, which are wholly-owned. All significant intercompany balances and transactions have been eliminated in consolidation. Comprehensive income is defined as the change in equity of a business enterprise during a period from transactions, and other events and circumstances from non-owner sources and includes all components of net income (loss) and other comprehensive income (loss). We had no items of other comprehensive income (loss) during the years ended December 31, 2019, 2018 and 2017.

CASH AND CASH EQUIVALENTS

Cash in excess of that necessary for operating requirements is invested in short-term, highly liquid, income-producing investments. Investments with original maturities of three months or less are classified as cash and cash equivalents, which primarily consist of cash on deposit with several banks and money market funds. Cash and cash equivalents are stated at cost, which approximates market value.

REVENUE RECOGNITION

Nature of Products and Services

We earn revenue from software licenses, royalties, subscription-based services, software services, post-contract customer support ("PCS" or "maintenance"), hardware, and appraisal services. Revenue is recognized upon transfer of control of promised products or services to customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. We determine revenue recognition through the following steps:

- Identification of the contract, or contracts, with a customer
- Identification of the performance obligations in the contract
- Determination of the transaction price
- Allocation of the transaction price to the performance obligations in the contract
- Recognition of revenue when, or as, we satisfy a performance obligation

Most of our software arrangements with customers contain multiple performance obligations that range from software licenses, installation, training, and consulting to software modification and customization to meet specific customer needs (services), hosting, and PCS. For these contracts, we account for individual performance obligations separately when they are distinct. We evaluate whether separate performance obligations can be distinct or should be accounted for as one performance obligation. Arrangements that include software services, such as training or installation, are evaluated to determine whether those services are highly interdependent or interrelated to the product's functionality. The transaction price is allocated to the distinct performance obligations on a relative standalone selling price ("SSP") basis. We determine the SSP based on our overall pricing objectives, taking into consideration market conditions and other factors, including the value of our contracts, the applications sold, customer demographics, and the number and types of users within our contracts. Revenue is recognized net of allowances for sales adjustments and any taxes collected from customers, which are subsequently remitted to governmental authorities.

Software Arrangements:

Software Licenses and Royalties

Many of our software arrangements involve "off-the-shelf" software. We recognize the revenue allocable to "off-the-shelf" software licenses and specified upgrades at a point in time when control of the software license transfers to the customer, unless the software is not considered distinct. We consider off-the-shelf software to be distinct when it can be added to an arrangement with minor changes in the underlying code, it can be used by the customer for the customer's purpose upon installation, and remaining services such as training are not considered highly interdependent or interrelated to the product's functionality.

For arrangements that involve significant production, modification or customization of the software, or where software services are otherwise not considered distinct, we recognize revenue over time by measuring progress-to-completion. We measure progress-to-completion primarily using labor hours incurred as it best depicts the transfer of control to the customer which occurs as we incur costs on our contracts. These arrangements are often implemented over an extended period and occasionally require us to revise total cost estimates. Amounts recognized in revenue are calculated using the progress-to-completion measurement after giving effect to any changes in our cost estimates. Changes to total estimated contract costs, if any, are recorded in the period they are determined. Estimated losses on uncompleted contracts are recorded in the period in which we first determine that a loss is apparent.

Software license fees are billed in accordance with the contract terms. Typically, a majority of the fee is due when access to the software license is made available to the customer and the remainder of the fee due over a passage of time stipulated by the contract. We record amounts that have been invoiced in accounts receivable and in deferred revenue or revenues, depending on whether the revenue recognition criteria have been met.

We recognize royalty revenue when the sale occurs under the terms of our third-party royalty arrangements. Currently, our third-party royalties are recognized on an estimated basis and are trued up when we receive notice of amounts we are entitled to receive. We typically receive notice of royalty revenues we are entitled to and billed on a quarterly basis in the quarter immediately following the royalty reporting period.

Software Services

As noted above, some of our software arrangements include services considered highly interdependent or highly interrelated or require significant customization to meet the customer's desired functionality. For these software arrangements, both the software licenses and related software services revenue are not distinct and are recognized over time using the progress-to-completion method. We measure progress-to-completion primarily using labor hours incurred as it best depicts the transfer of control to the customer which occurs as we incur costs on our contracts. Contract fees are typically billed on a milestone basis as defined within contract terms. We record amounts that have been invoiced in accounts receivable and in deferred revenue or revenues, depending on whether the revenue recognition criteria have been met. When software services are distinct, the fee allocable to the service element is recognized over the time we perform the services and is billed on a time and material basis.

Post-Contract Customer Support

Our customers generally enter into PCS agreements when they purchase our software licenses. PCS includes telephone support, bug fixes, and rights to upgrades on a when-and-if available basis. PCS is considered distinct when purchased with our software licenses. Our PCS agreements are typically renewable annually. PCS is recognized over time on a straight-line basis over the period the PCS is provided. All significant costs and expenses associated with PCS are expensed as incurred.

Computer Hardware Equipment

Revenue allocable to computer hardware equipment is recognized at a point in time when control of the equipment is transferred to the customer.

Subscription-Based Services:

Subscription-based services consist primarily of revenues derived from SaaS arrangements, typically utilizing the Tyler private cloud, and electronic filing transactions. Revenue from subscription-based services is generally recognized over time on a ratable basis over the contract term, beginning on the date that our service is made available to the customer. Our subscription contracts are generally three to five years or longer in length, billed annually in advance, and non-cancelable.

For SaaS arrangements, we evaluate whether the customer has the contractual right to take possession of our software at any time during the hosting period without significant penalty and whether the customer can feasibly maintain the software on the customer's hardware or enter into another arrangement with a third-party to host the software. We allocate contract value to each performance obligation of the arrangement that qualifies for treatment as a distinct element based on estimated SSP. We recognize SaaS arrangements services ratably over the term of the arrangement, which range from one to ten years, but are typically for a period of three to five years. For software services associated with certain SaaS arrangements, we have concluded that the services are not distinct, and we recognize the revenue ratably over the remaining contractual period once we have provided the customer access to the software. We record amounts that have been invoiced in accounts receivable and in deferred revenue or revenues, depending on whether the revenue recognition criteria have been met.

Electronic filing transaction fees primarily pertain to documents filed with the courts by attorneys and other third-parties via our e-filing services and retrieval of filed documents via our access services. For each document filed with a court, the filer generally pays a transaction fee and a court filing fee to us and we remit a portion of the transaction fee and the filing fee to the court. We record as revenue the transaction fee, while the portion of the transaction fee remitted to the courts is recorded as cost of revenues as we are acting as a principal in the arrangement. Court filing fees collected on behalf of the courts and remitted to the courts are recorded on a net basis and thus do not affect the statement of comprehensive income.

Other transaction-based fees primary relate to online payment services, which are offered with the assistance of third-party vendors. In general, when we are the principal in a transaction based on the factors identified in ASC 606-10-55-36 through 55-40, we record the revenue and related costs on a gross basis. Otherwise, we net the cost of revenue associated with the service against the gross revenue (amount billed to the customer) and record the net amount as revenue.

For e-filing transaction fees and other transaction-based revenues, we have the right to charge the customer an amount that directly corresponds with the value to the customer of our performance to date. Therefore, we recognize revenue for these services over time based on the amount billable to the customer in accordance with the 'as invoiced' practical expedient in ASC 606-10-55-18. In some cases, we are paid on a fixed fee basis and recognize the revenue ratably over the contractual period.

Costs of performing services under subscription-based arrangements are expensed as incurred, except for certain direct and incremental contract origination and set-up costs associated with SaaS arrangements. Such direct and incremental costs are capitalized and amortized ratably over the useful life.

Appraisal Services:

For our property appraisal projects, we recognize revenue using the progress-to-completion method since many of these projects are executed over one to three-year periods and consist of various unique activities. Appraisal services require a significant level of integration and interdependency with various individual service components; therefore, the service components are not considered distinct. Appraisal services are recognized over time by measuring progress-to-completion primarily using labor hours incurred as it best depicts the transfer of control to the customer which occurs as we incur costs on our contracts. These arrangements are often executed over an extended period and occasionally require us to revise total cost estimates. Amounts recognized in revenue are calculated using the progress-to-completion measurement after giving effect to any changes in our cost estimates. Changes to total estimated contract costs, if any, are recorded in the period they are determined. Estimated losses on uncompleted contracts are recorded in the period in which we first determine that a loss is apparent. Contract fees are typically billed on a milestone basis as defined within contract terms. We record amounts that have been invoiced in accounts receivable and in deferred revenue or revenues, depending on whether the revenue recognition criteria have been met.

Significant Judgments:

Our contracts with customers often include multiple performance obligations to a customer. When a software arrangement (license or subscription) includes both software licenses and software services, judgment is required to determine whether the software license is considered distinct and accounted for separately, or not distinct and accounted for together with the software services and recognized over time.

The transaction price is allocated to the separate performance obligations on a relative SSP basis. We determine the SSP based on our overall pricing objectives, taking into consideration market conditions and other factors, including the value of our contracts, the applications sold, customer demographics, and the number and types of users within our contracts. We use a range of amounts to estimate SSP when we sell each of the products and services separately and need to determine whether there is a discount to be allocated based on the relative SSP of the various products and services. In instances where SSP is not directly observable, such as when we do not sell the product or service separately, we determine SSP using the expected cost-plus margin approach.

For arrangements that involve significant production, modification or customization of the software, or where software services otherwise cannot be considered distinct, we recognize revenue as control is transferred to the customer over time using progress-to-completion methods. Depending on the contract, we measure progress-to-completion primarily using labor hours incurred, or value added. The progress-to-completion method generally results in the recognition of reasonably consistent profit margins over the life of a contract because we can provide reasonably dependable estimates of contract billings and contract costs. We use the level of profit margin that is most likely to occur on a contract. If the most likely profit margin cannot be precisely determined, the lowest probable level of profit margin in the range of estimates is used until the results can be estimated more precisely. These arrangements are often implemented over an extended time period and occasionally require us to revise total cost estimates. Amounts recognized in revenue are calculated using the progress-to-completion measurement after giving effect to any changes in our cost estimates. Changes to total estimated contract costs, if any, are recorded in the period they are determined. Estimated losses on uncompleted contracts are recorded in the period in which we first determine that a loss is apparent.

Typically, the structure of our arrangements does not give rise to variable consideration. However, in those instances whereby variable consideration exists, we include in our estimates additional revenue for variable consideration when we believe we have an enforceable right, the amount can be estimated reliably and its realization is probable.

Refer to Note 15 – "Disaggregation of Revenue" for further information, including the economic factors that affect the nature, amount, timing, and uncertainty of revenue and cash flows of our various revenue categories.

Contract Balances:

Accounts receivable and allowance for doubtful accounts and sales adjustments

Timing of revenue recognition may differ from the timing of invoicing to customers. We record an unbilled receivable when revenue is recognized prior to invoicing, or deferred revenue when revenue is recognized subsequent to invoicing. For multi-year agreements, we generally invoice customers annually at the beginning of each annual coverage period. We record an unbilled receivable related to revenue recognized for on-premises licenses as we have an unconditional right to invoice and receive payment in the future related to those licenses.

We maintain allowances for doubtful accounts, which are provided at the time the revenue is recognized. Since most of our customers are domestic governmental entities, we rarely incur a loss resulting from credit risk associated with the inability of a customer to make required payments. Events or changes in circumstances that indicate the carrying amount for the allowances for doubtful accounts may require revision include, but are not limited to, deterioration of a customer's financial condition, failure to manage our customer's expectations regarding the scope of the services to be delivered, and defects or errors in new versions or enhancements of our software products.

The following table summarizes the changes in the allowances for doubtful accounts and sales adjustments (in thousands):

Years Ended December 31,	2019	2018	2017
Balance at beginning of year	$ 4,647	$ 5,427	$ 3,396
Provisions for losses and sales adjustments - accounts receivable	1,636	(569)	2,031
Collection of accounts previously written off	(545)	(211)	—
Balance at end of year	$ 5,738	$ 4,647	$ 5,427

The allowance for doubtful accounts and sales adjustments reflects our best estimate of probable losses inherent in the accounts receivable balance. We determine the allowance based on known troubled accounts, historical experience, and other currently available evidence.

In connection with our appraisal services contracts and certain software services contracts, we may perform work prior to when the software and services are billable and/or payable pursuant to the contract. Unbilled revenue is not billable at the balance sheet date but is recoverable over the remaining life of the contract through billings made in accordance with contractual agreements. The termination clauses in most of our contracts provide for the payment for the value of products delivered or services performed in the event of early termination. We have historically recorded such unbilled receivables (costs and estimated profit in excess of billings) in connection with (1) property appraisal services contracts accounted for using progress-to-completion method of revenue recognition using labor hours as a measure of progress towards completion in which the services are performed in one accounting period but the billing normally occurs subsequently and may span another accounting period; (2) software services contracts accounted for using progress-to-completion method of revenue recognition using labor hours as a measure of progress towards completion in which the services are performed in one accounting period but the billing for the software element of the arrangement may be based upon the specific phase of the implementation; (3) software revenue for which we have recognized revenue at the point in time when the software is made available to the customer but the billing has not yet been submitted to the customer; (4) some of our contracts which provide for an amount to be withheld from a progress billing (generally between 5% and 20% retention) until final and satisfactory project completion is achieved; and (5) in a limited number of cases, extended payment terms, which may be granted to customers with whom we generally have a long-term relationship and favorable collection history.

As of December 31, 2019, and December 31, 2018, total current and long-term accounts receivable, net of allowance for doubtful accounts, was $396.5 million and $314.9 million, respectively. We have recorded unbilled receivables of $134.0 million and $104.2 million at December 31, 2019, and December 31, 2018, respectively. Included in unbilled receivables are retention receivables of $13.1 million and $12.2 million at December 31, 2019, and December 31, 2018, respectively, which become payable upon the completion of the contract or completion of our fieldwork and formal hearings. Unbilled receivables expected to be collected within one year have been included with accounts receivable, current portion in the accompanying consolidated balance sheets. Unbilled receivables and retention receivables expected to be collected past one year have been included with accounts receivable, long-term portion in the accompanying consolidated balance sheets.

Payment terms and conditions vary by contract type, although terms generally include a requirement of payment within 30 to 90 days. In instances where the timing of revenue recognition differs from the timing of invoicing, we have determined our contracts generally do not include a significant financing component. The primary purpose of our invoicing terms is to provide customers with simplified and predictable ways of purchasing our products and services, not to receive financing from our customers or to provide customers with financing. Examples include invoicing at the beginning of a subscription term with revenue recognized ratably over the contract period, and multi-year on-premises term licenses that are invoiced annually with revenue recognized upfront.

Deferred Revenue

The majority of deferred revenue consists of deferred maintenance revenue that has been billed based on contractual terms in the underlying arrangement, with the remaining balance consisting of payments received in advance of revenue being earned under software licensing, subscription-based services, software and appraisal services and hardware installation. Refer to Note 16 – “Deferred Revenue and Performance Obligations” for further information, including deferred revenue by segment and changes in deferred revenue during the period.

Deferred Commissions

Sales commissions earned by our sales force are considered incremental and recoverable costs of obtaining a contract with a customer. Sales commissions for initial contracts are deferred and then amortized on a straight-line basis over a period of benefit that we have determined to be three to seven years. We utilized the “portfolio approach” practical expedient in ASC 606-10-10-4, which allows entities to apply the guidance to a portfolio of contracts with similar characteristics because the effects on the financial statements of this approach would not differ materially from applying the guidance to individual contracts. Using the ‘portfolio approach’, we determined the period of benefit by taking into consideration our customer contracts, our technology life-cycle and other factors. Sales commissions for renewal contracts are generally not paid in connection with the renewal of a contract. In the small number of instances where a commission is paid on a renewal, it is not commensurate with the commission paid on the initial sale and is recognized over the term of renewal, which is generally one year. Amortization expense related to deferred commissions is included in selling, general and administrative expenses in the accompanying consolidated statements of income. Refer to Note 17 – “Deferred Commissions” for further information.

Prepaid expenses and other current assets include direct and incremental costs such as commissions associated with arrangements for which revenue recognition has been deferred. Such costs are expensed at the time the related revenue is recognized.

USE OF ESTIMATES

The preparation of our financial statements in conformity with accounting principles generally accepted in the United States (“GAAP”) requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant items subject to such estimates and assumptions include revenue recognition, determining the nature and timing of satisfaction of performance obligations, determining the SSP of performance obligations, variable consideration, and other obligations such as returns and refunds; loss contingencies; the estimated useful life of deferred commissions; the carrying amount and estimated useful lives of intangible assets; the carrying amount of operating lease right-of-use assets and operating lease liabilities; determining share-based compensation expense; the valuation allowance for receivables; and determining the potential outcome of future tax consequences of events that have been recognized on our consolidated financial statements or tax returns. Actual results could differ from estimates.

PROPERTY AND EQUIPMENT, NET

Property, equipment and purchased software are recorded at original cost and increased by the cost of any significant improvements after purchase. We expense maintenance and repairs when incurred. Depreciation and amortization is calculated using the straight-line method over the shorter of the asset’s estimated useful life or the term of the lease in the case of leasehold improvements. For income tax purposes, we use accelerated depreciation methods as allowed by tax laws.

RESEARCH AND DEVELOPMENT COSTS

We expensed research and development expense of $81.3 million in 2019, $63.3 million in 2018, and $47.3 million in 2017.

INCOME TAXES

Income taxes are accounted for under the asset and liability method. Deferred taxes arise because of different treatment between financial statement accounting and tax accounting, known as "temporary differences". We record the tax effect of these temporary differences as "deferred tax assets" (generally items that can be used as a tax deduction or credit in the future periods) and "deferred tax liabilities" (generally items that we received a tax deduction for, which have not yet been recorded in the income statement). The deferred tax assets and liabilities are measured using enacted tax rules and laws that are expected to be in effect when the temporary differences are expected to be recovered or settled. A valuation allowance would be established to reduce deferred tax assets if it is more likely than not that a deferred tax asset will not be "realized." On December 22, 2017, the Tax Cuts and Jobs Act (the "Tax Act") was enacted into law. The Tax Act amends the Internal Revenue Code to reduce tax rates and modify policies, credits and deductions for individuals and businesses. For businesses, the Tax Act reduces the corporate U.S. federal tax rate from a maximum of 35% to a flat 21% rate and transitions from a worldwide tax system to a territorial tax system. Under ASC 740 Income Taxes, the effects of changes in tax rates and laws are recognized in the period in which the new legislation is enacted.

SHARE-BASED COMPENSATION

We have a share-based award plan that provides for the grant of stock options, restricted stock units, and performance share units to key employees, directors and non-employee consultants. Stock options generally vest after three to six years of continuous service from the date of grant and have a contractual term of 10 years. Restricted stock unit grants generally vest ratably over three to five years of continuous service from the date of grant. Each performance share unit represents the right to receive one share of our common stock based on our achievement of certain financial performance targets during applicable performance periods. We account for share-based compensation utilizing the fair value recognition pursuant to ASC 718, Stock Compensation. See Note 9 – "Share-Based Compensation" for further information.

GOODWILL AND OTHER INTANGIBLE ASSETS

Goodwill

Goodwill represents the excess of the purchase price over the fair value of net assets acquired, including identifiable intangible assets, in connection with our business combinations. Upon acquisition, goodwill is assigned to the reporting unit that is expected to benefit from the synergies of the business combination, which is the reporting unit to which the related acquired technology is assigned. A reporting unit is the operating segment, or a business unit one level below that operating segment, for which discrete financial information is prepared and regularly reviewed by executive management.

We assess goodwill for impairment annually as of April 1st, or more frequently whenever events or changes in circumstances indicate its carrying value may not be recoverable. We begin with the qualitative assessment of whether it is more likely than not that a reporting unit's fair value is less than its carrying value before applying the quantitative assessment described below. If it is determined through the evaluation of events or circumstances that the carrying value may not be recoverable, we perform a comparison of the estimated fair value of the reporting unit to which the goodwill has been assigned to the sum of the carrying value of the assets and liabilities of that unit. If the sum of the carrying value of the assets and liabilities of a reporting unit exceeds the estimated fair value of that reporting unit, the carrying value of the reporting unit's goodwill is reduced to its fair value through an adjustment to the goodwill balance, resulting in an impairment charge. The fair values calculated in our impairment tests are determined using discounted cash flow models involving several assumptions. The assumptions that are used are based upon what we believe a hypothetical marketplace participant would use in estimating fair value. We evaluate the reasonableness of the fair value calculations of our reporting units by comparing the total of the fair value of all of our reporting units to our total market capitalization. Our annual goodwill impairment analysis, which we performed qualitatively during the second quarter of 2019, did not result in an impairment charge.

There have been no impairments of intangible assets in any of the periods presented. See Note 4 – "Goodwill and Other Intangible Assets" for additional information.

Other Intangible Assets

We make judgments about the recoverability of purchased intangible assets other than goodwill whenever events or changes in circumstances indicate that an impairment may exist. Customer base and acquired software each comprise approximately half of our purchased intangible assets other than goodwill. We review our customer turnover each year for indications of impairment. Our customer turnover has historically been very low. If indications of impairment are determined to exist, we measure the recoverability of assets by a comparison of the carrying amount of the asset to the estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of the assets exceeds their estimated future cash flows, an impairment charge is recognized for the amount by which the carrying amount of the assets exceeds the fair value of the assets. There have been no impairments of intangible assets in any of the periods presented.

IMPAIRMENT OF LONG-LIVED ASSETS

We periodically evaluate whether current facts or circumstances indicate that the carrying value of our property and equipment or other long-lived assets to be held and used may not be recoverable. If such circumstances are determined to exist, we measure the recoverability of assets to be held and used by a comparison of the carrying amount of the asset or appropriate grouping of assets and the estimated undiscounted future cash flows expected to be generated by the assets. If the carrying amount of the assets exceeds their estimated future cash flows, an impairment charge is recognized for the amount by which the carrying amount of the assets exceeds the fair value of the assets. Assets to be disposed of would be separately presented in the balance sheet and reported at the lower of the carrying amount or fair value less costs to sell and would no longer be depreciated. The assets and liabilities of a disposed group or classified as held for sale would be presented separately in the appropriate asset and liability sections of the balance sheet. There have been no significant impairments of long-lived assets in any of the periods presented.

COSTS OF COMPUTER SOFTWARE

We capitalize software development costs upon the establishment of technological feasibility and prior to the availability of the product for general release to customers. Software development costs primarily consist of personnel costs and rent for related office space. We capitalized approximately $4.8 million of software development costs in 2019. We begin to amortize capitalized costs when a product is available for general release to customers. Amortization expense is determined on a product-by-product basis at a rate not less than straight-line basis over the product's remaining estimated economic life of, generally, five years. Amortization of software development costs was approximately $296,000 in 2019, and is included in cost of software license revenue in the accompanying consolidated statements of comprehensive income. We have not capitalized any internal use software development costs in any of the periods presented.

CONTINGENT PURCHASE CONSIDERATION

Contingent future cash payments related to acquisitions are recognized at fair value as of the acquisition date and included in the determination of the acquisition date purchase price. Subsequent changes in the fair value of the contingent future cash payments are recognized in earnings in the period that the change occurs.

FAIR VALUE OF FINANCIAL INSTRUMENTS

Cash and cash equivalents, accounts receivables, accounts payables, short-term obligations and certain other assets at cost approximate fair value because of the short maturity of these instruments. The fair value of our revolving line of credit would approximate book value as of December 31, 2019, because our interest rates reset approximately every 30 days or less. See Note 6 – "Revolving Line of Credit" for further discussion.

As of December 31, 2019, we have $81.6 million in investment grade corporate bonds, municipal bonds and asset-backed securities with maturity dates ranging from 2020 through 2023. We intend to hold these bonds to maturity and have classified them as such. We believe cost approximates fair value. The fair values of these securities are considered Level II as they are based on inputs from quoted prices in markets that are not active or from other observable market data. These investments are included in short-term investments and non-current investments and other assets.

As of December 31, 2019, we have $15.0 million invested in convertible preferred stock representing a 20% interest in Record Holdings Pty Limited, a privately held Australian company specializing in digitizing the spoken word in court and legal proceedings. The investment in convertible preferred stock is accounted under the cost method because we do not have the ability to exercise significant influence over the investee and the securities do not have readily determinable fair values. Our investment is carried at cost less any impairment write-downs. Our cost method investments are assessed annually for impairment. We do not reassess the fair value of cost method investments if there are no identified events or changes in circumstances that may have a significant adverse effect on the fair value of the investments. There has been no impairment of our cost method investment for the periods presented. This investment is included in non-current investments and other assets in the accompanying consolidated balance sheets.

CONCENTRATIONS OF CREDIT RISK

Financial instruments that potentially subject us to significant concentrations of credit risk consist principally of cash and cash equivalents, accounts receivable from trade customers, and investments in marketable securities. Our cash and cash equivalents primarily consist of operating account balances and money market funds, which are maintained at several major domestic financial institutions and the balances often exceed insured amounts. As of December 31, 2019, we had cash and cash equivalents of $232.7 million. We perform periodic evaluations of the credit standing of these financial institutions.

Concentrations of credit risk with respect to receivables are limited due to the size and geographical diversity of our customer base. Historically, our credit losses have not been significant. As a result, we do not believe we have any significant concentrations of credit risk as of December 31, 2019.

We maintain allowances for doubtful accounts, which are provided at the time the revenue is recognized. Since most of our customers are domestic governmental entities, we rarely incur a loss resulting from the inability of a customer to make required payments. Events or changes in circumstances that indicate the carrying amount for the allowances for doubtful accounts may require revision include, but are not limited to, deterioration of a customer's financial condition, failure to manage our customer's expectations regarding the scope of the services to be delivered, and defects or errors in new versions or enhancements of our software products.

LEASES

We determine if an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use ("ROU") assets, and operating lease liabilities, current and long-term, on our consolidated balance sheets. We currently do not have any finance lease arrangements.

Operating lease ROU assets and operating lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at commencement date. As most of our leases do not provide an implicit rate, we use our incremental borrowing rate based on the information available at commencement date of the lease in determining the present value of future payments. The operating lease ROU asset also includes any lease payments made and excludes lease incentives and initial direct costs incurred. Our lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Lease expense for minimum lease payments is recognized on a straight-line basis over the lease term. Leases with an initial term of 12 months or less are not recorded on the balance sheet; we recognize lease expense for these leases on a straight-line basis over the lease term. We have lease agreements with lease and non-lease components, which are generally accounted for as a single lease component.

INDEMNIFICATION

Most of our software license agreements indemnify our customers in the event that the software sold infringes upon the intellectual property rights of a third-party. These agreements typically provide that in such event we will either modify or replace the software so that it becomes non-infringing or procure for the customer the right to use the software. We have recorded no liability associated with these indemnifications, as we are not aware of any pending or threatened infringement actions that are possible losses. We believe the estimated fair value of these intellectual property indemnification clauses is minimal.

We have also agreed to indemnify our officers and board members if they are named or threatened to be named as a party to any proceeding by reason of the fact that they acted in such capacity. We maintain directors' and officers' liability insurance coverage to protect against any such losses. We have recorded no liability associated with these indemnifications. Because of our insurance coverage, we believe the estimated fair value of these indemnification agreements is minimal.

RECLASSIFICATIONS

Certain amounts for previous years have been reclassified to conform to the current year presentation.

RECENTLY ADOPTED ACCOUNTING PRONOUNCEMENTS

Leases. We adopted ASU No. 2016-02, *Leases* ("Topic 842") using the transition method that allows us to initially apply the guidance at the adoption date of January 1, 2019, and recognized a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. We used the package of practical expedients that allows us to not reassess: (1) lease classification for any expired or existing leases and (2) initial direct costs for any expired or existing leases. We did not elect to use the hindsight application for evaluating the life of the lease arrangement. The impact of adoption is reflected in the financial information herein. For additional details, see Note 11 to our consolidated financial statements.

The impact of Topic 842 on our consolidated balance sheet beginning January 1, 2019, included the recognition of ROU assets and operating lease liabilities, while our accounting for finance leases remained substantially unchanged. We had no finance leases prior to the adoption of Topic 842 and continue to have none as of December 31, 2019.

Amounts recognized at January 1, 2019, for operating leases were as follows:

In thousands	
Operating lease right-of-use assets	$ 15,633
Operating lease liabilities	(4,344)
Operating lease liabilities, long-term	(12,405)
Retained earnings	$ (1,116)

NEW ACCOUNTING PRONOUNCEMENTS

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses*, ("ASU 2016-13"). ASU 2016-13 changes the impairment model for most financial assets and certain other instruments, including trade and other receivables, held-to-maturity debt securities and loans, and requires entities to use a new forward-looking expected loss model that will result in the earlier recognition of allowance for losses. This update is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted for a fiscal year beginning after December 15, 2018, including interim periods within that fiscal year. Entities will apply the standard's provisions as a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is adopted. We will adopt the new standard in the first quarter of 2020. We have evaluated the impact of this standard on our consolidated financial statements, including accounting policies, processes and systems. Based on the nature of the Company's customer base and historical nature of losses, we do not expect the impact to be material upon adoption.

(2) ACQUISITIONS

2019

On October 30, 2019, we acquired certain assets of Courthouse Technologies, Ltd ("CHT"), an industry-leading provider of jury management systems that offers a fully integrated, end-to-end SaaS solution to manage all facets of juror management, from source list generation to juror processing and payment. The total purchase price was approximately $20.5 million of which $19.1 million was paid in cash and approximately $1.4 million was accrued for working capital and indemnity holdbacks, subject to certain post-closing adjustments.

On February 28, 2019, we acquired all of the capital stock of MP Holdings Parent, Inc. dba MicroPact ("MicroPact"), a leading provider of commercial off-the-shelf ("COTS") solutions, including Entellitrak, a low-code application development platform for case management and business process management used extensively in the public sector. The total purchase price, net of cash acquired of $2.0 million, was approximately $202.2 million consisting of $198.2 million paid in cash and accrued consideration of $6.0 million contingent upon the achievement of certain financial performance objectives.

We have performed a valuation analysis of the fair market value of MicroPact's assets and liabilities. The following table summarizes the final allocation of the purchase price as of the acquisition date:

In thousands	
Cash	$ 1,983
Accounts receivable	10,535
Other current assets	8,979
Other noncurrent assets	10,417
Identifiable intangible assets	136,143
Goodwill	76,319
Accounts payable	(602)
Accrued expenses	(4,092)
Other noncurrent liabilities	(8,879)
Deferred revenue	(13,510)
Deferred tax liabilities, net	(13,125)
Total consideration	$ 204,168

In connection with this transaction, we acquired total tangible assets of $31.9 million and assumed liabilities of approximately $27.1 million. We recorded goodwill of $76.3 million, none of which is expected to be deductible for tax purposes, and other identifiable intangible assets of approximately $136.1 million. The $136.1 million of intangible assets are attributable to customer relationships, acquired software, trade name and favorable fair value of an operating lease and will be amortized over a weighted average period of approximately 11 years. We recorded deferred tax liabilities of $13.1 million related to estimated fair value allocations.

The acquisition of MicroPact augments our product solutions, positions us in new practice areas such as health and human services, and presents opportunities to expand our business across new and complementary markets. We intend to expand our total addressable market through MicroPact's strong presence in the federal market. Therefore, the goodwill of $76.3 million arising from this acquisition is primarily attributed to our ability to generate increased revenues, earnings and cash flow by expanding our addressable market and client base. In 2019, we recorded adjustments to the preliminary opening balance sheet attributed to changes in accounts receivable, deferred revenue, customer relationships, accrued expenses, working capital holdback and related deferred taxes resulting in a net decrease to goodwill of approximately $5.7 million.

The following unaudited pro forma consolidated operating results information has been prepared as if the MicroPact acquisition had occurred at January 1, 2018, after giving effect to certain adjustments, including amortization of intangibles, interest, transaction costs and tax effects.

Twelve Months Ended December 31, unaudited	2019	2018
Revenues	$ 1,098,226	$ 1,009,427
Net income	146,200	146,998
Basic earnings per share	$ 3.78	$ 3.82
Dilutes earnings per share	$ 3.65	$ 3.66

The pro forma information above does not include acquisitions that are not considered material to our results of operations. The pro forma information does not purport to represent what our results of operations actually would have been had such transaction occurred on the date specified or to project our results of operations for any future period.

On February 1, 2019, we acquired all the assets of Civic, LLC ("MyCivic"), a company that provides software solutions to connect communities. The total purchase price was $3.7 million in cash.

As of December 31, 2019, the purchase price allocations for MicroPact and MyCivic are complete. As of December 31, 2019, the purchase price allocation for CHT is not yet complete; therefore, the preliminary valuation estimates of fair value assumed at the acquisition date for intangible assets, receivables and deferred revenue and related deferred taxes are subject to change as valuations are finalized.

The operating results of all 2019 acquisitions are included with the operating results of the Enterprise Software segment since their date of acquisition. Revenues from MicroPact included in Tyler's results of operations totaled approximately $63.0 million and the net loss was approximately $98,000 from the date of acquisition through December 31, 2019. The impact of the MyCivic and CHT acquisitions, individually and in the aggregate, on our operating results, assets and liabilities is not material. In 2019, we incurred fees of approximately $1.1 million for financial advisory, legal, accounting, due diligence, valuation and other various services necessary to complete these acquisitions. These fees were expensed in 2019 and are included in selling, general and administrative expenses on the consolidated statement of comprehensive income.

Our balance sheet as of December 31, 2019, reflects the allocation of the purchase price to the assets acquired based on their fair value at the date of each acquisition. The fair value of the assets and liabilities acquired are based on valuations using Level III, unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

At December 31, 2019, the maximum aggregate amount of remaining contingent cash payments associated with our acquisitions is $6.0 million and are payable in fiscal year 2020.

2018

On December 7, 2018, we acquired certain assets and intellectual property of SceneDoc, Inc., a company that provides mobile-first, SaaS field reporting for law enforcement agencies. The total purchase price was approximately $6.2 million in cash.

On October 1, 2018, we acquired all of the equity interests of TradeMaster, Inc. dba MobileEyes, a company that develops SaaS software to improve public safety by supporting fire prevention and suppression, emergency response, and structural safety. The total purchase price was approximately $5.3 million in cash.

On August 31, 2018, we acquired all of the assets of CaseloadPRO, L. P., a company that provides a fully featured SaaS probation case management system. The purchase price of $9.3 million was paid in cash.

On April 30, 2018, we acquired all of the capital stock of Socrata, Inc.("Socrata"), a company that provides open data and data-as-a-service solutions including cloud-based data integration, visualization, analysis, and reporting solutions for state and local government agencies. The purchase price, net of cash acquired of $1.7 million, was $147.6 million paid in cash.

On April 30, 2018, we acquired all of the equity interests of Sage Data Security, LLC, a cybersecurity company offering a suite of services that supports an entire cybersecurity lifecycle, including program development, education and training, technical testing, advisory services, and digital forensics. The total purchase price was $11.6 million paid in cash.

The operating results of these acquisition are included in our results of operations of the Enterprise Software segment from their respective dates of acquisition.

2017

On November 29, 2017, we acquired audio and digital two-way radio communications technology and related assets from Radio 10-33, LLC. The total purchase price was $1.4 million, all of which was paid in cash.

On August 2, 2017, we acquired substantially all of the assets and assumed certain liabilities of Digital Health Department, Inc., a company that provides environmental health software, offering a SaaS solution for public health compliance and inspections processes. The total purchase price, net of debt assumed, was $3.9 million, all of which was paid in cash.

On May 30, 2017, we acquired all of the capital stock of Modria.com, Inc., a company that specializes in online dispute resolution for government and commercial entities. The total purchase price, net of debt assumed, was $6.1 million, all of which was paid in cash.

The operating results of these acquisition are included in our results of operations of the Enterprise Software segment from their respective dates of acquisition.

(3) PROPERTY AND EQUIPMENT, NET

Property and equipment, net consists of the following at December 31:

	Useful lives (years)	2019	2018
Land	—	$ 18,653	$ 9,958
Building and leasehold improvements	5-39	137,448	122,241
Computer equipment and purchased software	3-5	99,435	84,649
Furniture and fixtures	5	28,506	27,238
Transportation equipment	5	402	438
		284,444	244,524
Accumulated depreciation and amortization		(112,583)	(89,347)
Property and equipment, net		$ 171,861	$ 155,177

Depreciation expense was $23.4 million in 2019, $21.2 million in 2018, and $17.3 million in 2017.

We paid $20.8 million and $2.2 million for real estate and the expansion of existing buildings in 2019 and 2018, respectively.

In 2017, we purchased an office building in Latham, New York for approximately $2.9 million and paid $2.1 million for improvements to that building. We also paid $19.4 million for construction to expand our office building in Yarmouth, Maine.

(4) GOODWILL AND OTHER INTANGIBLE ASSETS

The changes in the carrying amount of goodwill for the two years ended December 31, 2019 are as follows:

	Enterprise Software	Appraisal and Tax	Total
Balance as of 12/31/2017	$ 651,430	$ 6,557	$ 657,987
Goodwill acquired related to the purchase of Socrata	75,657	—	75,657
Goodwill acquired related to other acquisitions	20,074	—	20,074
Balance as of 12/31/2018	747,161	6,557	753,718
Goodwill acquired related to the purchase of MicroPact	76,319	—	76,319
Goodwill acquired related to other acquisitions	10,080	—	10,080
Balance as of 12/31/2019	$ 833,560	$ 6,557	$ 840,117

Other intangible assets and related accumulated amortization consists of the following at December 31:

	2019	2018
Gross carrying amount of other intangibles:		
Customer related intangibles	$ 321,019	$ 238,219
Acquired software	262,286	202,416
Trade names	22,905	16,905
Capitalized software development costs	4,804	—
Leases acquired	5,037	3,694
	616,051	461,234
Accumulated amortization	(237,137)	(184,382)
Total other intangibles, net	$ 378,914	$ 276,852

Amortization expense for acquired software and capitalized software development costs are recorded to cost of revenues. Amortization expense for customer relationships and trade names are recorded to selling, general and administrative expenses. Total amortization expense for other intangibles was $52.8 million in 2019, $39.6 million in 2018, and $35.5 million in 2017.

The amortization periods of other intangible assets are summarized in the following table:

	December 31, 2019			December 31, 2018		
	Gross Carrying Amount	Weighted Average Amortization Period	Accumulated Amortization	Gross Carrying Amount	Weighted Average Amortization Period	Accumulated Amortization
Non-amortizable intangibles:						
Goodwill	$ 840,117	$ —	$ —	$ 753,718	—	$ —
Amortizable intangibles:						
Customer related intangibles	321,019	16 years	97,320	238,219	15 years	78,120
Acquired software	262,286	7 years	130,416	202,416	7 years	99,772
Trade names	22,905	11 years	7,205	16,905	11 years	5,139
Capitalized software development costs	$ 4,804	5 years	$ 296	$ —	—	$ —
Leases acquired	5,037	9 years	1,900	3,694	10 years	1,351

Estimated annual amortization expense related to acquired leases will be recorded as a reduction to hardware and other revenue and is expected to be $525,000 in 2020, $525,000 in 2021, $525,000 in 2022, $525,000 in 2023, $525,000 in 2024, and $512,000 thereafter.

Estimated annual amortization expense related to other intangibles, including customer relationships, acquired software, trade names and capitalized software development costs is as follows:

2020	$ 54,045
2021	53,687
2022	49,989
2023	31,838
2024	31,213
Thereafter	$ 155,005

(5) ACCRUED LIABILITIES

Accrued liabilities consist of the following at December 31:

	2019	2018
Accrued wages, bonuses and commissions	$ 49,126	$ 40,100
Other accrued liabilities	26,108	26,380
	$ 75,234	$ 66,480

(6) REVOLVING LINE OF CREDIT

On September 30, 2019, we entered into a $400 million credit agreement (the "Credit Facility") with the various lenders party thereto and Wells Fargo Bank, National Association, as Administrative Agent. The Credit Agreement provides for an unsecured revolving credit facility in an aggregate principal amount of up to $400.0 million, including a $25.0 million sublimit for letters of credit. The Credit Facility matures on September 30, 2024. Borrowings under the Credit Facility may be used for general corporate purposes, including working capital requirements, acquisitions and share repurchases.

Borrowings under the Credit Facility bear interest at a rate of either (1) Wells Fargo Bank's prime rate (subject to certain higher rate determinations) plus a margin of 0.125% to 0.75% or (2) the 30, 60, 90 or 180-day LIBOR rate plus a margin of 1.125% to 1.75%. As of December 31, 2019, our interest rate was 4.88% under the prime rate option or approximately 2.89% under the 30-day LIBOR option. The Credit Facility requires us to maintain certain financial ratios and other financial conditions and prohibits us from making certain investments, advances, cash dividends or loans, and limits incurrence of additional indebtedness and liens. As of December 31, 2019, we were in compliance with those covenants.

As of December 31, 2019, we had no outstanding borrowings and had unused borrowing capacity of $400 million under the Credit Facility. In addition, as of December 31, 2019, we had no outstanding letter of credit.

We paid interest of $1,750,000 in 2019, $770,000 in 2018, and $804,000 in 2017.

(7) INCOME TAX

The Income tax provision (benefit) on income from operations consists of the following:

Years Ended December 31,	2019	2018	2017
Current:			
Federal	$ 12,814	$ 9,110	$ 22,883
State	6,585	4,367	4,666
	19,399	13,477	27,549
Deferred	(6,088)	(5,069)	(33,664)
	$ 13,311	$ 8,408	$ (6,115)

Reconciliation of the U.S. statutory income tax rate to our effective income tax expense rate for operations follows:

Years Ended December 31,	2019	2018	2017
Federal income tax expense at statutory rate	$ 33,566	$ 32,733	$ 57,209
State income tax, net of federal income tax benefit	6,999	7,953	4,754
Domestic production activities deduction	—	—	(2,617)
Excess tax benefits related to stock option exercises	(29,819)	(32,487)	(40,624)
Tax Act adjustments	—	(1,750)	(25,992)
Tax credits	(3,446)	(3,715)	(3,578)
Non-deductible business expenses	6,011	5,655	4,573
Other, net	—	19	160
	$ 13,311	$ 8,408	$ (6,115)

The tax effects of the major items recorded as deferred tax assets and liabilities as of December 31 are:

	2019	2018
Deferred income tax assets:		
Operating expenses not currently deductible	$ 10,214	$ 8,989
Stock option and other employee benefit plans	19,308	19,496
Loss and credit carryforwards	23,841	17,999
Total deferred income tax assets	53,363	46,484
Valuation allowance	(1,923)	(1,049)
Total deferred income tax assets, net of valuation allowance	51,440	45,435
Deferred income tax liabilities:		
Intangible assets	(84,019)	(70,752)
Property and equipment	(9,265)	(8,455)
Prepaid expenses	(4,922)	(4,079)
Deferred revenue	(1,676)	(3,940)
Total deferred income tax liabilities	(99,882)	(87,226)
Net deferred income tax liabilities	$ (48,442)	$ (41,791)

As of December 31, 2019, we had federal net operating loss carryforwards of approximately $85.2 million, after-tax state net operating loss carryforwards of approximately $3.1 million, and tax credit carryforwards of approximately $4.8 million. The federal net operating loss carryforward will begin to expire in 2032 if not utilized, and a portion of the state net operating loss and tax credit carryforwards begin expiring in 2020 if not utilized.

The acquired carryforwards are subject to an annual limitation but are expected to be realized with the exception of certain state net operating loss and tax credit carryforwards. The valuation allowance disclosed in the table above relates to state net operating losses and tax credit carryforwards that are likely to expire before utilization. We believe it is more likely than not that all other deferred tax assets will be realized. However, the amount of the deferred tax asset considered realizable could be adjusted in the future if estimates of reversing taxable temporary differences are revised.

In connection with the acquisition of Socrata in 2018, we recorded a $1.9 million liability for an uncertain tax position associated with acquired tax credit carryforwards. The unrecognized tax benefits are included in deferred income taxes in our consolidated balance sheets. The entire amount, if recognized, would affect the effective tax rate. There was no change in the balance of unrecognized tax benefits during 2019. Based on the information currently available, we do not anticipate a significant increase or decrease to our tax contingencies for these issues for the next 12 months.

We are subject to U.S. federal income tax, as well as income tax of multiple state, local and foreign jurisdictions. We are routinely subject to income tax examinations by these taxing jurisdictions, but we do not have a history of, nor do we expect any material adjustments as a result of these examinations. With few exceptions, major U.S. federal, state, local and foreign jurisdictions are no longer subject to examination for years before 2015. As of February 19, 2020, no significant adjustments have been proposed by any taxing jurisdiction.

We paid income taxes, net of refunds received, of $21.3 million in 2019, $6.8 million in 2018, and $36.0 million in 2017.

(8) SHAREHOLDERS' EQUITY

The following table details activity in our common stock:

	Years Ended December 31,					
	2019		2018		2017	
	Shares	Amount	Shares	Amount	Shares	Amount
Stock option exercises	999	$ 96,908	1,126	$ 74,907	1,113	$ 49,845
Purchases of common stock	(72)	(14,289)	(781)	(150,050)	(44)	(6,613)
Employee stock plan purchase	53	9,576	45	8,051	51	7,044
Employee stock plan purchase	53	(5,361)	—	—	—	—

As of February 19, 2020, we had authorization from our board of directors to repurchase up to 2.6 million additional shares of our common stock.

(9) SHARE-BASED COMPENSATION

Share-Based Compensation Plan

In May 2018, shareholders approved the Tyler Technologies, Inc. 2018 Stock Incentive Plan ("the 2018 Plan") which amended and restated the existing Tyler Technologies, Inc. 2010 Stock Option Plan ("the 2010 Plan"). Upon shareholder approval of the 2018 Plan, the remaining shares available for grant under the 2010 Plan were added to the shares authorized for grant under the 2018 Plan. Additionally, any awards previously granted under the 2010 Plan that expire unexercised or are forfeited are added to the shares authorized for grant under the 2018 Plan.

During fiscal year 2019, we granted stock awards under the 2018 Plan in the form of stock options, restricted stock units and performance share units. Stock options generally vest after three to six years of continuous service from the date of grant and have a contractual term of 10 years. Once options become exercisable, the employee can purchase shares of our common stock at the market price on the date we granted the option. Restricted stock unit grants generally vest ratably over three to five years of continuous service from the date of grant. Each performance share unit represents the right to receive one share of our common stock based on our achievement of certain financial performance targets during applicable performance periods. We account for share-based compensation utilizing the fair value recognition pursuant to ASC 718, Stock Compensation.

As of December 31, 2019, there were 3.1 million shares available for future grants under the plan from the 22.9 million shares previously approved by the shareholders.

Determining Fair Value of Stock Compensation

Valuation and Amortization Method. We estimate the fair value of stock option awards granted using the Black-Scholes option valuation model. For restricted stock unit and performance stock unit awards, we amortize the fair value of all awards on a straight-line basis over the requisite service periods, which are generally the vesting periods.

Expected Life. The expected life of awards granted represents the period of time that they are expected to be outstanding. The expected life represents the weighted-average period the stock options are expected to be outstanding based primarily on the options' vesting terms, remaining contractual life and the employees' expected exercise based on historical patterns.

Expected Volatility. Using the Black-Scholes option valuation model, we estimate the volatility of our common stock at the date of grant based on the historical volatility of our common stock.

Risk-Free Interest Rate. We base the risk-free interest rate used in the Black-Scholes option valuation model on the implied yield currently available on U.S. Treasury zero-coupon issues with an equivalent remaining term equal to the expected life of the award.

Expected Dividend Yield. We have not paid any cash dividends on our common stock in more than ten years and we do not anticipate paying any cash dividends in the foreseeable future. Consequently, we use an expected dividend yield of zero in the Black-Scholes option valuation model.

Expected Forfeitures. We use historical data to estimate pre-vesting option forfeitures. We record share-based compensation only for those awards that are expected to vest.

The following weighted average assumptions were used for options granted:

Years Ended December 31,	2019	2018	2017
Expected life (in years)	6.0	6.0	6.0
Expected volatility	26.6%	26.7%	28.1%
Risk-free interest rate	1.8%	2.7%	2.0%
Expected forfeiture rate	—%	—%	—%

Share-Based Award Activity

The following table summarizes restricted stock unit and performance stock unit activity during fiscal year 2019 (shares in thousands):

	Number of Shares	Weighted Average Grant Date Fair Value per Share
Unvested at January 1, 2018	—	$ —
Granted	336	221.29
Vested	—	—
Forfeited	(2)	229.75
Unvested at December 31, 2018	334	221.25
Granted	256	241.19
Vested	(76)	221.15
Forfeited	(14)	229.75
Unvested at December 31, 2019	500	$ 231.57

Options granted, exercised, forfeited and expired are summarized as follows:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value
Outstanding at December 31, 2016	5,156	$ 83.64		
Granted	824	176.26		
Exercised	(1,113)	44.80		
Forfeited	(50)	134.83		
Outstanding at December 31, 2017	4,817	107.91		
Granted	432	208.21		
Exercised	(1,126)	66.53		
Forfeited	(31)	158.80		
Outstanding at December 31, 2018	4,092	129.51		
Granted	162	251.58		
Exercised	(999)	96.92		
Forfeited	(29)	174.54		
Outstanding at December 31, 2019	3,226	$145.27	6	$ 499,124
Exercisable at December 31, 2019	2,067	$121.07	6	$ 369,938

We had unvested options to purchase 1.2 million shares with a weighted average grant date exercise price of $188.48 as of December 31, 2019, and unvested options to purchase 1.7 million shares with a weighted average grant date exercise price of $169.24 as of December 31, 2018.

Other information pertaining to option activity was as follows during the twelve months ended December 31:

	2019	2018	2017
Weighted average grant-date fair value of stock options granted	$ 74.54	$ 66.52	$ 55.56
Total intrinsic value of stock options exercised	$155,899	$176,716	$137,699

Share-Based Compensation Expense

The following table summarizes share-based compensation expense related to share-based awards which is recorded in the consolidated statements of comprehensive income:

Years Ended December 31,	2019	2018	2017
Cost of software services, maintenance and subscriptions	$ 15,002	$ 13,588	$ 9,415
Selling, general and administrative expenses	44,965	39,152	27,933
Total share-based compensation expenses	59,967	52,740	37,348
Excess tax benefit	(29,819)	(32,487)	(40,624)
Net decrease (increase) in net income	$ 30,148	$ 20,253	$ (3,276)

As of December 31, 2019, we had $148.7 million of total unrecognized compensation cost related to unvested options and restricted stock units, net of expected forfeitures, which is expected to be amortized over a weighted average amortization period of 2.5 years.

Employee Stock Purchase Plan

Under our Employee Stock Purchase Plan ("ESPP") participants may contribute up to 15% of their annual compensation to purchase common shares of Tyler. The purchase price of the shares is equal to 85% of the closing price of Tyler shares on the last day of each quarterly offering period. As of December 31, 2019, there were 702,000 shares available for future issuances the ESPP from the 2.0 million shares previously approved by the shareholders.

(10) EARNINGS PER SHARE

Basic earnings and diluted earnings per share data were computed as follows:

Years Ended December 31,	2019	2018	2017
Numerator for basic and diluted earnings per share:			
Net income	$146,527	$147,462	$169,571
Denominator:			
Weighted-average basic common shares outstanding	38,640	38,445	37,273
Assumed conversion of dilutive securities:			
Stock options	1,465	1,678	1,973
Denominator for diluted earnings per share – Adjusted weighted-average shares	40,105	40,123	39,246
Earnings per common share:			
Basic	$ 3.79	$ 3.84	$ 4.55
Diluted	$ 3.65	$ 3.68	$ 4.32

Share-based awards representing the right to purchase common stock of 633,000 shares in 2019, 888,000 shares in 2018, and 1,343,000 shares in 2017 were not included in the computation of diluted earnings per share because their inclusion would have had an anti-dilutive effect.

(11) LEASES

We lease office facilities for use in our operations, as well as transportation and other equipment. Most of our leases are non-cancelable operating lease agreements and they expire in one year to eight years. Some of these leases include options to extend for up to 10 years. We had no finance leases and no related party lease agreements as of December 31, 2019. Operating lease costs were approximately $9.9 million in 2019, $7.4 million in 2018, and $6.9 million in 2017.

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

Lease Costs	Financial Statement Classification	For the year ended 2019
Operating lease cost	Selling, general and administrative expenses	$ 6,379
Short-term lease cost	Selling, general and administrative expenses	2,269
Variable lease cost	Selling, general and administrative expenses	1,274
Net lease cost		$ 9,922

As of December 31, 2019, ROU lease assets and lease liabilities for our operating leases were recorded in the consolidated balance sheet as follows (in thousands):

	December 31, 2019
Assets:	
Operating lease right-of-use assets	$ 18,992
Liabilities:	
Operating leases, short-term	6,387
Operating leases, long-term	16,822
Total lease liabilities	$ 23,209

Supplemental information related to leases was as follows:

Other Information	For the year ended 2019
Cash Flows (in thousands):	
Cash paid amounts included in the measurement of lease liabilities:	
Operating cash outflows from operating leases	$ 7,267
Right-of-use assets obtained in exchange for lease obligations (non-cash):	
Operating leases	$ 3,466
Lease Term and Discount Rate:	
Weighted average remaining lease term (years)	4
Weighted average discount rate	4.00%

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

Years Ending December 31,	Amount
2020	$ 7,684
2021	6,246
2022	3,960
2023	2,923
2024	2,478
Thereafter	2,042
Total lease payments	25,333
Less: Interest	(2,124)
Present value of operating lease liabilities	$ 23,209

As of December 31, 2018, the future minimum lease commitments related to lease agreements under Topic 840, the predecessor of Topic 842, were as follows (in thousands):

Years Ending December 31,	Amount
2019	$ 5,994
2020	5,146
2021	3,976
2022	1,925
2023	1,164
Thereafter	2,132
Total	$ 20,337

Rental Income from third parties

We own office buildings in Bangor, Falmouth and Yarmouth, Maine; Lubbock and Plano, Texas; Troy, Michigan; Latham, New York; and Moraine, Ohio. We lease space in some of these buildings to third-party tenants. The property we lease to others under operating leases consists primarily of specific facilities where one tenant obtains substantially all of the economic benefit from the asset and has the right to direct the use of the asset. These non-cancelable leases expire between 2020 and 2025, some of which have options to extend the lease for up to five years. We determine if an arrangement is a lease at inception. None of our leases allow the lessee to purchase the leased asset.

Rental income from third-party tenants was $1.1 million in 2019, $1.2 million in 2018, and $1.5 million in 2017. Rental income is included in Hardware and other revenue on the consolidated statements of comprehensive income. Future minimum operating rental income based on contractual agreements is as follows (in thousands):

Years Ending December 31,	Amount
2020	$ 1,341
2021	1,372
2022	1,402
2023	1,432
2024	1,462
Thereafter	857
Total	$ 7,866

As of December 31, 2019, we had no additional significant operating or finance leases that had not yet commenced.

(12) EMPLOYEE BENEFIT PLANS

We provide a defined contribution plan for the majority of our employees meeting minimum service requirements. Eligible employees can contribute up to 30% of their current compensation to the plan subject to certain statutory limitations. We contribute up to a maximum of 3% of an employee's compensation to the plan. We made contributions to the plan and charged operating results $11.5 million in 2019, $9.3 million in 2018, and $7.9 million in 2017.

(13) COMMITMENTS AND CONTINGENCIES

Other than routine litigation incidental to our business, there are no material legal proceedings pending to which we are party or to which any of our properties are subject.

(14) SEGMENT AND RELATED INFORMATION

We provide integrated information management solutions and services for the public sector, with a focus on local governments.

We provide our software systems and services and appraisal services through six business units, which focus on the following products:

- financial management, education and planning, regulatory and maintenance software solutions;
- financial management, municipal courts, planning, regulatory and maintenance, and land and vital records management software solutions;
- courts and justice and public safety software solutions;
- data and insights solutions;
- case management and business management solutions; and
- appraisal and tax software solutions and property appraisal services.

In accordance with ASC 280-10, *Segment Reporting*, the financial management, education and planning, regulatory and maintenance software solutions unit; financial management, municipal courts, planning, regulatory and maintenance, and land and vital records management software solutions unit; courts and justice and public safety software solutions unit; the data and insights solutions unit; and case management and business management solutions unit meet the criteria for aggregation and are presented in one reportable segment, Enterprise Software ("ES"). The ES segment provides public sector entities with software systems and services to meet their information technology and automation needs for mission-critical "back-office" functions such as: financial management and education, courts and justice, public safety, planning, regulatory and maintenance, land and vital records management, data and insights and case management and business management processes. The Appraisal and Tax ("A&T") segment provides systems and software that automate the appraisal and assessment of real and personal property as well as property appraisal outsourcing services for local governments and taxing authorities. Property appraisal outsourcing services include: the physical inspection of commercial and residential properties; data collection and processing; computer analysis for property valuation; preparation of tax rolls; community education; and arbitration between taxpayers and the assessing jurisdiction.

We evaluate performance based on several factors, of which the primary financial measure is business segment operating income. We define segment operating income for our business units as income before noncash amortization of intangible assets associated with their acquisition, interest expense and income taxes. Segment operating income includes intercompany transactions. The majority of intercompany transactions relate to contracts involving more than one unit and are valued based on the contractual arrangement. Segment operating income for corporate primarily consists of compensation costs for the executive management team and certain accounting and administrative staff and share-based compensation expense for the entire company. Corporate segment operating income also includes revenues and expenses related to a company-wide user conference. The accounting policies of the reportable segments are the same as those described in Note 1, "Summary of Significant Accounting Policies."

Segment assets include net accounts receivable, prepaid expenses and other current assets and net property and equipment. Corporate assets consist of cash and investments, prepaid insurance, intangibles associated with acquisitions, capitalized software development costs, deferred income taxes and net property and equipment mainly related to unallocated information and technology assets.

ES segment capital expenditures included $12.6 million in 2019 and $2.2 million in 2018 for the expansion of existing buildings and purchases of buildings and land. A&T segment capital expenditures included $8.2 million in 2019 for the expansion of existing buildings.

Notes to Consolidated Financial Statements

For the year ended December 31, 2019	Enterprise Software	Appraisal and Tax	Corporate	Totals
Revenues				
Software licenses and royalties	$ 92,567	$ 7,638	$ —	$ 100,205
Subscriptions	285,092	11,260	—	296,352
Software services	185,892	27,169	—	213,061
Maintenance	405,063	25,255	—	430,318
Appraisal services	—	23,479	—	23,479
Hardware and other	16,735	21	6,256	23,012
Intercompany	15,496	—	(15,496)	—
Total revenues	$1,000,845	$ 94,822	$ (9,240)	$1,086,427
Depreciation and amortization expense	64,289	926	11,457	76,672
Segment operating income	261,494	20,789	(73,829)	208,454
Capital expenditures	19,335	8,384	10,379	38,098
Segment assets	$ 834,010	$ 90,536	$1,267,068	$2,191,614

For the year ended December 31, 2018	Enterprise Software	Appraisal and Tax	Corporate	Totals
Revenues				
Software licenses and royalties	$ 83,735	$ 9,706	$ —	$ 93,441
Subscriptions	210,740	9,807	—	220,547
Software services	166,921	24,348	—	191,269
Maintenance	359,904	24,617	—	384,521
Appraisal services	—	21,846	—	21,846
Hardware and other	18,745	32	4,881	23,658
Intercompany	13,155	—	(13,155)	—
Total revenues	$853,200	$ 90,356	$ (8,274)	$ 935,282
Depreciation and amortization expense	50,130	914	10,715	61,759
Segment operating income	237,159	23,094	(68,572)	191,681
Capital expenditures	13,973	782	10,377	25,132
Segment assets	$556,100	$ 63,670	$1,171,193	$1,790,963

For the year ended December 31, 2017	Enterprise Software	Appraisal and Tax	Corporate	Totals
Revenues				
Software licenses and royalties	$ 78,388	$ 7,854	$ —	$ 86,242
Subscriptions	614,317	7,859	—	172,176
Software services	161,245	19,215	—	180,460
Maintenance	337,701	21,618	—	359,319
Appraisal services	—	25,023	—	25,023
Hardware and other	13,057	10	4,612	17,679
Intercompany	10,425	—	(10,425)	—
Total revenues	$765,133	$ 81,579	$ (5,813)	$ 840,899
Depreciation and amortization expense	43,987	760	8,648	53,359
Segment operating income	229,001	20,788	(51,964)	197,825
Capital expenditures	28,096	1,181	16,341	45,618
Segment assets	$365,736	$ 46,279	$1,199,336	$1,611,351

Reconciliation of reportable segment operating income to the Company's consolidated totals:	Years Ended December 31, 2019	2018	2017
Total segment operating income	$ 208,454	$ 191,681	$ 197,825
Amortization of acquired software	(30,642)	(22,972)	(21,686)
Amortization of customer and trade name intangibles	(21,445)	(16,217)	(13,381)
Other income (expense), net	3,471	3,378	698
Income before income taxes	$ 159,838	$ 155,870	$ 163,456

(15) DISAGGREGATION OF REVENUE

The tables below show disaggregation of revenue into categories that reflect how economic factors affect the nature, amount, timing, and uncertainty of revenue and cash flows.

Timing of Revenue Recognition

Timing of revenue recognition by revenue category during the period is as follows:

For the year ended December 31, 2019	Products and Services Transferred at a Point in Time	Products and Services Transferred Over Time	Total
Revenues			
Software licenses and royalties	$ 84,900	$ 15,305	$ 100,205
Subscriptions	—	296,352	296,352
Software services	—	213,061	213,061
Maintenance	—	430,318	430,318
Appraisal services	—	23,479	23,479
Hardware and other	23,012	—	23,012
Total	$ 107,912	$ 978,515	$1,086,427

For the year ended December 31, 2018	Products and Services Transferred at a Point in Time	Products and Services Transferred Over Time	Total
Revenues			
Software licenses and royalties	$ 75,188	$ 18,253	$ 93,441
Subscriptions	—	220,547	220,547
Software services	—	191,269	191,269
Maintenance	—	384,521	384,521
Appraisal services	—	21,846	21,846
Hardware and other	23,658	—	23,658
Total	$ 98,846	$ 836,436	$ 935,282

For the year ended December 31, 2017	Products and Services Transferred at a Point in Time	Products and Services Transferred Over Time	Total
Revenues			
Software licenses and royalties	$ 69,167	$ 17,075	$ 86,242
Subscriptions	—	172,176	172,176
Software services	—	180,460	180,460
Maintenance	—	359,319	359,319
Appraisal services	—	25,023	25,023
Hardware and other	17,679	—	17,679
Total	$ 86,846	$ 754,053	$ 840,899

Recurring Revenue

The majority of our revenue is comprised of recurring revenues from maintenance and subscriptions. Virtually all of our on-premises software clients contract with us for maintenance and support, which provides us with a significant source of recurring revenue. We generally provide maintenance and support for our on-premises clients under annual, or in some cases, multi-year contracts. The contract terms for subscription arrangements range from one to 10 years but are typically contracted for initial periods of three to five years. Non-recurring revenues are derived from all other revenue categories.

Recurring revenues and non-recurring revenues recognized during the period are as follows:

For the year ended December 31, 2019	Enterprise Software	Appraisal and Tax	Corporate	Totals
Recurring revenues	$ 690,156	$ 36,514	$ —	$ 726,670
Non-recurring revenues	295,193	58,308	6,256	359,757
Intercompany	15,496	—	(15,496)	—
Total revenues	$1,000,845	$ 94,822	$ (9,240)	$1,086,427

For the year ended December 31, 2018	Enterprise Software	Appraisal and Tax	Corporate	Totals
Recurring revenues	$ 570,645	$ 34,424	$ —	$ 605,069
Non-recurring revenues	269,400	55,932	4,881	330,213
Intercompany	13,155	—	(13,155)	—
Total revenues	$ 853,200	$ 90,356	$ (8,274)	$ 935,282

For the year ended December 31, 2017	Enterprise Software	Appraisal and Tax	Corporate	Totals
Recurring revenues	$ 502,018	$ 29,477	$ —	$ 531,495
Non-recurring revenues	252,690	52,102	4,612	309,404
Intercompany	10,425	—	(10,425)	—
Total revenues	$ 756,133	$ 81,579	$ (5,813)	$ 840,899

(16) DEFERRED REVENUE AND PERFORMANCE OBLIGATIONS

Total deferred revenue, including long-term, by segment is as follows::

December 31,	2019	2018
Enterprise software	$ 386,115	$ 327,521
Appraisal and tax	25,210	20,018
Corporate	1,369	3,397
Totals	$ 412,694	$ 350,936

Changes in total deferred revenue, including long-term, were as follows:

	2019
Balance at beginning of year	$ 350,936
Deferral of revenue	993,109
Recognition of deferred revenue	(931,351)
Balance at end of year	$ 412,694

Transaction Price Allocated to the Remaining Performance Obligations

The aggregate amount of transaction price allocated to the remaining performance obligations represents contracted revenue that has not yet been recognized ("Backlog"), which includes deferred revenue and amounts that will be invoiced and recognized as revenue in future periods. Backlog as of December 31, 2019 was $1.46 billion, of which we expect to recognize approximately 49% as revenue over the next 12 months and the remainder thereafter.

(17) DEFERRED COMMISSIONS

Sales commissions earned by our sales force are considered incremental and recoverable costs of obtaining a contract with a customer. Sales commissions for initial contracts are deferred and then amortized commensurate with the recognition of associated revenue over a period of benefit that we have determined to be three to seven years. Deferred commissions were $29.8 million, $21.9 million, as of December 31, 2019, and 2018 respectively. Amortization expense was $17.8 million $15.6 million, $11.2 million for the twelve months ended December 31, 2019, 2018, and 2017, respectively. There were no indicators of impairment in relation to the costs capitalized for the periods presented. Deferred commissions have been included with prepaid expenses in the accompanying consolidated balance sheets. Amortization expense related to deferred commissions is included in selling, general and administrative expenses in the accompanying consolidated statements of comprehensive income.

(18) SUBSEQUENT EVENTS

There are no material events or transactions that have occurred subsequent to December 31, 2019.

(19) QUARTERLY FINANCIAL INFORMATION (UNAUDITED)

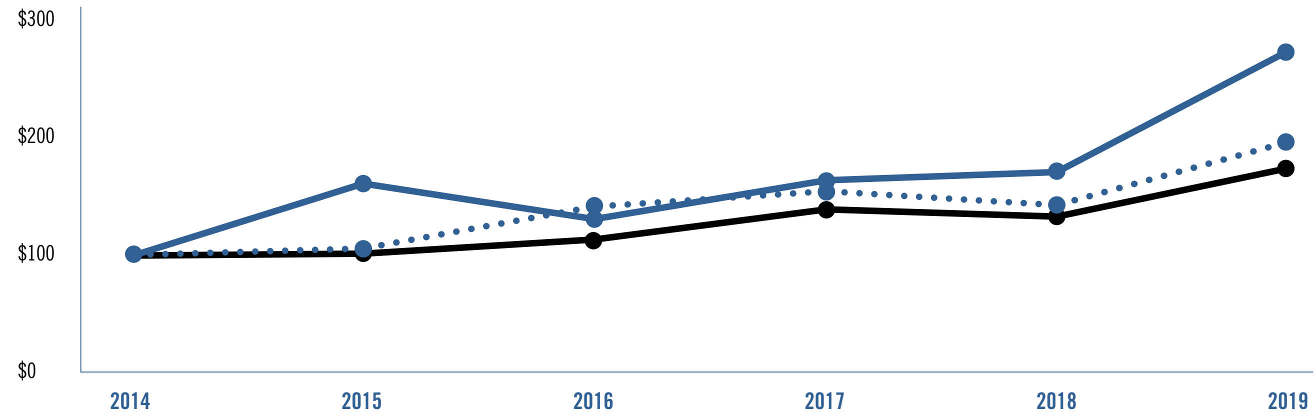
The following table contains selected financial information from unaudited statements of income for each quarter of 2019 and 2018:

	Quarters Ended							
	2019				2018			
	Dec. 31	Sept. 30	June 30	Mar. 31	Dec. 31	Sept. 30	June 30	Mar. 31
Revenues	$288,837	$275,400	$275,124	$247,066	$241,981	$236,067	$236,060	$221,174
Gross profit	142,275	130,717	127,860	116,048	115,871	111,626	109,276	102,805
Income before income taxes	47,790	40,552	36,419	35,077	40,107	38,626	37,700	39,437
Net income	46,790	40,390	31,999	27,348	31,552	38,924	39,161	37,825
Earnings per diluted share	$ 1.15	$ 1.00	$ 0.80	$ 0.69	$ 0.79	$ 0.96	$ 0.97	$ 0.95
Shares used in computing diluted earnings per share	40,736	40,280	39,813	39,585	39,891	40,528	40,224	39,836

Performance Graph

The following table compares total shareholder returns for Tyler over the last five years to the Standard and Poor's 500 Stock Index and the Standard and Poor's 600 Information Technology Index assuming a $100 investment made on December 31, 2014. Each of the three measures of cumulative total return assumes reinvestment of dividends. The stock performance shown on the graph below is not necessarily indicative of future price performance.

COMPARISON OF CUMULATIVE FIVE YEAR TOTAL RETURN



	2014	2015	2016	2017	2018	2019
Tyler Technologies, Inc.	100	159.28	130.46	161.78	169.79	274.14
S&P 500 Stock Index	100	101.38	113.51	138.29	132.23	173.86
S&P 600 Information Technology Index	100	104.65	140.08	154.48	140.68	196.38

Tyler Technologies, Inc.
S&P 500 Stock Index
S&P 600 Information Technology Index

CORPORATE OFFICERS

H. Lynn Moore Jr.
President and
Chief Executive Officer

Brian K. Miller
Executive Vice President
Chief Financial Officer
and Treasurer

Matthew B. Bieri
Chief Information Officer

S. Brett Cate
Chief Sales Officer

Samantha B. Crosby
Chief Marketing Officer

Abigail M. Diaz
Chief Legal Officer and Secretary

Bruce E. Graham
Senior Strategy Advisor

Jason P. Durham
Corporate Controller

Jeffrey S. Green
Chief Technology Officer

Jeffrey D. Puckett
Chief Strategy Officer

Kelley B. Shimansky
Chief Human Resources Officer

W. Michael Smith
Chief Accounting Officer

BOARD OF DIRECTORS

John S. Marr Jr. [1]
Executive Chairman of the Board
Tyler Technologies, Inc.

H. Lynn Moore Jr. [1]
President and
Chief Executive Officer
Tyler Technologies, Inc.

Donald R. Brattain [2, 4]
President
Brattain and Associates, LLC

Glenn A. Carter [3, 4]
Retired Chief Executive Officer
DataProse, Inc.

Brenda A. Cline [2, 3]
Executive Vice President
Kimbell Art Foundation

J. Luther King Jr. [2, 4]
Chief Executive Officer
Luther King Capital Management

Daniel M. Pope [3]
Mayor
City of Lubbock, Texas

Dustin R. Womble
Retired Executive Vice President
Tyler Technologies, Inc.

[1] Executive Committee
[2] Audit Committee
[3] Nominating and Governance Committee
[4] Compensation Committee

OPERATIONAL LEADERSHIP

S. Franklin Williams III
President
Data & Insights Division

Kristoffer L. Collo
President
Federal Division

Enterprise Group

Christopher P. Hepburn
President
Enterprise Group

Mark A. Hawkins
President
Appraisal & Tax Division

Christopher J. Webster
President
ERP Division

Dane L. Womble
President
Local Government Division

Justice Group

D. Bret Dixon
President
Justice Group

Russell J. Smith
President
Courts & Justice Division

Bryan K. Proctor
President
Public Safety Division

CORPORATE HEADQUARTERS

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972.713.3700
tylertech.com

TRANSFER AGENT AND REGISTRAR

American Stock Transfer & Trust Company
6201 15th Avenue
Brooklyn, New York 11219
800.937.5449
help@astfinancial.com
amstock.com

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Ernst & Young LLP
Dallas, Texas

ANNUAL MEETING OF SHAREHOLDERS

Tuesday, May 12, 2020
9:00 a.m. Central Time
Renaissance Dallas at
Plano Legacy West
607 Legacy Drive
Plano, Texas 75024

CERTIFICATIONS

We submitted an unqualified Annual CEO Certification to the New York Stock Exchange (NYSE) as required by the NYSE Listed Company rules. We also filed with the Securities and Exchange Commission the Chief Executive Officer and Chief Financial Officer certifications required under Section 302 of the Sarbanes-Oxley Act as exhibits to our Annual Report on Form 10-K.

INVESTOR INFORMATION

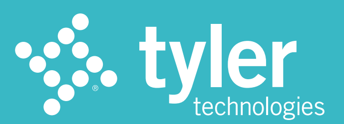
Our annual report on Form 10-K is available on the company's website at www.tylertech.com. A copy of the Form 10-K or other information may also be obtained by contacting the Investor Relations Department at corporate headquarters.

INVESTOR RELATIONS

972.713.3714
info@tylertech.com

COMMON STOCK

Listed on the New York Stock Exchange under the symbol "TYL"



Empowering people who serve the public®

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