

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

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

For the fiscal year ended December 31, 2019

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

For the transition period from ___ to ___

Commission File Number 1-12273

ROPER TECHNOLOGIES, INC.

(Exact name of Registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

51-0263969

(I.R.S. Employer Identification No.)

6901 Professional Parkway East, Suite 200
Sarasota, Florida 34240

(Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (941) 556-2601

SECURITIES REGISTERED PURSUANT TO SECTION 12(b) OF THE ACT:

Title of Each Class

Trading Symbol

Name of Each Exchange On Which Registered

Common Stock, \$0.01 Par Value

ROP

New York Stock Exchange

SECURITIES REGISTERED PURSUANT TO SECTION 12(g) OF THE ACT: None

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

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes No

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (\$223.405) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company (as defined in Rule 12b-2 of the Exchange Act). Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company Emerging growth company

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

Indicate by check mark if the registrant is a shell company (as defined in Rule 12-b2 of the Act). Yes No

Based on the closing sale price on the New York Stock Exchange on June 28, 2019, the aggregate market value of the voting and non-voting common stock held by non-affiliates of the registrant was: \$37,906,002,884.

Number of shares of registrant's Common Stock outstanding as of February 21, 2020: 106,109,664.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement to be furnished to Stockholders in connection with its 2020 Annual Meeting of Stockholders are incorporated by reference into Part III, Items 10, 11, 12, 13 and 14 of this Annual Report on Form 10-K.

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Information About Forward-Looking Statements

This Annual Report on Form 10-K (“Annual Report”) includes and incorporates by reference “forward-looking statements” within the meaning of the federal securities laws. In addition, we, or our executive officers on our behalf, may from time to time make forward-looking statements in reports and other documents we file with the U.S. Securities and Exchange Commission (“SEC”) or in connection with oral statements made to the press, potential investors or others. All statements that are not historical facts are “forward-looking statements.” Forward-looking statements may be indicated by words or phrases such as “anticipate,” “estimate,” “plans,” “expects,” “projects,” “should,” “will,” “believes” or “intends” and similar words and phrases. These statements reflect management’s current beliefs and are not guarantees of future performance. They involve risks and uncertainties that could cause actual results to differ materially from those expressed or implied in any forward-looking statement.

Examples of forward-looking statements in this report include but are not limited to statements regarding operating results, the success of our operating plans, our expectations regarding our ability to generate cash and reduce debt and associated interest expense, profit and cash flow expectations, the prospects for newly acquired businesses to be integrated and contribute to future growth and our expectations regarding growth through acquisitions. Important assumptions relating to the forward-looking statements include, among others, demand for our products, the cost, timing and success of product upgrades and new product introductions, raw material costs, expected pricing levels, expected outcomes of pending litigation, competitive conditions and general economic conditions. These assumptions could prove inaccurate. Although we believe that the estimates and projections reflected in the forward-looking statements are reasonable, our expectations may prove to be incorrect. Important factors that could cause actual results to differ materially from estimates or projections contained in the forward-looking statements include, but are not limited to:

- general economic conditions;
- difficulty making acquisitions and successfully integrating acquired businesses;
- any unforeseen liabilities associated with future acquisitions;
- limitations on our business imposed by our indebtedness;
- unfavorable changes in foreign exchange rates;
- failure to effectively mitigate cybersecurity threats;
- failure to comply with new data privacy laws and regulations;
- difficulties associated with exports/imports and risks of changes to tariff rates;
- risks and costs associated with our international sales and operations;
- rising interest rates;
- product liability and insurance risks;
- increased warranty exposure;
- future competition;
- the cyclical nature of some of our markets;
- reduction of business with large customers;
- risks associated with government contracts;
- changes in the supply of, or price for, raw materials, parts and components;
- environmental compliance costs and liabilities;
- risks and costs associated with asbestos-related litigation;
- potential write-offs of our goodwill and other intangible assets;
- our ability to successfully develop new products;
- failure to protect our intellectual property;
- the effect of, or change in, government regulations (including tax);
- economic disruption caused by terrorist attacks, health crises or other unforeseen events; and
- the factors discussed in Item 1A to this Annual Report under the heading “Risk Factors.”

We believe these forward-looking statements are reasonable. However, you should not place undue reliance on any forward-looking statements, which are based on current expectations. Further, forward-looking statements speak only as of the date they are made, and we undertake no obligation to publicly update any of them in light of new information or future events.

PART I

ITEM 1. BUSINESS

All currency amounts are in millions unless specified

Our Business

Roper Technologies, Inc. (“Roper,” the “Company,” “we,” “our” or “us”) is a diversified technology company. We operate businesses that design and develop software (both license and Software-as-a-Service (“SaaS”)) and engineered products and solutions for a variety of niche end markets.

We pursue consistent and sustainable growth in earnings and cash flow by emphasizing continuous improvement in the operating performance of our existing businesses and by acquiring other businesses that offer high value-added software, services, engineered products and solutions that we believe are capable of achieving growth and maintaining high margins. We compete in many niche markets and believe we are the market leader or a competitive alternative to the market leader in most of these markets.

We were incorporated on December 17, 1981 under the laws of the State of Delaware.

Market Share, Market Expansion, and Product Development

Leadership with Engineered Content for Niche Markets - We maintain a leading position in many of our markets. We believe our market positions are attributable to the technical sophistication of our products and software, the applications expertise used to create our advanced products and systems, and our distribution and service capabilities. Our operating units grow their businesses through new product development and development of new applications and services to satisfy customer needs. In addition, our operating units grow our customer base by expanding our access to customers and entering adjacent markets.

Diversified End Markets and Geographic Reach - We have a global presence, with sales to customers outside the U.S. totaling \$1.4 billion in 2019. Information regarding our international operations is set forth in Note 13 of the Notes to Consolidated Financial Statements included in this Annual Report.

Our Business Segments

During the first quarter of 2019, we implemented a realignment of our reportable segment structure. The new reportable segments continue to provide a transparent view into Roper’s operations and capital deployment strategy and objectives. The Company’s new reporting segment structure reinforces Roper’s diversified, niche market strategy by reporting based upon business models instead of end markets. The four new reportable segments (and businesses within each; including changes due to acquisitions and divestitures since the realignment) are as follows:

- **Application Software** - Aderant, CBORD, CliniSys, Data Innovations, Deltek, Horizon, IntelliTrans, PowerPlan, Strata, Sunquest
- **Network Software & Systems** - ConstructConnect, DAT, Foundry, Inovonics, iPipeline, iTradeNetwork, Link Logistics, MHA, RF IDEas, SHP, SoftWriters, TransCore
- **Measurement & Analytical Solutions** ⁽¹⁾ - Alpha, CIVCO Medical Solutions, CIVCO Radiotherapy, Dynisco, FMI, Hansen, Hardy, IPA, Logitech, Neptune, Northern Digital, Struers, Technolog, Uson, Verathon
- **Process Technologies** - AMOT, CCC, Cornell, FTI, Metrix, PAC, Roper Pump, Viatran, Zetec

⁽¹⁾The Measurement & Analytical Solutions segment includes the results of the divestitures completed in 2019 through the transaction date for (i) Princeton Instruments, Photometrics, Lumenera, and other brands (collectively, the “Imaging” businesses), sold to Teledyne Technologies Inc. (“Teledyne”) on February 5, 2019 and (ii) Gatan, Inc. (“Gatan”) sold to AMETEK, Inc. (“AMETEK”) on October 29, 2019.

The Company’s strategy, organizational structure, and day-to-day operations of our businesses remain unchanged. All prior periods have been recast to reflect the changes noted above. Information regarding our business segments is set forth in Note 13 of the Notes to Consolidated Financial Statements included in this Annual Report.

Application Software

Our Application Software segment had net revenues of \$1.59 billion for the year ended December 31, 2019, representing 29.6% of our total net revenues. Below is a description of the products offered by business that comprise the Application Software segment.

Aderant - provides comprehensive management software solutions for law and other professional services firms, including business development, calendar/docket matter management, time and billing and case management.

CBORD - provides campus solutions software including access and cashless systems and food and nutrition service management serving primarily higher education and healthcare markets.

CliniSys - provides laboratory information management software solutions.

Data Innovations - provides software solutions that enable enterprise management of hospitals and independent laboratories.

Deltek - provides enterprise software and information solutions for government contractors, professional services firms and other project-based businesses.

Horizon - provides software, services, and technologies for foodservice operations—specializing in K-12.

IntelliTrans - provides transportation management software and services to bulk and break-bulk commodity producers.

PowerPlan - provides financial and compliance management software and solutions to large complex companies in asset-intensive industries.

Strata - provides cloud-based financial analytics and performance management software that is used by healthcare providers for financial planning, decision support and continuous cost improvement.

Sunquest - provides diagnostic and laboratory information systems to health care providers worldwide.

Network Software & Systems

Our Network Software & Systems segment had net revenues of \$1.53 billion for the year ended December 31, 2019, representing 28.5% of our total net revenues. Below is a description of the products offered by business that comprise the Network Software & Systems segment.

ConstructConnect - provides cloud-based data, collaboration and estimating automation software solutions to a network of pre-construction contractors.

DAT - provides electronic marketplaces that connect available capacity of trucking units with the available loads of freight throughout North America.

Foundry - provides software technologies used to deliver visual effects and 3D content for the entertainment and digital design industries.

Inovonics - provides high performance wireless sensor network and solutions for a variety of applications.

iPipeline - provides cloud-based software solutions for the life insurance and financial services industries.

iTradeNetwork - provides electronic marketplaces and supply chain software that connect food suppliers, distributors and vendors, primarily in the perishable food sector.

Link Logistics - provides electronic marketplaces that connect available capacity of trucking units with the available loads of freight throughout Canada.

MHA - provides health care service and software solutions to alternate site health care markets.

RF IDEas - provides RFID card readers used in numerous identity access management applications across a variety of vertical markets.

SHP - provides data analytics and benchmarking information for the post-acute healthcare provider marketplace.

SoftWriters - provides software solutions to pharmacies that primarily serve the long term care marketplace.

TransCore - provides toll systems and toll products, transaction and violation processing services, and intelligent traffic systems to governmental and private sector entities.

Measurement & Analytical Solutions

Our Measurement & Analytical Solutions segment had net revenues of \$1.60 billion for the year ended December 31, 2019, representing 29.7% of our total net revenues. Below is a description of the products offered by business that comprise the Measurement & Analytical Solutions segment.

Alpha - provides precision rubber and polymer testing instruments, and data analysis software.

CIVCO Medical Solutions - provides accessories focused on guidance and infection control for ultrasound procedures.

CIVCO Radiotherapy - provides radiotherapy solutions, including patient positioning and immobilization devices, and patient care products.

Dynisco - provides solutions for testing and analyzing plastics used in a variety of end markets.

FMI - provides dispensers and metering pumps which are utilized in a broad range of applications requiring precision fluid control.

Hansen - provides control valves for large industrial refrigeration systems.

Hardy - provides precision weighing equipment for process and packaging for a variety of industries including food processing, automated manufacturing, chemical, plastics, and rubber.

IPA - provides automated surgical scrub and linen dispensing equipment for healthcare providers.

Logitech - provides equipment and consumables used for sample preparation and material analysis used primarily in the semiconductor geological science industries.

Neptune - provides water meters, enabling water utilities to remotely monitor their customers utilizing Automatic Meter Reading (AMR) and Advanced Metering Infrastructure (AMI) technologies.

Northern Digital - provides optical and electromagnetic precision measurement systems for medical and industrial applications.

Struers - provides equipment and consumables for sample preparation and testing of solid materials used across a variety of end markets.

Technolog - provides products and services to water and gas utilities, used for network monitoring, pressure control, and remote meter reading.

Uson - provides automated leak detection equipment for a variety of end markets, including automotive, medical device, pharmaceutical, and general industrial.

Verathon - provides medical devices that enable airway management and bladder volume measurement solutions for healthcare providers.

Process Technologies

Our Process Technologies segment had net revenues of \$0.65 billion for the year ended December 31, 2019, representing 12.2% of our total net revenues. Below is a description of the products offered by business that comprise the Process Technologies segment.

AMOT - provides temperature control and emergency shutoff valves used by customers in the energy and general industrial end markets.

CCC - provides turbomachinery control hardware, software, and services for customers across the upstream, midstream, and downstream energy markets.

Cornell - provides specialized pumps used across a variety of end markets, including agriculture, energy, food processing, mining, waste water processing, and general industrial.

FTI - provides flow meter calibrators, and controllers used primarily in the aerospace, automotive, energy, and general industrial end markets.

Metrix - provides vibration monitoring systems and controls across a variety of end markets.

PAC - provides analytical instruments used by energy refineries and laboratories.

Roper Pump - provides specialty pumps and drilling power sections used by customers in the energy, general industrial, and transportation end markets.

Viatran - provides pressure and level sensors for energy and general industrial end markets.

Zetec - provides non-destructive testing equipment and solutions used primarily in the power generation and other industrial end markets.

Materials and Suppliers

We believe most materials and supplies we use are readily available from numerous sources and suppliers throughout the world. However, some components and sub-assemblies are currently available from only a limited number of suppliers. We regularly investigate and identify alternative sources where possible, and we believe these conditions equally affect our competitors. Supply shortages have not had a material adverse effect on our revenues although delays in shipments have occurred following such supply interruptions.

Backlog

Our backlog includes only firm unfilled orders expected to be recognized as revenue within twelve months. Backlog was \$1.99 billion at December 31, 2019, and \$1.69 billion at December 31, 2018.

Distribution and Sales

Distribution and sales occur primarily through direct sales offices, manufacturers' representatives, resellers and distributors.

Environmental Matters and Other Governmental Regulation

Our operations and properties are subject to laws and regulations relating to environmental protection, including those governing air emissions, water discharges, waste management and workplace safety. We use, generate and dispose of hazardous substances and waste in our operations and could be subject to material liabilities relating to the investigation and clean-up of contaminated properties and related claims. We are required to conform our operations and properties to these laws and adapt to regulatory requirements in all countries as these requirements change. In connection with our acquisitions, we may assume significant environmental liabilities, some of which we may not be aware of, or may not be quantifiable, at the time of acquisition. In addition, new laws and regulations, the discovery of previously unknown contamination or the imposition of new requirements could increase our costs or subject us to new or increased liabilities.

Customers

No customer accounted for 10% or more of net revenues for 2019 for any of our segments or for our Company as a whole.

Competition

Generally, our products and solutions face significant competition, usually from a limited number of competitors. We believe that we are a leader in most of our markets, and no single company competes with us over a significant number of product lines. Competitors might be large or small in size, often depending on the size of the niche market we serve. We compete primarily on product quality, performance, innovation, technology, price, applications expertise, system and service flexibility, distribution channel access and customer service capabilities.

Patents and Trademarks

In addition to trade secrets, unpatented know-how, and other intellectual property rights, we own or license the rights under a number of patents, trademarks and copyrights relating to certain of our products and businesses. We also employ various methods, including confidentiality and non-disclosure agreements with individuals and companies we do business with, employees, distributors, representatives and customers to protect our trade secrets and know-how. We believe none of our operating units are substantially dependent on any single patent, trademark, copyright, or other item of intellectual property or group of patents, trademarks or copyrights.

Employees

As of December 31, 2019, we had 16,460 employees, with 10,621 located in the United States. We have 167 employees who are subject to collective bargaining agreements. We have not experienced any work stoppages and consider our relations with our employees to be good.

Available Information

All reports we file electronically with the SEC, including our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and our annual proxy statements, as well as any amendments to those reports, are accessible at no cost on our website at www.ropertech.com as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. These filings are also accessible on the SEC's website at www.sec.gov. Our Corporate Governance Guidelines; the charters of our Audit Committee, Compensation Committee, and Nominating and Governance Committee; and our Business Code of Ethics and Standards of Conduct are also available on our website. Any amendment to the Business Code of Ethics and Standards of Conduct and any waiver applicable to our directors, executive officers or senior financial officers will be posted on our website within the time period required by the SEC and the New York Stock Exchange (the "NYSE"). The information posted on our website is not incorporated into this Annual Report.

ITEM 1A. RISK FACTORS

Risks Relating to Our Business

Our indebtedness may affect our business and may restrict our operating flexibility.

As of December 31, 2019, we had \$5.3 billion in total consolidated indebtedness. In addition, we had \$2.5 billion undrawn availability under our senior unsecured credit facility. Subject to restrictions contained in our credit facility, we may incur additional indebtedness in the future, including indebtedness incurred to finance acquisitions.

Our level of indebtedness and the debt servicing costs associated with that indebtedness could have important effects on our operations and business strategy. For example, our indebtedness could:

- limit our ability to borrow additional funds;
- limit our ability to complete future acquisitions;
- limit our ability to pay dividends;
- limit our ability to make capital expenditures;
- place us at a competitive disadvantage relative to our competitors, some of which have lower debt service obligations and greater financial resources; and
- increase our vulnerability to general adverse economic and industry conditions.

Our ability to make scheduled principal payments of, to pay interest on, or to refinance our indebtedness and to satisfy our other debt obligations will depend upon our future operating performance, which may be affected by factors beyond our control. In addition, there can be no assurance that future borrowings or equity financing will be available to us on favorable terms for the payment or refinancing of our indebtedness. If we are unable to service our indebtedness, our business, financial condition and results of operations would be materially adversely affected.

Our credit facility contains covenants requiring us to achieve certain financial and operating results and maintain compliance with specified financial ratios. Our ability to meet the financial covenants or requirements in our credit facility may be affected by events beyond our control, and we may not be able to satisfy such covenants and requirements. A breach of these covenants or our inability to comply with the financial ratios, tests or other restrictions contained in our facility could result in an event of default under this facility. Upon the occurrence of an event of default under our credit facility, and the expiration of any grace periods, the lenders could elect to declare all amounts outstanding under the facility, together with accrued interest, to be immediately due and payable. If this were to occur, our assets may not be sufficient to fully repay the amounts due under this facility or our other indebtedness.

Additionally, on July 27, 2017, the Financial Conduct Authority (FCA) in the U.K. announced that it would phase out London Interbank Offered Rate (“LIBOR”) as a benchmark by the end of 2021. It is unclear whether new methods of calculating LIBOR will be established such that it continues to exist after 2021, or whether different benchmark rates used to price indebtedness will develop. If LIBOR ceases to exist, we may need to amend certain agreements and we cannot predict what alternative index would be negotiated with our counterparties. As a result, our interest expense could increase and our available cash flow for general corporate requirements may be adversely affected. In addition, the overall financial market may be disrupted as a result of the phase-out or replacement of LIBOR.

Unfavorable changes in foreign exchange rates may harm our business.

Several of our operating companies have transactions and balances denominated in currencies other than the U.S. dollar. Most of these transactions and balances are denominated in euros, Canadian dollars, British pounds or Danish kroner. Sales by our operating companies whose functional currency is not the U.S. dollar represented 16% and 17% of our total net revenues for the years ended December 31, 2019 and 2018, respectively. Unfavorable changes in exchange rates between the U.S. dollar and those currencies could significantly reduce our reported revenues and earnings.

We export a significant portion of our products. Difficulties associated with the export of our products could harm our business.

Sales to customers outside the U.S. by our businesses located in the U.S. account for a significant portion of our net revenues. These sales accounted for 10% and 11% of our net revenues for the years ended December 31, 2019 and 2018, respectively. We are subject to risks that could limit our ability to export our products or otherwise reduce the demand for these products in our foreign markets. Such risks include, without limitation, the following:

- unfavorable changes in or noncompliance with U.S. and other jurisdictions’ export requirements;
- restrictions on the export of technology and related products;
- unfavorable changes in or noncompliance with U.S. and other jurisdictions’ export policies to certain countries;
- unfavorable changes in the import policies of our foreign markets; and
- a general economic downturn in our foreign markets.

The occurrence of any of these events could reduce the foreign demand for our products or could limit our ability to export our products and, therefore, could have a material negative effect on our future sales and earnings.

Economic, political and other risks associated with our international operations could adversely affect our business.

As of and for the year ended December 31, 2019, 19% of our net revenues and 17% of our long-lived assets, excluding goodwill and intangibles, were attributable to operations outside the U.S. We expect our international operations to contribute materially to our business for the foreseeable future. Our international operations are subject to varying degrees of risk inherent in doing business outside the U.S. including, without limitation, the following:

- adverse changes in a specific country's or region's political or economic conditions, particularly in emerging markets;
- oil price volatility;
- trade protection measures, tariffs, and import or export requirements;
- subsidies or increased access to capital for firms that are currently, or may emerge as, competitors in countries in which we have operations;
- partial or total expropriation;
- potentially negative consequences from changes in tax laws;
- difficulty in staffing and managing widespread operations;
- differing labor regulations;
- differing protection of intellectual property;
- differing and unexpected changes in regulatory requirements; and
- potentially negative consequences from the United Kingdom's exit from the European Union.

Our growth strategy includes acquisitions. We may not be able to identify suitable acquisition candidates, complete acquisitions or integrate acquisitions successfully.

Our future growth is likely to depend to some degree on our ability to acquire and successfully integrate new businesses. We intend to seek additional acquisition opportunities, both to expand into new markets and to enhance our position in existing markets. There are no assurances, however, that we will be able to successfully identify suitable candidates, negotiate appropriate terms, obtain financing on acceptable terms, complete proposed acquisitions, successfully integrate acquired businesses or expand into new markets. Once acquired, operations may not achieve anticipated levels of revenues or profitability.

Acquisitions involve risks, including difficulties in the integration of the operations, technologies, services and products of the acquired companies and the diversion of management's attention from other business concerns. Although our management will endeavor to evaluate the risks inherent in any particular transaction, there are no assurances that we will properly ascertain all such risks. In addition, prior acquisitions have resulted, and future acquisitions could result, in the incurrence of substantial additional indebtedness and other expenses. Future acquisitions may also result in potentially dilutive issuances of equity securities. Difficulties encountered with acquisitions may have a material adverse effect on our business, financial condition and results of operations.

Our technology is important to our success and our failure to protect this technology could put us at a competitive disadvantage.

Many of our products rely on proprietary technology; therefore we believe that the development and protection of intellectual property rights through patents, copyrights, trade secrets, trademarks, confidentiality agreements and other contractual provisions are important to the future success of our business. Despite our efforts to protect proprietary rights, unauthorized parties or competitors may copy or otherwise obtain and use our products or technology. Actions to enforce these rights may result in substantial costs and diversion of resources, and we make no assurances that any such actions will be successful.

Product liability, insurance risks and increased insurance costs could harm our operating results.

Our business exposes us to product liability risks in the design, manufacture and distribution of our products. In addition, certain of our products are used in hazardous environments. We currently have product liability insurance; however, we may not be able to maintain our insurance at a reasonable cost or in sufficient amounts to adequately protect us against losses. We also maintain other insurance policies, including directors' and officers' liability insurance. We believe we have adequately accrued estimated losses, principally related to deductible amounts under our insurance policies, with respect to all product liability and other claims, based upon our past experience and available facts. However, a successful product liability or other claim or series of claims brought against us could have a material adverse effect on our business, financial condition and results of operations. In addition, a significant increase in our insurance costs could have an adverse impact on our operating results.

Our operating results could be adversely affected by a reduction of business with our large customers.

In some of our businesses, we derive a significant amount of revenue from large customers. The loss or reduction of any significant contracts with any of these customers could reduce our revenues and cash flows. Additionally, many of our customers are government entities. In many situations, government entities can unilaterally terminate or modify our existing contracts without cause and without penalty to the government agency.

We face intense competition. If we do not compete effectively, our business may suffer.

We face intense competition from numerous competitors. Our products compete primarily on the basis of product quality, performance, innovation, technology, price, applications expertise, system and service flexibility, distribution channel access and established customer service capabilities. We may not be able to compete effectively on all of these fronts or with all of our competitors. In addition, new competitors may emerge, and product lines may be threatened by new technologies or market trends that reduce the value of these product lines. To remain competitive, we must develop new products, respond to new technologies and enhance our existing products in a timely manner. We anticipate that we may have to adjust prices to stay competitive.

We rely on information and technology for many of our business operations which could fail and cause disruption to our business operations.

Our business operations are dependent upon information technology networks and systems to securely transmit, process and store electronic information and to communicate among our locations around the world and with clients and vendors. A shutdown of, or inability to access, one or more of our facilities, a power outage or a failure of one or more of our information technology, telecommunications or other systems could significantly impair our ability to perform such functions on a timely basis. Computer viruses, cyber-attacks, other external hazards and human error could result in the misappropriation of assets or sensitive information, corruption of data or operational disruption. If sustained or repeated, such a business interruption, system failure, service denial or data loss and damage could result in a deterioration of our ability to perform necessary business functions.

A breach in the security of our software could harm our reputation, result in a loss of current and potential customers, and subject us to material claims, which could materially harm our operating results and financial condition.

If our security measures are breached, an unauthorized party may obtain access to our data or our users' or customers' data. In addition, cyber-attacks and similar acts could lead to interruptions and delays in customer processing or a loss or breach of customers' data. Because the techniques used to obtain unauthorized access, disable or degrade service, or sabotage systems change frequently and often are not recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures. The risk that these types of events could seriously harm our business is likely to increase as we expand the number of web-based products and services we offer, and operate in more countries.

Regulatory authorities around the world have adopted and are considering further adoption of legislative and regulatory proposals concerning data protection and data privacy. In addition, the interpretation and application of consumer and data protection laws in the United States, Europe and elsewhere are often uncertain and in flux. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our data practices. If so, in addition to the possibility of fines, this could result in an order requiring that we change our data practices, which could have an adverse effect on our business and results of operations.

Any security breaches for which we are, or are perceived to be, responsible, in whole or in part, could subject us to legal claims or legal proceedings, including regulatory investigations, which could harm our reputation and result in significant litigation costs and damage awards or settlement amounts. Any imposition of liability, particularly liability that is not covered by insurance or is in excess of insurance coverage, could materially harm our operating results and financial condition. Security breaches also could cause us to lose current and potential customers, which could have an adverse effect on our business. Moreover, we might be required to expend significant financial and other resources to protect further against security breaches or to rectify problems caused by any security breach.

Changes in the supply of, or price for, raw materials, parts and components used in our products could affect our business.

The availability and prices of raw materials, parts and components are subject to curtailment or change due to, among other things, suppliers' allocations to other purchasers, interruptions in production by suppliers, changes in exchange rates and prevailing price levels. In addition, some of our products are provided by sole source suppliers. Any change in the supply of, or price for, these parts and components, as well as any increases in commodity prices, particularly copper, could affect our business, financial condition and results of operations.

Environmental compliance costs and liabilities could increase our expenses and adversely affect our financial condition.

Our operations and properties are subject to laws and regulations relating to environmental protection, including air emissions, water discharges, waste management and workplace safety. These laws and regulations can result in the imposition of substantial fines and sanctions for violations and could, in certain instances, require the installation of pollution control equipment or operational changes to limit pollution emissions and/or decrease the likelihood of accidental hazardous substance releases. Additionally, we could be affected by future regulations imposed in response to concerns over climate change. We must conform our operations and properties to these laws and adapt to regulatory requirements in the countries in which we operate as these requirements change.

We use and generate hazardous substances and wastes in some of our operations and, as a result, could be subject to potentially material liabilities relating to the investigation and clean-up of contaminated properties and to claims alleging personal injury. We have experienced, and expect to continue to experience, costs relating to compliance with environmental laws and regulations. In connection with our acquisitions, we may assume significant environmental liabilities, some of which we may not be aware of at the time of acquisition. In addition, new laws and regulations, stricter enforcement of existing laws and regulations, the discovery of previously unknown contamination or the imposition of new clean-up requirements could require us to incur costs or become the basis for new or increased liabilities that could have a material adverse effect on our business, financial condition and results of operations.

Some of the industries in which we operate are cyclical, and, accordingly, our business is subject to changes in the economy.

Some of the business areas in which we operate are subject to specific industry and general economic cycles. Certain businesses are subject to industry cycles, including but not limited to, the industrial and energy markets. Accordingly, a downturn in these or other markets in which we participate could materially adversely affect us. If demand changes and we fail to respond accordingly, our results of operations could be materially adversely affected. The business cycles of our different operations may occur contemporaneously. Consequently, the effect of an economic downturn may have a magnified negative effect on material portions of our business.

Our goodwill and intangible assets are a significant amount of our total assets, and any write-off of our intangible assets would negatively affect our results of operations.

Our total assets reflect substantial intangible assets, primarily goodwill. At December 31, 2019, goodwill totaled \$10.8 billion compared to \$9.5 billion of stockholders' equity, and represented 60% of our total assets of \$18.1 billion. The goodwill results from our acquisitions, representing the excess purchase price over the fair value of the net identifiable assets acquired. We assess at least annually whether there has been an impairment in the value of our goodwill and indefinite economic life intangible assets. If future operating performance at one or more of our business units were to fall significantly below current levels, if competing or alternative technologies emerge, if interest rates rise or if business valuations decline, we could incur a non-cash charge to operating income. Any determination requiring the write-off of a significant portion of goodwill or unamortized intangible assets would negatively affect our results of operations, the effect of which could be material.

We depend on our ability to develop new products, and any failure to develop or market new products could adversely affect our business.

The future success of our business will depend, in part, on our ability to design and manufacture new competitive products and to enhance existing products so that we maintain our margin profile. This product development may require substantial internal investment. There can be no assurance that unforeseen problems will not occur with respect to the development, performance or market acceptance of new technologies or products or that we will otherwise be able to successfully develop and market new products. Failure of our products to gain market acceptance or our failure to successfully develop and market new products could reduce our margins, which would have an adverse effect on our business, financial condition and results of operations.

Any business disruptions due to political instability, armed hostilities, incidents of terrorism, public health crisis or natural disasters could adversely impact our financial performance.

If terrorist activity, armed conflict, political instability, public health crisis, such as an epidemic or pandemic related to the Coronavirus, or natural disasters occur in the U.S. or other locations, such events may negatively impact our operations, cause general economic conditions to deteriorate or cause demand for our products to decline. A prolonged economic slowdown or recession could reduce the demand for our products, and therefore, negatively affect our future sales and profits. Any of these events could have a significant impact on our business, financial condition or results of operations.

Recent significant changes to our executive leadership team and any future loss of members of such team, and the resulting management transitions, could harm our operating results.

Over the past several years, we have experienced significant changes to our executive leadership team. Leadership transitions and changes can be inherently difficult to manage and may cause uncertainty or disruption to our business or may increase the likelihood of turnover in key leadership positions. If we cannot effectively manage leadership transitions and changes, it could make it more difficult to successfully operate our business.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None

ITEM 2. PROPERTIES

Our corporate offices, consisting of 29,000 square feet of leased space, are located at 6901 Professional Parkway East, Sarasota, Florida. As of December 31, 2019, we owned approximately 0.8 million square feet, and leased approximately 4.3 million square feet. Of the total 5.1 million square feet, 72% is concentrated in the United States. We consider our facilities to be in good operating condition and adequate for their present use and believe we have sufficient capacity to meet our anticipated operating requirements.

ITEM 3. LEGAL PROCEEDINGS

Information pertaining to legal proceedings can be found in Note 12 to the Consolidated Financial Statements included in this Annual Report, and is incorporated by reference herein.

ITEM 4. MINE SAFETY DISCLOSURES

Not Applicable

PART II

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

Our common stock trades on the NYSE under the symbol "ROP". Based on information available to us and our transfer agent, we believe that as of February 21, 2020 there were 186 record holders of our common stock.

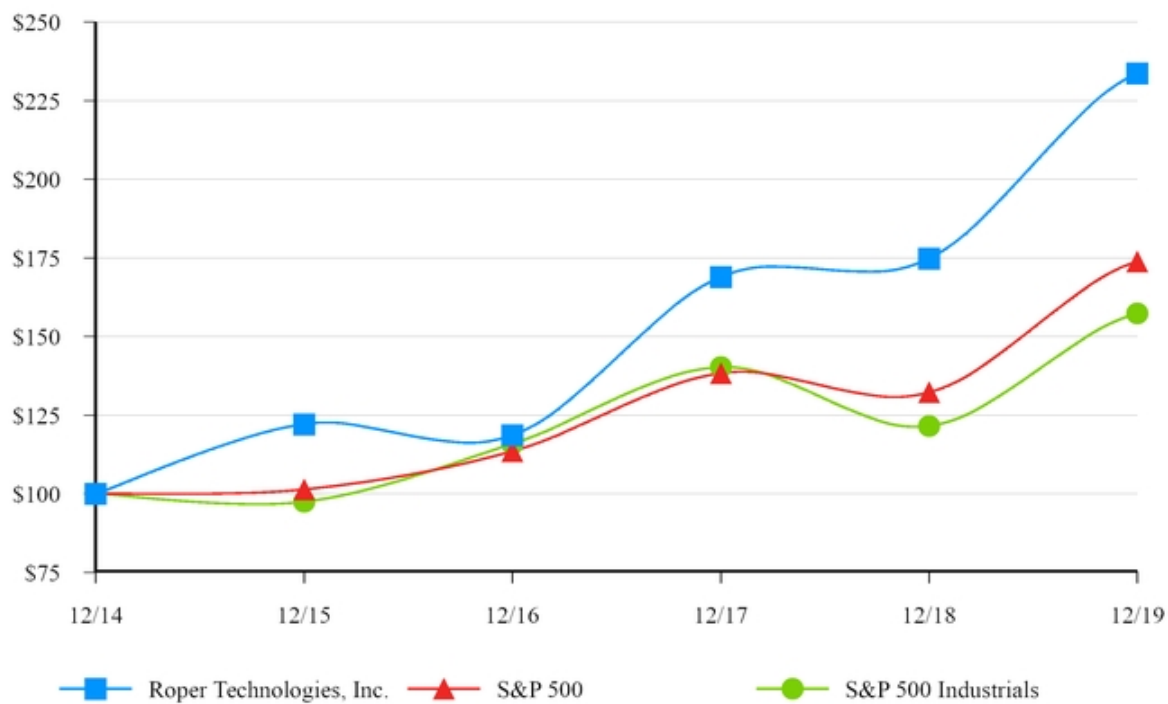
Dividends – We have declared a cash dividend in each quarter since our February 1992 initial public offering and we have annually increased our dividend rate since our initial public offering. In November 2019, our Board of Directors increased the quarterly dividend paid January 23, 2020 to \$0.5125 per share from \$0.4625 per share, an increase of 11%. This is the twenty-seventh consecutive year in which the Company has increased its dividend. The timing, declaration and payment of future dividends will be at the sole discretion of our Board of Directors and will depend upon our profitability, financial condition, capital needs, future prospects and other factors deemed relevant by our Board of Directors.

Recent Sales of Unregistered Securities - In 2019, there were no sales of unregistered securities.

Performance Graph - This performance graph shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act") or otherwise subject to the liabilities under that Section and shall not be deemed to be incorporated by reference into any of our filings under the Securities Act of 1933, as amended, or under the Exchange Act.

The following graph compares, for the five year period ended December 31, 2019, the cumulative total stockholder return for our common stock, the Standard and Poor's 500 Stock Index (the "S&P 500") and the Standard and Poor's 500 Industrials Index (the "S&P 500 Industrials"). Measurement points are the last trading day of each of our fiscal years ended December 31, 2014, 2015, 2016, 2017, 2018 and 2019. The graph assumes that \$100 was invested on December 31, 2014 in our common stock, the S&P 500 and the S&P 500 Industrials and assumes reinvestment of any dividends. The stock price performance on the following graph is not necessarily indicative of future stock price performance.

	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019
Roper Technologies, Inc.	\$ 100.00	\$ 122.13	\$ 118.61	\$ 168.88	\$ 174.82	\$ 233.67
S&P 500	100.00	101.38	113.51	138.29	132.23	173.86
S&P 500 Industrials	100.00	97.47	115.85	140.22	121.58	157.29



The information set forth in Item 12 under the heading “Securities Authorized for Issuance under Equity Compensation Plans” is incorporated herein by reference.

ITEM 6. SELECTED FINANCIAL DATA

You should read the table below in conjunction with “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our Consolidated Financial Statements and related notes included in this Annual Report (amounts in millions, except per share data).

	As of and for the Years ended December 31,				
	2019 ⁽¹⁾⁽⁸⁾	2018 ⁽²⁾	2017 ⁽³⁾	2016 ⁽⁴⁾	2015 ⁽⁵⁾
Operations data:					
Net revenues	\$ 5,366.8	\$ 5,191.2	\$ 4,607.5	\$ 3,789.9	\$ 3,582.4
Gross profit	3,427.1	3,279.5	2,864.8	2,332.4	2,164.6
Income from operations	1,498.4	1,396.4	1,210.2	1,054.6	1,027.9
Net earnings ⁽⁶⁾	1,767.9	944.4	971.8	658.6	696.1
Per share data:					
Basic earnings per share	\$ 17.02	\$ 9.15	\$ 9.51	\$ 6.50	\$ 6.92
Diluted earnings per share	\$ 16.82	\$ 9.05	\$ 9.39	\$ 6.43	\$ 6.85
Dividends declared per share	\$ 1.9000	\$ 1.7000	\$ 1.4625	\$ 1.2500	\$ 1.0500
Balance sheet data:					
Cash and cash equivalents	\$ 709.7	\$ 364.4	\$ 671.3	\$ 757.2	\$ 778.5
Working capital ⁽⁷⁾	(505.4)	(200.4)	(140.4)	(25.0)	126.2
Total assets	18,108.9	15,249.5	14,316.4	14,324.9	10,168.4
Current portion of long-term debt	602.2	1.5	800.9	401.0	6.8
Long-term debt, net of current portion	4,673.1	4,940.2	4,354.6	5,808.6	3,264.4
Stockholders’ equity	9,491.9	7,738.5	6,863.6	5,788.9	5,298.9

⁽¹⁾ Includes results from the acquisitions of Foundry from April 18, 2019, ComputerEase from August 19, 2019, iPipeline from August 22, 2019, and Bellefield from December 18, 2019; and the results from the Imaging businesses through disposal on February 5, 2019 and Gatan through disposal on October 29, 2019.

⁽²⁾ Includes results from the acquisitions of Quote Software from January 2, 2018, PlanSwift Software from March 28, 2018, Smartbid from May 8, 2018, PowerPlan, Inc. from June 4, 2018, ConceptShare from June 7, 2018, BillBlast from July 10, 2018 and Avitru from December 31, 2018.

⁽³⁾ Includes results from the acquisitions of Phase Technology from June 21, 2017, Handshake Software, Inc. from August 4, 2017, Workbook Software A/S from September 15, 2017 and Onvia, Inc. from November 17, 2017.

⁽⁴⁾ Includes results from the acquisitions of CliniSys Group Ltd. from January 7, 2016, PCI Medical Inc. from March 17, 2016, GeneInsight Inc. from April 1, 2016, iSqFt Holdings Inc. (d/b/a ConstructConnect) from October 31, 2016, UNICconnect LC from November 10, 2016 and Deltek, Inc. from December 28, 2016.

⁽⁵⁾ Includes results from the acquisitions of Strata Decision Technologies LLC from January 21, 2015, SoftWriters Inc. from February 9, 2015, Data Innovations LLC from March 4, 2015, On Center Software LLC from July 20, 2015, RF IDEas Inc. from September 1, 2015, Atlantic Health Partners LLC from September 4, 2015, Aderant Holdings Inc. from October 21, 2015, Atlas Database Software Corp. from October 26, 2015; and the results from the Black Diamond Advanced Technologies through disposal on March 20, 2015 and Abel Pumps through disposal on October 2, 2015.

⁽⁶⁾ The Company recognized an after tax gain of \$687.3 in connection with the dispositions of the Imaging businesses and Gatan during 2019. The Tax Cuts and Jobs Act of 2017 (“the Tax Act”) was signed into U.S. law on December 22, 2017, which was prior to the end of the Company’s 2017 reporting period and resulted in a one-time net income tax benefit of \$215.4.

⁽⁷⁾ Net working capital equals current assets, excluding cash, less total current liabilities, excluding debt.

⁽⁸⁾ In 2019 working capital includes the impact of the increase in income taxes payable of approximately \$200.0 due to the taxes incurred on the gain on sale of Gatan, and the adoption of Accounting Standards Codification (“ASC”) Topic 842, Leases (“ASC 842”) which resulted in an increase to current liabilities of \$56.8 as of December 31, 2019. The other balance sheet accounts impacted due to the adoption of ASC 842 are set forth in Note 16 of the Notes to Consolidated Financial Statements included in this Annual Report.

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

All currency amounts are in millions unless specified

You should read the following discussion in conjunction with "Selected Financial Data" and our Consolidated Financial Statements and related notes included in this Annual Report, as well as Part II, "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" of our Form 10-K for the year ended December 31, 2018, which provides additional information on comparisons of years 2018 and 2017 relating to any sections which remain unchanged.

Overview

We are a diversified technology company. We operate businesses that design and develop software (both license and SaaS) and engineered products and solutions for a variety of niche end markets.

We pursue consistent and sustainable growth in earnings and cash flow by emphasizing continuous improvement in the operating performance of our existing businesses and by acquiring other carefully selected businesses. Our acquisitions have represented both new strategic platforms and additions to existing businesses.

Application of Critical Accounting Policies

Our Consolidated Financial Statements are prepared in conformity with generally accepted accounting principles in the United States ("GAAP"). A discussion of our significant accounting policies can also be found in the notes to our Consolidated Financial Statements for the year ended December 31, 2019 included in this Annual Report.

GAAP offers acceptable alternative methods for accounting for certain issues affecting our financial results, such as determining inventory cost, depreciating long-lived assets and recognizing revenue. We have not changed the application of acceptable accounting methods or the significant estimates affecting the application of these principles in the last three years in a manner that had a material effect on our Consolidated Financial Statements.

The preparation of financial statements in accordance with GAAP requires the use of estimates, assumptions, judgments and interpretations that can affect the reported amounts of assets, liabilities, revenues and expenses, the disclosure of contingent assets and liabilities and other supplemental disclosures.

The development of accounting estimates is the responsibility of our management. Our management discusses those areas that require significant judgments with the Audit Committee of our Board of Directors. The Audit Committee has reviewed all financial disclosures in our annual filings with the SEC. Although we believe the positions we have taken with regard to uncertainties are reasonable, others might reach different conclusions and our positions can change over time as more information becomes available. If an accounting estimate changes, its effects are accounted for prospectively or through a cumulative catch up adjustment.

Our most significant accounting uncertainties are encountered in the areas of accounts receivable collectibility, inventory valuation, future warranty obligations, revenue recognition, income taxes, valuation of other intangible assets and goodwill and indefinite-lived impairment analyses. These issues affect each of our business segments and are evaluated using a combination of historical experience, current conditions and relatively short-term forecasting.

Accounts receivable collectibility is based on the economic circumstances of customers and credits given to customers after shipment of products, including in certain cases credits for returned products. Accounts receivable are regularly reviewed to determine customers who have not paid within agreed upon terms, whether these amounts are consistent with past experiences, what historical experience has been with amounts deemed uncollectible and the impact that economic conditions might have on collection efforts in general and with specific customers. The returns and other sales credit allowance is an estimate of customer returns, exchanges, discounts or other forms of anticipated concessions and is treated as a reduction in revenue. The returns and other sales credits histories are analyzed to determine likely future rates for such credits. At December 31, 2019, our allowance for doubtful accounts receivable was \$16.9 and our allowance for sales returns and sales credits was \$3.4, for a total of \$20.3, or 2.5% of total gross accounts receivable, as compared to a total of \$23.1, or 3.2% of total gross accounts receivable, at December 31, 2018. This percentage is influenced by the risk profile of the underlying receivables, and the timing of write-offs of accounts deemed uncollectible.

We regularly compare inventory quantities on hand against anticipated future usage, which we determine as a function of historical usage or forecasts related to specific items in order to evaluate obsolescence and excessive quantities. When we use historical usage, this information is also qualitatively compared to business trends to evaluate the reasonableness of using historical information as an estimate of future usage. At December 31, 2019, inventory reserves for excess and obsolete inventory were \$33.4, or 14.4% of gross inventory cost, as compared to \$30.3, or 13.7% of gross inventory cost, at December 31, 2018. The inventory reserve as a percent of gross inventory cost will continue to fluctuate based upon specific identification of reserves needed based upon changes in our business as well as the physical disposal of obsolete inventory.

Most of our product-based revenues are covered by warranty provisions that generally provide for the repair or replacement of qualifying defective items for a specified period after the time of sale, typically 12 to 24 months. Future warranty obligations are evaluated using, among other factors, historical cost experience, product evolution and customer feedback. Our expense for warranty obligations was less than 1% of net revenues for each of the years ended December 31, 2019, 2018 and 2017.

Revenues from our project-based businesses, including toll and traffic systems, control systems and installations of large software application projects, are generally recognized over time using the input method, primarily utilizing the ratio of costs incurred to total estimated costs, as the measure of performance. The Company recognized revenues of \$247.8, \$245.9 and \$249.3 for the years ended December 31, 2019, 2018 and 2017, respectively, using this method. There was \$401.6 and \$241.6 of revenue related to unfinished percentage-of-completion contracts had yet to be recognized at December 31, 2019, and 2018, respectively. The primary driver in the increase was due to our TransCore business that was awarded the contract for the New York Central Business District Tolling Program.

Income taxes can be affected by estimates of whether and within which jurisdictions future earnings will occur and if, how and when cash is repatriated to the U.S., combined with other aspects of an overall income tax strategy. Additionally, taxing jurisdictions could retroactively disagree with our tax treatment of certain items, and some historical transactions have income tax effects going forward. Accounting rules require these future effects to be evaluated using current laws, rules and regulations, each of which can change at any time and in an unpredictable manner. During 2019, our effective income tax rate was 20.6%, as compared to the 2018 rate of 21.2%. The decrease was due primarily to the recognition of a discrete tax benefit of \$41.0 in connection with a foreign restructuring plan allowing the future realization of net operating losses and the reversal of the deferred tax liability of \$10.0 originally recorded in the second quarter of 2018 associated with the excess of Gatan's book basis over our tax basis in the shares during the third quarter of 2019, partially offset by the higher income tax rate incurred on the Imaging and Gatan gains. We expect the effective tax rate for 2020 to be between 21% and 23%.

We account for goodwill in a purchase business combination as the excess purchase price over the fair value of the net identifiable assets acquired. Goodwill, which is not amortized, is tested for impairment on an annual basis in conjunction with our annual forecast process during the fourth quarter (or an interim basis if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value).

When testing goodwill for impairment, we have the option to first assess qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that the estimated fair value of a reporting unit is less than its carrying amount. If we elect to perform a qualitative assessment and determine that an impairment is more likely than not, we are then required to perform the quantitative impairment test; otherwise, no further analysis is required. Under the qualitative assessment, we consider various qualitative factors, including macroeconomic conditions, relevant industry and market trends, cost factors, overall financial performance, other entity-specific events and events affecting the reporting unit that could indicate a potential change in the fair value of our reporting unit or the composition of its carrying values. We also consider the specific future outlook for the reporting unit.

We also may elect not to perform the qualitative assessment and, instead, proceed directly to the quantitative impairment test. The quantitative assessment utilizes both an income approach (discounted cash flows) and a market approach (consisting of a comparable company earnings multiples methodology) to estimate the fair value of a reporting unit. To determine the reasonableness of the estimated fair values, we review the assumptions to ensure that neither the income approach nor the market approach provides significantly different valuations. If the estimated fair value exceeds the carrying value, no further work is required and no impairment loss is recognized. If the carrying value exceeds the estimated fair value, a non-cash impairment loss is recognized in the amount of that excess.

Key assumptions used in the income and market approaches are updated when the analysis is performed for each reporting unit. Various assumptions are utilized including forecasted operating results, strategic plans, economic projections, anticipated future cash flows, the weighted-average cost of capital, comparable transactions, market data and earnings multiples. While we use reasonable and timely information to prepare our cash flow and discount rate assumptions, actual future cash flows or market conditions could differ significantly and could result in future non-cash impairment charges related to recorded goodwill balances.

Recently acquired reporting units generally represent a higher inherent risk of impairment, which typically decreases as the businesses are integrated into our enterprise. Negative industry or economic trends, disruptions to our business, actual results significantly below projections, unexpected significant changes or planned changes in the use of the assets, divestitures and market capitalization declines may have a negative effect on the fair value of our reporting units.

Roper has 35 reporting units with individual goodwill amounts ranging from zero to \$2.5 billion. In 2019, the Company performed its annual impairment test in the fourth quarter for all reporting units. The Company conducted its analysis qualitatively and assessed whether it was more likely than not that the respective fair value of these reporting units was less than the carrying amount. The Company determined that impairment of goodwill was not likely in 33 of its reporting units and thus was not required to perform a quantitative assessment for these reporting units. For the remaining two reporting units, the Company performed its quantitative assessment and concluded that the fair value of each of these two reporting units was substantially in excess of its carrying value, with no impairment indicated as of October 1, 2019.

Trade names that are determined to have an indefinite useful economic life are not amortized, but separately tested for impairment during the fourth quarter of the fiscal year or on an interim basis if an event occurs that indicates the fair value is more likely than not below the carrying value. We first qualitatively assess whether the existence of events or circumstances leads to a determination that it is more likely than not that the estimated fair value of the indefinite-lived trade name is less than its carrying amount. If necessary, we conduct a quantitative assessment using the relief-from-royalty method, which we believe to be an acceptable methodology due to its common use by valuation specialists in determining the fair value of intangible assets. This methodology assumes that, in lieu of ownership, a third-party would be willing to pay a royalty in order to exploit the related benefits of these assets. The fair value of each trade name is determined by applying a royalty rate to a projection of net revenues discounted using a risk-adjusted rate of capital. Each royalty rate is determined based on the profitability of the trade name to which it relates and observed market royalty rates. Revenue growth rates are determined after considering current and future economic conditions, recent sales trends, discussions with customers, planned timing of new product launches or other variables. Trade names resulting from recent acquisitions generally represent the highest risk of impairment, which typically decreases as the businesses are integrated into our enterprise and positioned for future sales growth.

The Company performed a quantitative analysis over the fair values of two of its trade names and concluded that the fair value exceeded its carrying value, with no impairment indicated as of October 1, 2019. Of those trade names subjected to our quantitative analysis, one, associated with our lab software business, had a fair value that approximated its carrying value, which was \$100.4 as of October 1, 2019. Holding other assumptions constant, for the specific trade name associated with our lab software business, a 50 basis point increase in the discount rate would result in a \$5.5 impairment and a 100 basis point decrease in the terminal growth rate would result in an \$9.7 impairment.

The assessment of fair value for impairment purposes requires significant judgments to be made by management. Although our forecasts are based on assumptions that are considered reasonable by management and consistent with the plans and estimates management uses to operate the underlying businesses, there is significant judgment in determining the expected results attributable to the businesses and/or reporting units. Changes in estimates or the application of alternative assumptions could produce significantly different results. No impairment resulted from the annual reviews performed in 2019.

The most significant identifiable intangible assets with definite useful economic lives recognized from our acquisitions are customer relationships. The fair value for customer relationships is determined as of the acquisition date using the excess earnings method. Under this methodology the fair value is determined based on the estimated future after-tax cash flows arising from the acquired customer relationships over their estimated lives after considering customer attrition and contributory asset charges. When testing customer relationship intangible assets for potential impairment, management considers historical customer attrition rates and projected revenues and profitability related to customers that existed at acquisition. In evaluating the amortizable life for customer relationship intangible assets, management considers historical customer attrition patterns.

We evaluate whether there has been an impairment of identifiable intangible assets with definite useful economic lives, or of the remaining life of such assets, when certain indicators of impairment are present. In the event that facts and circumstances indicate that the cost or remaining period of amortization of any asset may be impaired, an evaluation of recoverability would be performed. If an evaluation is required, the estimated future gross, undiscounted cash flows associated with the asset would be compared to the asset's carrying amount to determine if a write-down to fair value or a revision in the remaining amortization period is required.

Results of Operations

All currency amounts are in millions unless specified, percentages are net of revenues

Percentages may not sum due to rounding.

The following table sets forth selected information for the years indicated.

	Years ended December 31,		
	2019	2018	2017
Net revenues:			
Application Software ⁽¹⁾	\$ 1,588.0	\$ 1,452.7	\$ 1,222.2
Network Software & Systems ⁽²⁾	1,529.5	1,345.2	1,254.1
Measurement & Analytical Solutions ⁽³⁾	1,596.4	1,705.6	1,531.3
Process Technologies ⁽⁴⁾	652.9	687.7	599.9
Total	\$ 5,366.8	\$ 5,191.2	\$ 4,607.5
Gross margin:			
Application Software	67.0 %	66.9 %	65.3 %
Network Software & Systems	69.2	68.3	66.6
Measurement & Analytical Solutions	58.5	58.7	58.4
Process Technologies	56.9	56.4	56.3
Total	63.9 %	63.2 %	62.2 %
Segment operating margin:			
Application Software	25.5 %	24.6 %	22.8 %
Network Software & Systems	35.2	36.0	35.0
Measurement & Analytical Solutions	31.4	30.7	29.1
Process Technologies	34.6	34.0	31.4
Total	31.1 %	30.8 %	29.3 %
Corporate administrative expenses	(3.2)%	(3.9)%	(3.1)%
Income from operations	27.9	26.9	26.3
Interest expense, net	(3.5)	(3.5)	(3.9)
Loss on debt extinguishment	—	(0.3)	—
Other income/(expense)	(0.1)	—	0.1
Gain on disposal of businesses	17.2	—	—
Earnings before income taxes	41.5	23.1	22.5
Income taxes	(8.6)	(4.9)	(1.4)
Net earnings	32.9 %	18.2 %	21.1 %

(1) Includes results from the acquisitions of Handshake Software, Inc. from August 4, 2017, Workbook Software A/S from September 15, 2017, Onvia, Inc. from November 17, 2017, PowerPlan, Inc. from June 4, 2018, ConceptShare from June 7, 2018, BillBlast from July 10, 2018, Avitru from December 31, 2018, ComputerEase from August 19, 2019, and Bellefield from December 18, 2019.

(2) Includes results from the acquisitions of Quote Software from January 2, 2018, PlanSwift Software from March 28, 2018, Smartbid from May 8, 2018, Foundry from April 18, 2019, and iPipeline from August 22, 2019.

(3) Includes the results from the Imaging businesses through February 5, 2019 and Gatan through October 29, 2019.

(4) Includes results from the acquisition of Phase Technology from June 21, 2017.

Year Ended December 31, 2019 Compared to Year Ended December 31, 2018

Net revenues for the year ended December 31, 2019 were \$5.37 billion as compared to \$5.19 billion for the year ended December 31, 2018, an increase of 3.4%. The increase was the result of organic growth of 2.8% and a net effect from acquisitions and divestitures of 1.4%, partially offset by a negative foreign exchange impact of 0.8%.

In our Application Software segment, net revenues for the year ended December 31, 2019 increased by \$135.3 or 9% over the year ended December 31, 2018. Organic revenues increased by 5% and acquisitions accounted for 5% of our growth, partially offset by a negative foreign exchange impact of 1%. The growth in organic revenues was due primarily to broad-based revenue growth across the segment, led by businesses serving government contracting, professional services, legal and healthcare markets. Gross margin remained relatively flat at 67.0% for the year ended December 31, 2019 as compared to 66.9% for the year ended December 31, 2018. Selling, general and administrative (“SG&A”) expenses as a percentage of revenues in the year ended December 31, 2019 decreased to 41.5%, as compared to 42.3% in the year ended December 31, 2018, due primarily to operating leverage on higher organic revenues. The resulting operating margin was 25.5% in the year ended December 31, 2019 as compared to 24.6% in the year ended December 31, 2018.

Our Network Software & Systems segment reported a \$184.3 or 14% increase in net revenues for the year ended December 31, 2019 over the year ended December 31, 2018. Organic revenues increased by 5% and acquisitions accounted for 8% of our growth. The growth in organic revenues was due to broad-based revenue growth across the segment led by our network software businesses serving the transportation, healthcare and food markets. Gross margin increased to 69.2% for the year ended December 31, 2019 from 68.3% for the year ended December 31, 2018, due primarily to revenue mix. SG&A expenses as a percentage of net revenues increased to 34.0% in the year ended December 31, 2019, as compared to 32.3% in the year ended December 31, 2018, due primarily to the acquisitions completed in 2019, including amortization of acquired intangibles. The resulting operating margin was 35.2% in the year ended December 31, 2019 as compared to 36.0% in the year ended December 31, 2018.

Net revenues for our Measurement & Analytical Solutions segment decreased by \$109.2 or 6% for the year ended December 31, 2019 from the year ended December 31, 2018. Organic revenues increased 2%, more than offset by a decrease in revenue of 8% attributable to the disposal of the Imaging businesses and Gatan as discussed above, and a negative foreign exchange impact of 1%. The growth in organic revenues was due primarily to our medical products and water meter technology businesses, partially offset by industrial business declines. Gross margin decreased to 58.5% in the year ended December 31, 2019, as compared to 58.7% in the year ended December 31, 2018, due primarily to revenue mix. SG&A expenses as a percentage of net revenues decreased to 27.1% in the year ended December 31, 2019, as compared to 27.9% in the year ended December 31, 2018, due primarily to operating leverage on higher organic revenues and the sale of the Imaging businesses. The resulting operating margin was 31.4% in the year ended December 31, 2019 as compared to 30.7% in the year ended December 31, 2018.

In our Process Technologies segment, net revenues for the year ended December 31, 2019 decreased by \$34.8 or 5% from the year ended December 31, 2018. Organic sales decreased by 4% and the negative foreign exchange impact was 1%. The decrease in organic revenues was due primarily to lower demand at our businesses serving upstream oil and gas end markets. Gross margin increased to 56.9% in the year ended December 31, 2019 as compared to 56.4% in the year ended December 31, 2018, due primarily to revenue mix. SG&A expenses as a percentage of net revenues decreased to 22.3% in the year ended December 31, 2019, as compared to 22.5% in the year ended December 31, 2018, due primarily to lower costs that are generally variable with revenue. As a result, operating margin was 34.6% in the year ended December 31, 2019 as compared to 34.0% in the year ended December 31, 2018.

Corporate expenses decreased by \$31.1 to \$172.4, or 3.2% of revenues, in 2019 as compared to \$203.5, or 3.9% of revenues, in 2018. The decrease was due primarily to \$35.0 of accelerated vesting associated with the passing of our former executive chairman incurred in 2018, partially offset by higher acquisition-related expenses.

Interest expense, net, increased \$4.5, or 2.5%, for the year ended December 31, 2019 as compared to the year ended December 31, 2018. The increase was due to higher weighted average interest rates, partially offset by lower weighted average debt balances.

Loss on debt extinguishment of \$15.9 for the year ended December 31, 2018, incurred in connection with the early redemption of the \$500.0 aggregate principal amount of 6.25% senior unsecured notes due September 1, 2019, was composed of the early redemption premium and remaining unamortized deferred financing costs.

Other expense, net, of \$5.1 for the year ended December 31, 2019 was composed primarily of foreign exchange losses at our non-U.S. based subsidiaries, partially offset by royalty income. Other income, net, of \$0.0 for the year ended December 31, 2018 was composed primarily of royalty income, offset entirely by various other immaterial expenses.

Gain on disposal of businesses, resulted in a pretax gain of \$920.7 for the year ended December 31, 2019. The Company recognized \$119.6 on the sale of the Imaging businesses, which closed February 5, 2019, and \$801.1 on the sale of Gatan, which closed October 29, 2019.

During 2019, our effective income tax rate was 20.6% as compared to our 2018 rate of 21.2%. The decrease was due primarily to the recognition of a discrete tax benefit of \$41.0 in connection with a foreign restructuring plan allowing the future realization of net operating losses and the reversal of the deferred tax liability of \$10.0 originally recorded in the second quarter of 2018 associated with the excess of Gatan's book basis over our tax basis in the shares during the third quarter of 2019, partially offset by the higher income tax rate incurred on the Imaging and Gatan gains.

Order backlog is equal to our remaining performance obligations expected to be recognized within the next 12 months as discussed in Note 1 of the Notes to Consolidated Financial Statements.

	2019	2018	change
Application Software	\$ 834.6	\$ 756.4	10.3 %
Network Software & Systems	848.5	501.0	69.4
Measurement & Analytical Solutions	188.5	305.6	(38.3)
Process Technologies	113.8	129.8	(12.3)
Total	\$ 1,985.4	\$ 1,692.8	17.3 %

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

Net revenues for the year ended December 31, 2018 were \$5.19 billion as compared to \$4.61 billion for the year ended December 31, 2017, an increase of 12.7%. The increase was the result of organic growth of 9.4%, a net effect from acquisitions and divestitures of 2.9%, and foreign exchange benefit of 0.4%.

In our Application Software segment, net revenues for the year ended December 31, 2018 increased by \$230.5 or 19% over the year ended December 31, 2017. Organic revenues increased by 9% and acquisitions accounted for 9%. The growth in organic revenues was due primarily to broad-based revenue growth across the segment, led by businesses serving government contracting, professional services, legal and healthcare markets, and the non-recurrence of purchase accounting adjustments to acquired deferred revenues in the year ended December 31, 2017 associated with our 2016 Deltek acquisition. Gross margin was 66.9% for the year ended December 31, 2018 as compared to 65.3% for the year ended December 31, 2017, due primarily to operating leverage on higher revenues. SG&A expenses were relatively flat as a percentage of revenues at 42.3% for the year ended December 31, 2018 as compared to 42.4% for the year ended December 31, 2017. The resulting operating margin was 24.6% in 2018 as compared to 22.8% in 2017.

In our Network Software & Systems segment, net revenues for the year ended December 31, 2018 increased by \$91.1 or 7% over the year ended December 31, 2017. Organic revenues increased by 6% and acquisitions accounted for 1%. The growth in organic revenues was due to broad-based revenue growth across the segment led by our network software businesses serving the transportation markets and the non-recurrence of purchase accounting adjustments to acquired deferred revenues in the year ended December 31, 2017 associated with our 2016 ConstructConnect acquisition. Gross margin increased to 68.3% for the year ended December 31, 2018 from 66.6% for the year ended December 31, 2017, due primarily to operating leverage on higher revenues. SG&A expenses as a percentage of net revenues increased to 32.3% in the year ended December 31, 2018, as compared to 31.6% in the year ended December 31, 2017, due primarily to the acquisitions completed in 2018, including amortization of acquired intangibles. The resulting operating margin was 36.0% in the year ended December 31, 2018 as compared to 35.0% in the year ended December 31, 2017.

In our Measurement & Analytical Solutions segment, net revenues for the year ended December 31, 2018 increased by \$174.3 or 11% over the year ended December 31, 2017. Organic revenues increased by 11% and the foreign exchange benefit was 1%. The growth in organic revenues was due to broad-based revenue growth across the segment led by our scientific imaging, water meter technology and medical products businesses. Gross margin increased to 58.7% for the year ended December 31, 2018 from 58.4% for the year ended December 31, 2017 and SG&A expenses as a percentage of net revenues decreased to 27.9% in the year ended December 31, 2018, as compared to 29.3% in the year ended December 31, 2017, due primarily to operating leverage on higher sales volume. The resulting operating margin was 30.7% in the year ended December 31, 2018 as compared to 29.1% in the year ended December 31, 2017.

In our Process Technologies segment, net revenues for the year ended December 31, 2018 increased by \$87.8 or 15% from the year ended December 31, 2017. Organic sales increased by 14% and the benefit from foreign exchange was 1%. The growth in organic revenues was due to broad-based growth in our businesses serving energy and industrial end markets. Gross margin increased to 56.4% in the year ended December 31, 2018 as compared to 56.3% in the year ended December 31, 2017 and SG&A expenses as a percentage of net revenues decreased to 22.5% in the year ended December 31, 2018, as compared to 24.9% in the year ended December 31, 2017, both of which were due to operating leverage on higher sales volume. As a result, operating margin was 34.0% in the year ended December 31, 2018 as compared to 31.4% in the year ended December 31, 2017.

Order backlog is equal to our remaining performance obligations expected to be recognized within the next 12 months as discussed in Note 1 of the Notes to Consolidated Financial Statements.

	2018	2017	change
Application Software	\$ 756.4	\$ 679.8	11.3 %
Network Software & Systems	501.0	550.6	(9.0)%
Measurement & Analytical Solutions	305.6	313.2	(2.4)%
Process Technologies	129.8	128.8	0.8 %
Total	\$ 1,692.8	\$ 1,672.4	1.2 %

Financial Condition, Liquidity and Capital Resources

All currency amounts are in millions unless specified

Selected cash flows for the years ended December 31, 2019, 2018 and 2017 are as follows:

	2019	2018	2017
Cash provided by/(used in):			
Operating activities	\$ 1,461.8	\$ 1,430.1	\$ 1,234.5
Investing activities	(1,296.0)	(1,335.1)	(209.6)
Financing activities	177.0	(388.1)	(1,170.0)

Operating activities - The growth in cash provided by operating activities in 2019 and in 2018 was primarily due to increased earnings net of non-cash expenses, partially offset by higher cash taxes paid in 2019, most notably cash taxes paid on the gain on sale of the Imaging businesses.

Investing activities - Cash used in investing activities during 2019 was primarily for business acquisitions, most notably iPipeline and Foundry, partially offset by proceeds from the disposal of the Gatan business and the Imaging businesses. Cash used in investing activities during 2018 was primarily for business acquisitions, most notably PowerPlan.

Financing activities - Cash provided by/(used in) financing activities in all periods presented was primarily debt repayments/borrowings as well as dividends paid to stockholders. Cash provided by financing activities during 2019 was primarily from the issuance of \$1.2 billion of senior notes partially offset by \$865.0 of revolving debt repayments and to a lesser extent dividend payments. Cash used in financing activities during 2018 was primarily from the pay-down of revolving debt borrowings of \$405.0, partially offset by the net issuance of senior notes of \$200.0 and dividends paid to shareholders.

Net working capital (current assets, excluding cash, less total current liabilities, excluding debt) was negative \$505.4 at December 31, 2019 compared to negative \$200.4 at December 31, 2018, due primarily to increased income taxes payable, deferred revenue, and the adoption of ASC 842, partially offset by increased accounts receivable. The increase in income taxes payable is due primarily to the approximately \$200.0 of taxes incurred on the gain associated with the divestiture of Gatan. We expect to pay these taxes in the second quarter of 2020. The deferred revenue increase is due to a higher percentage of revenue from software and subscription-based services.

Total debt excluding unamortized debt issuance costs was \$5.3 billion at December 31, 2019 (35.9% of total capital) compared to \$5.0 billion at December 31, 2018 (39.1% of total capital). Our increased total debt at December 31, 2019 compared to December 31, 2018 was due primarily to the issuance of \$500.0 of 2.35% senior unsecured notes and \$700.0 of 2.95% senior unsecured notes, partially offset by the pay-down of revolving debt borrowings of \$865.0.

On September 23, 2016, we entered into a five-year unsecured credit facility, as amended as of December 2, 2016 (the “2016 Facility”) with JPMorgan Chase Bank, N.A., as administrative agent, and a syndicate of lenders, which replaced our previous unsecured credit facility, dated as of July 27, 2012, as amended as of October 28, 2015 (the “2012 Facility”). The 2016 Facility comprises a five year \$2.5 billion revolving credit facility, which includes availability of up to \$150.0 for letters of credit. We may also, subject to compliance with specified conditions, request term loans or additional revolving credit commitments in an aggregate amount not to exceed \$500.0.

The 2016 Facility contains various affirmative and negative covenants which, among other things, limit our ability to incur new debt, enter into certain mergers and acquisitions, sell assets and grant liens, make restricted payments (including the payment of dividends on our common stock) and capital expenditures, or change our line of business. We also are subject to financial covenants which require us to limit our consolidated total leverage ratio and to maintain a consolidated interest coverage ratio. The most restrictive covenant is the consolidated total leverage ratio which is limited to 3.5 to 1.

The 2016 Facility provides that the consolidated total leverage ratio may be increased, no more than twice during the term of the 2016 Facility, to 4.00 to 1 for a consecutive four quarter fiscal period per increase (or, for any portion of such four quarter fiscal period in which the maximum would be 4.25 to 1). In conjunction with the Deltek acquisition in December of 2016, we increased the maximum consolidated total leverage ratio covenant to 4.25 to 1 through June 30, 2017 and 4.00 to 1 through December 31, 2017.

At December 31, 2019, we had \$5.3 billion of senior unsecured notes and \$0.0 of outstanding revolver borrowings. In addition, we had \$7.7 of other debt in the form of finance leases and several smaller facilities that allow for borrowings or the issuance of letters of credit in foreign locations to support our non-U.S. businesses. We had \$74.0 of outstanding letters of credit at December 31, 2019, of which \$35.8 was covered by our lending group, thereby reducing our revolving credit capacity commensurately.

We may redeem some or all of our senior secured notes at any time or from time to time, at 100% of their principal amount, plus a make-whole premium based on a spread to U.S. Treasury securities.

We were in compliance with all debt covenants related to our credit facility throughout the years ended December 31, 2019 and 2018.

See Note 8 of the Notes to Consolidated Financial Statements included in this Annual Report for additional information regarding our credit facility and senior notes.

Cash and cash equivalents at our foreign subsidiaries at December 31, 2019 totaled \$291.8 as compared to \$339.0 at December 31, 2018, a decrease of 13.9%. The decrease was due primarily to the repatriation of \$290.6 during the year and cash used in the acquisition of Foundry, partially offset by cash generated from foreign operations. We intend to repatriate substantially all historical and future earnings subject to the deemed repatriation tax.

Capital expenditures of \$52.7, \$49.1 and \$48.8 were incurred during 2019, 2018 and 2017, respectively. Capitalized software expenditures of \$10.2, \$9.5 and \$10.8 were incurred during 2019, 2018 and 2017, respectively. Capital expenditures and capitalized software expenditures were relatively consistent in 2019 as compared to 2018 and 2017. In the future, we expect the aggregate of capital expenditures and capitalized software expenditures as a percentage of annual net revenues to be between 1.0% and 1.5%.

Contractual Cash Obligations and Other Commercial Commitments and Contingencies

All currency amounts are in millions

The following tables quantify our contractual cash obligations and commercial commitments at December 31, 2019.

Contractual Cash Obligations ¹	Total	Payments Due in Fiscal Year					
		2020	2021	2022	2023	2024	Thereafter
Total debt	\$ 5,307.7	\$ 603.1	\$ 502.3	\$ 502.3	\$ 700.0	\$ 500.0	\$ 2,500.0
Senior note interest	986.9	176.6	158.8	143.4	122.3	100.7	285.1
Operating leases	305.1	63.7	55.9	42.8	35.3	29.9	77.5
Total	\$ 6,599.7	\$ 843.4	\$ 717.0	\$ 688.5	\$ 857.6	\$ 630.6	\$ 2,862.6

Other Commercial Commitments	Total Amount Committed	Amounts Expiring in Fiscal Year					
		2020	2021	2022	2023	2024	Thereafter
Standby letters of credit and bank guarantees	\$ 74.0	\$ 24.7	\$ 40.7	\$ 7.5	\$ 0.4	\$ 0.2	\$ 0.5

¹ We have excluded the liability for uncertain tax positions and certain other tax liabilities as we are not able to reasonably estimate the timing of the payments. See Note 7 of the Notes to Consolidated Financial Statements included in this Annual Report.

As of December 31, 2019, we had \$732.7 of outstanding surety bonds. Certain contracts, primarily those involving public sector customers, require us to provide a surety bond as a guarantee of our performance of contractual obligations.

We believe that internally generated cash flows and the remaining availability under our credit facility will be adequate to finance normal operating requirements. Although we maintain an active acquisition program, any future acquisitions will be dependent on numerous factors and it is not feasible to reasonably estimate if or when any such acquisitions will occur and what the impact will be on our activities, financial condition and results of operations. We may also explore alternatives to attract additional capital resources.

We anticipate that our businesses will generate positive cash flows from operating activities, and that these cash flows will permit the reduction of currently outstanding debt in accordance with the repayment schedule. However, the rate at which we can reduce our debt during 2020 (and reduce the associated interest expense) will be affected by, among other things, the financing and operating requirements of any new acquisitions and the financial performance of our existing companies. None of these factors can be predicted with certainty.

Off-Balance Sheet Arrangements

At December 31, 2019 and 2018, we did not have any relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Recently Issued Accounting Standards

See Note 1 of the Notes to Consolidated Financial Statements included in this Annual Report for information regarding the effect of new accounting pronouncements on our Consolidated Financial Statements.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to interest rate risks on our outstanding revolving credit borrowings, and to foreign currency exchange risks on our transactions denominated in currencies other than the U.S. dollar. We are also exposed to equity market risks pertaining to the traded price of our common stock.

At December 31, 2019, we had \$5.3 billion of fixed rate borrowings with interest rates ranging from 2.35% to 4.20%. At December 31, 2019, the prevailing market rates for our long-term notes were between 0.1% and 1.5% lower than the fixed rates on our debt instruments. Our credit facility contains a \$2.5 billion variable-rate revolver with \$0 of outstanding borrowings at December 31, 2019.

Several of our businesses have transactions and balances denominated in currencies other than the U.S. dollar. Most of these transactions or balances are denominated in euros, Canadian dollars, British pounds or Danish kroner. Net revenues recognized by companies whose functional currency was not the U.S. dollar were 16% of our total revenues in 2019 and 70% of these revenues were recognized by companies with a European functional currency. If these currency exchange rates had been 10% different throughout 2019 compared to currency exchange rates actually experienced, the impact on our net earnings would have been approximately 1%.

The trading price of our common stock influences the valuation of stock award grants and the effects these grants have on our results of operations. The stock price also influences the computation of potentially dilutive common stock to determine diluted earnings per share. The stock price also affects our employees' perceptions of programs that involve our common stock. We believe the quantification of the effects of these changing prices on our future earnings and cash flows is not readily determinable.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Roper Technologies, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Roper Technologies, Inc. and its subsidiaries (the “Company”) as of December 31, 2019 and 2018, and the related consolidated statements of earnings, of comprehensive income, of stockholders’ equity, and of cash flows for each of the three years in the period ended December 31, 2019, including the related notes and financial statement schedule listed in the accompanying index (collectively referred to as the “consolidated financial statements”). We also have audited the Company’s internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

The Company’s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management’s Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company’s internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the 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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated 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 consolidated 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 consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As described in Management’s Report on Internal Control over Financial Reporting, management has excluded the four acquisitions completed in 2019 from its assessment of internal control over financial reporting as of December 31, 2019 because they were acquired by the Company in purchase business combinations during 2019. We have also excluded the four acquisitions completed in 2019 from our audit of internal control over financial reporting. The acquired entities are wholly-owned subsidiaries whose total assets and total revenues excluded from management’s assessment and our audit of internal control over financial reporting collectively represent less than 1% and 2%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2019.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) 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.

Quantitative Goodwill Impairment Assessment

As described in Notes 1 and 5 to the consolidated financial statements, the Company's consolidated goodwill balance was \$10,815.4 million as of December 31, 2019. Goodwill, which is not amortized, is tested for impairment on an annual basis (or an interim basis if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value). The Company conducted its analysis qualitatively and assessed whether it was more likely than not that the respective fair value of the reporting units was less than the carrying amount. The Company determined that impairment of goodwill was not likely in 33 of its reporting units and thus was not required to perform a quantitative analysis for these reporting units. For the remaining two reporting units, the Company performed its quantitative analysis. The quantitative process utilizes both an income approach (discounted cash flows) and a market approach (consisting of a comparable public company earnings multiples methodology) to estimate the fair value of a reporting unit. When performing the quantitative assessment, key assumptions used in the income and market methodologies are updated when the analysis is performed for each reporting unit. Various assumptions are utilized, including forecasted operating results, strategic plans, economic projections, anticipated future cash flows, the weighted-average cost of capital, comparable transactions, market data and earnings multiples. The assumptions that have the most significant effect on the fair value calculations are the anticipated future cash flows, discount rates, and the earnings multiples.

The principal considerations for our determination that performing procedures relating to the quantitative goodwill impairment assessment is a critical audit matter are there was significant judgment by management when developing the fair value measurement of the reporting units. This in turn led to a high degree of auditor judgment, subjectivity and effort in performing procedures to evaluate management's discounted cash flows and key assumptions, including anticipated future cash flows, discount rates and earnings multiples. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's goodwill impairment assessment, including controls over the valuation of the Company's reporting units. These procedures also included, among others, testing management's process for developing the fair value estimate, evaluating the appropriateness of the income and market based approaches, testing the completeness, accuracy and relevance of underlying data used in the approaches, and evaluating significant assumptions used by management, including anticipated future cash flows. Evaluating management's assumption related to anticipated future cash flows involved evaluating whether the assumption used by management was reasonable considering the past performance of the reporting unit and considered whether the assumption was consistent with evidence obtained in other areas of the audit. Evaluating the market based approach involved evaluating the Company's peer companies and the consistency of assumptions used as compared to the income approach. Professionals with specialized skill and knowledge were used to assist in evaluating the Company's income and market based approaches and reasonableness of certain assumptions, including the weighted-average cost of capital and earnings multiples.

Quantitative Indefinite-Lived Trade Name Intangible Assets Impairment Assessment

As described in Notes 1 and 5 to the consolidated financial statements, the Company's consolidated indefinite-lived intangible assets balance was \$659.8 million as of December 31, 2019, which was comprised entirely of trade names. Trade names that are determined to have an indefinite useful economic life are not amortized, but separately tested for impairment during the fourth quarter of the fiscal year or on an interim basis if an event occurs that indicates the fair value is more likely than not below the carrying value. The Company first qualitatively assesses whether the existence of events or circumstances leads to a determination that it is more likely than not that the estimated fair value of the indefinite-lived trade name is less than its carrying amount. If necessary, the Company conducts a quantitative assessment using the relief-from-royalty method. This methodology assumes that, in lieu of ownership, a third party would be willing to pay a royalty in order to exploit the related benefits of these assets. The fair value of each trade name is determined by applying a royalty rate to a projection of net revenues discounted using a risk adjusted rate of capital. Each royalty rate is determined based on the profitability of the trade name to which it relates and observed market royalty rates. Revenue growth rates are determined after considering current and future economic conditions, recent sales trends, discussions with customers, planned timing of new product launches or other variables.

The principal considerations for our determination that performing procedures relating to the quantitative indefinite-lived trade name intangible assets impairment assessment is a critical audit matter are there was significant judgment by management when developing the fair value measurement of the indefinite-lived trade name intangible assets. This in turn led to a high degree of auditor judgment, subjectivity and effort in performing procedures to assess the significant assumptions relating to the quantitative indefinite-lived trade name impairment assessment, such as royalty rates, revenue growth rates, and risk-adjusted rate of capital. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's indefinite-lived trade name intangible assets impairment test, including controls over the valuation of the Company's indefinite-lived trade name intangible assets. These procedures also included, among others, testing management's process for developing the fair value estimate, testing the completeness, accuracy and relevance of underlying data used, and evaluating the significant assumptions and method used by management, including royalty rates, revenue growth rates, and risk-adjusted rate of capital. Evaluating management's assumptions related to revenue growth rates involved evaluating whether the assumptions used were reasonable considering the past performance of the asset group comprised of the indefinite-lived trade name and considering whether they were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in evaluating the Company's relief-from-royalty method and reasonableness of certain significant assumptions, including the royalty rates and risk-adjusted rate of capital.

Valuation of Amortizable Customer Relationships Intangible Assets Acquired

As described in Notes 1 and 2 to the consolidated financial statements, the Company completed four acquisitions in the year ended December 31, 2019, with an aggregate purchase price of \$2,387.6 million, net of cash acquired. The amortizable intangible assets include customer relationships of \$1,020.0 million. The fair value for customer relationships is determined as of the acquisition date using the excess earnings method. Under this methodology, the fair value is determined based on the estimated future after-tax cash flows arising from the acquired customer relationships over their estimated lives after considering customer attrition and contributory asset charges.

The principal considerations for our determination that performing procedures relating to valuation of amortizable customer relationships intangible assets acquired is a critical audit matter are there was significant judgment by management when developing the fair value measurement of the amortizable customer relationships intangible assets. This in turn led to high degree of auditor judgment, subjectivity and effort in performing procedures to evaluate management's significant assumptions relating to the amortizable customer relationships intangible assets, such as the estimated future after-tax cash flows, including the customer attrition rate. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's valuation of amortizable customer relationships intangible assets acquired. These procedures also included, among others, testing management's process by evaluating the reasonableness of the valuation reports of intangible assets acquired, testing the completeness, accuracy and relevance of underlying data used, and reading the purchase agreements. Evaluating management's assumptions related to estimated future after-tax cash flows involved evaluating whether the assumptions used, including the customer attrition rate, were reasonable considering the past and post-acquisition performance of the business, and considering whether they were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in evaluating the reasonableness of significant assumptions with respect to management's cash flow projections, including the customer attrition rate.

/S/ PricewaterhouseCoopers LLP
Tampa, Florida
February 28, 2020

We have served as the Company's auditor since 2002.

ROPER TECHNOLOGIES, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

December 31, 2019 and 2018

(in millions, except per share data)

	2019	2018
Assets		
Cash and cash equivalents	\$ 709.7	\$ 364.4
Accounts receivable, net	791.6	700.8
Inventories, net	198.6	190.8
Income taxes receivable	18.5	21.7
Unbilled receivables	183.5	169.4
Other current assets	97.6	80.0
Current assets held for sale	—	83.6
Total current assets	<u>1,999.5</u>	<u>1,610.7</u>
Property, plant and equipment, net	139.9	128.7
Goodwill	10,815.4	9,346.8
Other intangible assets, net	4,667.7	3,842.1
Deferred taxes	95.6	52.2
Other assets	390.8	101.1
Assets held for sale	—	167.9
Total assets	<u>\$ 18,108.9</u>	<u>\$ 15,249.5</u>
Liabilities and Stockholders' Equity		
Accounts payable	\$ 162.0	\$ 165.3
Accrued compensation	240.1	248.3
Deferred revenue	831.8	677.9
Other accrued liabilities	346.2	258.0
Income taxes payable	215.1	58.3
Current portion of long-term debt, net	602.2	1.5
Current liabilities held for sale	—	38.9
Total current liabilities	<u>2,397.4</u>	<u>1,448.2</u>
Long-term debt, net of current portion	4,673.1	4,940.2
Deferred taxes	1,108.1	931.1
Other liabilities	438.4	191.5
Total liabilities	<u>8,617.0</u>	<u>7,511.0</u>
Commitments and contingencies (Note 12)		
Stockholders' equity:		
Preferred stock, \$0.01 par value per share; 1.0 shares authorized; none outstanding	—	—
Common stock, \$0.01 par value per share; 350.0 shares authorized; 105.9 shares issued and 104.1 outstanding at December 31, 2019 and 105.2 shares issued and 103.4 outstanding at December 31, 2018	1.1	1.1
Additional paid-in capital	1,903.9	1,751.5
Retained earnings	7,818.0	6,247.7
Accumulated other comprehensive loss	(212.8)	(243.3)
Treasury stock, 1.8 shares at December 31, 2019 and 1.9 shares at December 31, 2018	(18.3)	(18.5)
Total stockholders' equity	<u>9,491.9</u>	<u>7,738.5</u>
Total liabilities and stockholders' equity	<u>\$ 18,108.9</u>	<u>\$ 15,249.5</u>

See accompanying notes to Consolidated Financial Statements.

ROPER TECHNOLOGIES, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF EARNINGS
 Years ended December 31, 2019, 2018 and 2017
 (Dollar and share amounts in millions, except per share data)

	Years ended December 31,		
	2019	2018	2017
Net revenues	\$ 5,366.8	\$ 5,191.2	\$ 4,607.5
Cost of sales	1,939.7	1,911.7	1,742.7
Gross profit	3,427.1	3,279.5	2,864.8
Selling, general and administrative expenses	1,928.7	1,883.1	1,654.6
Income from operations	1,498.4	1,396.4	1,210.2
Interest expense, net	186.6	182.1	180.6
Loss on extinguishment of debt	—	15.9	—
Other income/(expense), net	(5.1)	—	5.1
Gain on disposal of businesses	920.7	—	—
Earnings before income taxes	2,227.4	1,198.4	1,034.7
Income taxes	459.5	254.0	62.9
Net earnings	\$ 1,767.9	\$ 944.4	\$ 971.8
Earnings per share:			
Basic	\$ 17.02	\$ 9.15	\$ 9.51
Diluted	\$ 16.82	\$ 9.05	\$ 9.39
Weighted-average common shares outstanding:			
Basic	103.9	103.2	102.2
Diluted	105.1	104.4	103.5

See accompanying notes to Consolidated Financial Statements.

ROPER TECHNOLOGIES, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

Years ended December 31, 2019, 2018 and 2017

(in millions)

	Years ended December 31,		
	2019	2018	2017
Net earnings	\$ 1,767.9	\$ 944.4	\$ 971.8
Other comprehensive income, net of tax:			
Foreign currency translation adjustments	30.5	(57.1)	138.5
Total other comprehensive income/(loss), net of tax	30.5	(57.1)	138.5
Comprehensive income	\$ 1,798.4	\$ 887.3	\$ 1,110.3

See accompanying notes to Consolidated Financial Statements.

ROPER TECHNOLOGIES, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

Years ended December 31, 2019, 2018 and 2017

(in millions, except per share data)

	Common Stock		Additional paid-in capital	Retained earnings	Accumulated other comprehensive earnings	Treasury stock	Total stockholders' equity
	Shares	Amount					
Balances at December 31, 2016	101.7	\$ 1.0	\$ 1,489.1	\$ 4,642.4	\$ (324.7)	\$ (18.9)	\$ 5,788.9
Net earnings	—	—	—	971.8	—	—	971.8
Stock option exercises	0.6	—	61.3	—	—	—	61.3
Treasury stock sold	—	—	4.0	—	—	0.2	4.2
Currency translation adjustments, including tax provision of \$4.9	—	—	—	—	138.5	—	138.5
Stock based compensation	—	—	81.3	—	—	—	81.3
Restricted stock activity	0.2	—	(32.8)	—	—	—	(32.8)
Dividends declared (\$1.4625 per share)	—	—	—	(149.6)	—	—	(149.6)
Balances at December 31, 2017	102.5	\$ 1.0	\$ 1,602.9	\$ 5,464.6	\$ (186.2)	\$ (18.7)	\$ 6,863.6
Adoption of ASC 606	—	—	—	14.3	—	—	14.3
Net earnings	—	—	—	944.4	—	—	944.4
Stock option exercises	0.6	0.1	58.7	—	—	—	58.8
Treasury stock sold	—	—	5.2	—	—	0.2	5.4
Currency translation adjustments, including tax benefit of \$7.2	—	—	—	—	(57.1)	—	(57.1)
Stock based compensation	—	—	132.9	—	—	—	132.9
Restricted stock activity	0.3	—	(48.2)	—	—	—	(48.2)
Dividends declared (\$1.70 per share)	—	—	—	(175.6)	—	—	(175.6)
Balances at December 31, 2018	103.4	\$ 1.1	\$ 1,751.5	\$ 6,247.7	\$ (243.3)	\$ (18.5)	\$ 7,738.5
Net earnings	—	—	—	1,767.9	—	—	1,767.9
Stock option exercises	0.5	—	64.9	—	—	—	64.9
Treasury stock sold	—	—	6.6	—	—	0.2	6.8
Currency translation adjustments, including tax benefit of \$3.8	—	—	—	—	30.5	—	30.5
Stock based compensation	—	—	110.9	—	—	—	110.9
Restricted stock activity	0.2	—	(30.0)	—	—	—	(30.0)
Dividends declared (\$1.90 per share)	—	—	—	(197.6)	—	—	(197.6)
Balances at December 31, 2019	104.1	\$ 1.1	\$ 1,903.9	\$ 7,818.0	\$ (212.8)	\$ (18.3)	\$ 9,491.9

See accompanying notes to Consolidated Financial Statements.

ROPER TECHNOLOGIES, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
Years ended December 31, 2019, 2018 and 2017
(in millions)

	Years ended December 31,		
	2019	2018	2017
Cash flows from operating activities:			
Net earnings	\$ 1,767.9	\$ 944.4	\$ 971.8
Adjustments to reconcile net earnings to cash flows from operating activities:			
Depreciation and amortization of property, plant and equipment	49.2	49.5	49.5
Amortization of intangible assets	366.8	317.5	295.5
Amortization of deferred financing costs	7.3	6.3	7.2
Non-cash stock compensation	104.5	133.8	83.1
Loss on debt extinguishment	—	15.9	—
Gain on sale of assets	—	—	(9.4)
Gain on disposal of businesses, net of associated income tax	(687.3)	—	—
Changes in operating assets and liabilities, net of acquired businesses:			
Accounts receivable	(46.7)	(83.5)	(6.7)
Unbilled receivables	(12.0)	(14.0)	(13.5)
Inventories	(17.3)	(21.8)	(15.3)
Accounts payable and accrued liabilities	(12.2)	68.8	73.3
Deferred revenue	108.8	86.6	74.9
Income taxes	(105.4)	(67.6)	(257.0)
Cash tax paid for gain on disposal of business	(39.4)	—	—
Other, net	(22.4)	(5.8)	(18.9)
Cash provided by operating activities	<u>1,461.8</u>	<u>1,430.1</u>	<u>1,234.5</u>
Cash flows used in investing activities:			
Acquisitions of businesses, net of cash acquired	(2,387.3)	(1,275.8)	(153.7)
Capital expenditures	(52.7)	(49.1)	(48.8)
Capitalized software expenditures	(10.2)	(9.5)	(10.8)
Proceeds from disposal of businesses	1,156.8	—	—
Proceeds from sale of assets	—	—	10.6
Other, net	(2.6)	(0.7)	(6.9)
Cash used in investing activities	<u>(1,296.0)</u>	<u>(1,335.1)</u>	<u>(209.6)</u>
Cash flows from (used in) financing activities:			
Proceeds from senior notes	1,200.0	1,500.0	—
Payment of senior notes	—	(1,300.0)	(400.0)
Borrowings/(payments) under revolving line of credit, net	(865.0)	(405.0)	(660.0)
Debt issuance costs	(12.1)	(13.9)	—
Redemption premium for debt extinguishment	—	(15.5)	—
Cash dividends to stockholders	(191.7)	(170.1)	(142.8)
Treasury stock sales	6.8	5.4	4.2
Proceeds from stock based compensation, net	34.9	10.6	28.5
Other, net	4.1	0.4	0.1
Cash provided by (used in) financing activities	<u>177.0</u>	<u>(388.1)</u>	<u>(1,170.0)</u>
Effect of exchange rate changes on cash	2.5	(13.8)	59.2
Net increase (decrease) in cash and cash equivalents	345.3	(306.9)	(85.9)
Cash and cash equivalents, beginning of year	364.4	671.3	757.2
Cash and cash equivalents, end of year	<u>\$ 709.7</u>	<u>\$ 364.4</u>	<u>\$ 671.3</u>
Supplemental disclosures:			
Cash paid for:			
Interest	\$ 171.7	\$ 169.0	\$ 175.0
Income taxes, net of refunds received	\$ 370.9	\$ 321.6	\$ 320.2
Noncash investing activities:			
Net assets of businesses acquired:			
Fair value of assets, including goodwill	\$ 2,472.4	\$ 1,505.1	\$ 177.3
Liabilities assumed	(85.1)	(229.3)	(23.6)
Cash paid, net of cash acquired	<u>\$ 2,387.3</u>	<u>\$ 1,275.8</u>	<u>\$ 153.7</u>

See accompanying notes to Consolidated Financial Statements.

ROPER TECHNOLOGIES, INC. AND SUBSIDIARIES
Notes to Consolidated Financial Statements
Years ended December 31, 2019, 2018 and 2017
(Dollar and share amounts in millions unless specified, except per share data)

(1) Summary of Accounting Policies

Basis of Presentation - These financial statements present consolidated information for Roper Technologies, Inc. and its subsidiaries (“Roper,” the “Company,” “we,” “our” or “us”). All significant intercompany accounts and transactions have been eliminated.

Nature of the Business - Roper is a diversified technology company. The Company operates businesses that design and develop software (both license and SaaS) and engineered products and solutions for a variety of niche end markets.

Changes in Segment Reporting Structure

During the first quarter of 2019, we implemented a realignment of our reportable segment structure. The new reportable segments continue to provide a transparent view into Roper’s operations and capital deployment strategy and objectives. The Company’s new reporting segment structure reinforces Roper’s diversified, niche market strategy by reporting based upon business models instead of end markets. The four new reportable segments (and businesses within each; including changes due to acquisitions and divestitures since the realignment) are as follows:

- **Application Software** - Aderant, CBORD, CliniSys, Data Innovations, Deltek, Horizon, IntelliTrans, PowerPlan, Strata, Sunquest
- **Network Software & Systems** - ConstructConnect, DAT, Foundry, Inovonics, iPipeline, iTradeNetwork, Link Logistics, MHA, RF Ideas, SHP, SoftWriters, TransCore
- **Measurement & Analytical Solutions** ⁽¹⁾ - Alpha, CIVCO Medical Solutions, CIVCO Radiotherapy, Dynisco, FMI, Hansen, Hardy, IPA, Logitech, Neptune, Northern Digital, Struers, Technolog, Uson, Verathon
- **Process Technologies** - AMOT, CCC, Cornell, FTI, Metrix, PAC, Roper Pump, Viatran, Zetec

⁽¹⁾The Measurement & Analytical Solutions segment includes the results of the divestitures completed in 2019 through the transaction date for (i) Imaging businesses, sold to Teledyne on February 5, 2019 and (ii) Gatan, sold to AMETEK on October 29, 2019.

The Company’s strategy, organizational structure, and day-to-day operations of our businesses remain unchanged. All prior periods have been recast to reflect the changes noted above.

Recent Accounting Pronouncements - The Financial Accounting Standards Board (“FASB”) establishes changes to accounting principles under GAAP in the form of accounting standards updates (“ASUs”) to the FASB’s Accounting Standards Codification (“ASC”). The Company considers the applicability and impact of all ASUs. Any ASUs not listed below were assessed and determined to be either not applicable or are expected to have an immaterial impact on the Company’s results of operations, financial position or cash flows.

Recently Adopted Accounting Pronouncements

In February 2016, the FASB issued ASC 842, which included the recognition of right-of-use (“ROU”) lease assets and lease liabilities on the balance sheet and the disclosure of other key information about leasing arrangements. The Company adopted ASC 842, as of January 1, 2019 using the cumulative effect transition method for leases in existence as of the date of adoption.

The reported results for 2019 reflect the application of ASC 842 guidance while the reported results for 2018 were prepared under the previous guidance of ASC 840, Leases (“ASC 840”). The adoption of ASC 842 represents a change in accounting principle that recognizes ROU assets and lease liabilities arising from all leases based on the present value of future minimum lease payments over the lease term. Consistent with ASC 840, lease expense for minimum lease payments is recognized on a straight-line basis over the lease term. The Company’s adoption of ASC 842 had no impact on our Consolidated Statements of Earnings or our Consolidated Statement of Cash Flows.

We elected the package of practical expedients permitted under the transition guidance within ASC 842, which allowed us to: (i) carry forward the historical lease classification, (ii) not reassess whether any existing contract contains a lease, and (iii) not reassess initial direct costs for existing leases.

Operating leases are classified as non-current operating lease ROU assets and current and non-current operating lease liabilities on our Consolidated Balance Sheet. Finance leases are not material.

Adoption of ASC 842 resulted in the recognition of operating lease ROU assets and total operating lease liabilities of \$274.0 and \$282.7, respectively, as of January 1, 2019. The difference between the operating lease ROU assets and total operating lease liabilities is the reclassification of previously recognized deferred rent liabilities against operating lease ROU assets. The adoption of ASC 842 did not result in an adjustment to retained earnings and it did not impact our net deferred tax assets or liabilities.

The Company's operating leases are primarily for real property in support of our business operations. Although many of our leases contain renewal options, we generally are not reasonably certain to exercise these options at the commencement date. Accordingly, renewal options are generally not included in the lease term for determining the ROU asset and lease liability at commencement.

Variable lease payments generally depend on an inflation-based index and such payments are not included in the original estimate of the lease liability. These variable lease payments are not material.

Discount rates are determined based on Roper's incremental borrowing rate as our leases generally do not provide an implicit rate.

In May 2014, the FASB issued ASC 606, which created a single, comprehensive revenue recognition model for all contracts with customers. The Company adopted ASC 606 as of January 1, 2018 using the modified retrospective transition method resulting in a \$14.3 increase to beginning retained earnings.

See the Company's accounting policies below for details.

Recently Released Accounting Pronouncements

In June 2016, the FASB issued an update which amends the measurement of credit losses on financial instruments by requiring entities to use a forward-looking approach based on expected losses rather than incurred losses to estimate credit losses on certain types of financial instruments, including trade receivables. The Company will adopt this update as of January 1, 2020. The Company has completed its assessment to identify differences between the existing standard and new standard and determined this update is not material to our results of operations and financial condition.

Cash and Cash Equivalents - Roper considers highly liquid financial instruments with remaining maturities at acquisition of three months or less to be cash equivalents. Roper had \$370.1 and \$0.0 cash equivalents at December 31, 2019 and December 31, 2018, respectively.

Contingencies - Management continually assesses the probability of any adverse judgments or outcomes to its potential contingencies. Disclosure of the contingency is made if there is at least a reasonable possibility that a loss or an additional loss may have been incurred. In the assessment of contingencies as of December 31, 2019, management concluded that there were no matters for which there was a reasonable possibility of a material loss.

Earnings per Share - Basic earnings per share were calculated using net earnings and the weighted-average number of shares of common stock outstanding during the respective year. Diluted earnings per share were calculated using net earnings and the weighted-average number of shares of common stock and potential common stock associated with stock options outstanding during the respective year. The effects of potential common stock were determined using the treasury stock method:

	Years ended December 31,		
	2019	2018	2017
Basic weighted-average shares outstanding	103.9	103.2	102.2
Effect of potential common stock:			
Common stock awards	1.2	1.2	1.3
Diluted weighted-average shares outstanding	105.1	104.4	103.5

As of and for the years ended December 31, 2019, 2018 and 2017, there were 0.627, 0.724 and 0.478 outstanding stock options, respectively, that were not included in the determination of diluted earnings per share because doing so would have been antidilutive.

Estimates - The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

Foreign Currency Translation and Transactions - Assets and liabilities of subsidiaries whose functional currency is not the U.S. dollar were translated at the exchange rate in effect at the balance sheet date, and revenues and expenses were translated at average exchange rates for the period in which those entities were included in Roper's financial results. Translation adjustments are reflected as a component of other comprehensive income. Foreign currency transaction gains and losses are recorded in the Consolidated Statements of Earnings within "Other income/(expense), net." Foreign currency transaction gains/(losses) were \$(3.7), \$0.2 and \$(1.4) for the years ended December 31, 2019, 2018 and 2017.

Goodwill and Other Intangibles - Roper accounts for goodwill in a purchase business combination as the excess of the cost over the estimated fair value of net assets acquired. Business combinations can also result in other intangible assets being recognized. Amortization of intangible assets, if applicable, occurs over their estimated useful lives. Goodwill, which is not amortized, is tested for impairment on an annual basis (or an interim basis if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value). When testing goodwill for impairment, the Company has the option to first assess qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that the estimated fair value of a reporting unit is less than its carrying amount. If the Company elects to perform a qualitative assessment and determines that an impairment is more likely than not, then performance of the quantitative impairment test is required. The quantitative process utilizes both an income approach (discounted cash flows) and a market approach (consisting of a comparable public company earnings multiples methodology) to estimate the fair value of a reporting unit. To determine the reasonableness of the estimated fair values, the Company reviews the assumptions to ensure that neither the income approach nor the market approach provides significantly different valuations. If the estimated fair value exceeds the carrying value, no further work is required and no impairment loss is recognized. If the carrying value exceeds the estimated fair value, a non-cash impairment loss is recognized in the amount of that excess.

When performing the quantitative assessment, key assumptions used in the income and market methodologies are updated when the analysis is performed for each reporting unit. Various assumptions are utilized including forecasted operating results, strategic plans, economic projections, anticipated future cash flows, the weighted-average cost of capital, comparable transactions, market data and earnings multiples. The assumptions that have the most significant effect on the fair value calculations are the anticipated future cash flows, discount rates, and the earnings multiples. While the Company uses reasonable and timely information to prepare its cash flow and discount rate assumptions, actual future cash flows or market conditions could differ significantly resulting in future impairment charges related to recorded goodwill balances.

Roper has 35 reporting units with individual goodwill amounts ranging from zero to \$2.5 billion. In 2019, the Company performed its annual impairment test in the fourth quarter for all reporting units. The Company conducted its analysis qualitatively and assessed whether it was more likely than not that the respective fair value of these reporting units was less than the carrying amount. The Company determined that impairment of goodwill was not likely in 33 of its reporting units and thus was not required to perform a quantitative analysis for these reporting units. For the remaining two reporting units, the Company performed its quantitative analysis and concluded that the fair value of each of these two reporting units was substantially in excess of its carrying value, with no impairment indicated as of October 1, 2019.

Recently acquired reporting units generally represent a higher inherent risk of impairment, which typically decreases as the businesses are integrated into the enterprise. Negative industry or economic trends, disruptions to its business, actual results significantly below expected results, unexpected significant changes or planned changes in the use of the assets, divestitures and market capitalization declines may have a negative effect on the fair value of Roper's reporting units.

The following events or circumstances, although not comprehensive, would be considered to determine whether interim testing of goodwill would be required:

- a significant adverse change in legal factors or in the business climate;
- an adverse action or assessment by a regulator;
- unanticipated competition;
- a loss of key personnel;
- a more-likely-than-not expectation that a reporting unit or a significant portion of a reporting unit will be sold or otherwise disposed of;
- the testing for recoverability of a significant asset group within a reporting unit; and
- recognition of a goodwill impairment loss in the financial statements of a subsidiary that is a component of a reporting unit.

Business combinations can also result in other intangible assets being recognized. Amortization of intangible assets, if applicable, occurs over their estimated useful lives. Trade names that are determined to have an indefinite useful economic life are not amortized, but separately tested for impairment during the fourth quarter of the fiscal year or on an interim basis if an event occurs that indicates the fair value is more likely than not below the carrying value. Roper first qualitatively assesses whether the existence of events or circumstances leads to a determination that it is more likely than not that the estimated fair value of an indefinite-lived trade name is less than its carrying amount. If necessary, Roper conducts a quantitative review using the relief-from-royalty method. This methodology assumes that, in lieu of ownership, a third party would be willing to pay a royalty in order to exploit the related benefits of these assets. The fair value of each trade name is determined by applying a royalty rate to a projection of net revenues discounted using a risk adjusted rate of capital. Each royalty rate is determined based on the profitability of the trade name to which it relates and observed market royalty rates. Revenue growth rates are determined after considering current and future economic conditions, recent sales trends, discussions with customers, planned timing of new product launches or other variables. Trade names resulting from recent acquisitions generally represent the highest risk of impairment, which typically decreases as the businesses are integrated into Roper. The Company performed a quantitative analysis over the fair values of two of its trade names and concluded that the fair value exceeded its carrying value, with no impairment indicated as of October 1, 2019.

The assessment of fair value for impairment purposes requires significant judgments to be made by management. Although forecasts are based on assumptions that are considered reasonable by management and consistent with the plans and estimates management uses to operate the underlying businesses, there is significant judgment in determining the expected results attributable to the reporting units. Changes in estimates or the application of alternative assumptions could produce significantly different results. No impairment resulted from the annual testing performed in 2019.

The most significant identifiable intangible assets with definite useful economic lives recognized from our acquisitions are customer relationships. The fair value for customer relationships is determined as of the acquisition date using the excess earnings method. Under this methodology the fair value is determined based on the estimated future after-tax cash flows arising from the acquired customer relationships over their estimated lives after considering customer attrition and contributory asset charges. When testing customer relationship intangible assets for potential impairment, management considers historical customer attrition rates and projected revenues and profitability related to customers that existed at acquisition. In evaluating the amortizable life for customer relationship intangible assets, management considers historical customer attrition patterns.

Roper evaluates whether there has been an impairment of identifiable intangible assets with definite useful economic lives, or of the remaining life of such assets, when certain indicators of impairment are present. In the event that facts and circumstances indicate that the cost or remaining period of amortization of any asset may be impaired, an evaluation of recoverability would be performed. If an evaluation is required, the estimated future gross, undiscounted cash flows associated with the asset would be compared to the asset's carrying amount to determine if a write-down to fair value or a revision in the remaining amortization period is required.

Impairment of Long-Lived Assets - The Company determines whether there has been an impairment of long-lived assets, excluding goodwill and identifiable intangible assets that are determined to have indefinite useful economic lives, when certain indicators of impairment are present. In the event that facts and circumstances indicate that the cost or life of any long-lived assets may be impaired, an evaluation of recoverability would be performed. If an evaluation is required, the estimated future gross, undiscounted cash flows associated with the asset would be compared to the asset's carrying amount to determine if a write-down to fair value or revision to remaining life is required. Future adverse changes in market conditions or poor operating results of underlying long-lived assets could result in losses or an inability to recover the carrying value of the long-lived assets that may not be reflected in the assets' current carrying value, thereby possibly requiring an impairment charge or acceleration of depreciation or amortization expense in the future.

Income Taxes - The Company recognizes in the Consolidated Financial Statements only those tax positions determined to be "more likely than not" of being sustained upon examination based on the technical merits of the positions. Interest and penalties related to unrecognized tax benefits are classified as a component of income tax expense.

The Company records a valuation allowance to reduce its deferred tax assets if, based on the weight of available evidence, both positive and negative, for each respective tax jurisdiction, it is more likely than not that some portion or all of such deferred tax assets will not be realized. Available evidence which is considered in determining the amount of valuation allowance required includes, but is not limited to, the Company's estimate of future taxable income and any applicable tax-planning strategies.

Certain assets and liabilities have different bases for financial reporting and income tax purposes. Deferred income taxes have been provided for these differences at the enacted tax rates expected to be paid. See Note 7 for information regarding income taxes.

Interest Rate Risk - The Company manages interest rate risk by targeting a combination of fixed-rate and variable-rate debt, which may include interest rate swaps to convert fixed-rate debt to variable-rate debt, or to convert variable-rate debt to fixed-rate debt. Interest rate swaps are recorded at fair value in the balance sheet as an asset or liability, and the changes in fair values of both the swap and the hedged item are recorded as interest expense in current earnings. There were no interest rate swaps outstanding at December 31, 2019 or December 31, 2018.

Inventories - Inventories are valued at the lower of cost and net realizable value. Cost is determined using the first-in, first-out method. The Company writes down its inventory for estimated obsolescence or excess inventory equal to the difference between the cost of inventory and the estimated net realizable value based upon assumptions about future demand and market conditions.

Other Comprehensive Income - Comprehensive income includes net earnings and all other non-owner sources of changes in a company's net assets.

Product Warranties - The Company sells certain of its products to customers with a product warranty that allows customers to return a defective product during a specified warranty period following the purchase in exchange for a replacement product, repair at no cost to the customer or the issuance of a credit to the customer. The Company accrues its estimated exposure to warranty claims based upon current and historical product sales data, warranty costs incurred and any other related information known to the Company.

Property, Plant and Equipment and Depreciation and Amortization - Property, plant and equipment is stated at cost less accumulated depreciation and amortization. Depreciation and amortization are provided for using principally the straight-line method over the estimated useful lives of the assets as follows:

Buildings	20-30 years
Machinery	8-12 years
Other equipment	3-5 years

Research and Development - Research and development ("R&D") costs include salaries and benefits, rents, supplies, and other costs related to products under development. Research and development costs are expensed in the period incurred and totaled \$339.1, \$316.8 and \$281.1 for the years ended December 31, 2019, 2018 and 2017, respectively.

Revenue Recognition - The Company adopted ASC 606 as of January 1, 2018 using the modified retrospective method for all contracts not substantially completed as of the date of adoption. The reported results for 2018 and thereafter reflect the application of ASC 606 guidance, while the reported results for 2017 were prepared under the guidance of ASC Topic 605, Revenue Recognition. The adoption of ASC 606 represents a change in accounting principle that is intended to more closely align revenue recognition with the transfer of control of the Company's products and services to the customer. The amount of revenue recognized reflects the consideration which the Company expects to be entitled to receive in exchange for these products and/or services. To achieve this principle, the Company applies the following five steps:

- identify the contract with the customer;
- identify the performance obligations in the contract;
- determine the transaction price;
- allocate the transaction price to performance obligations in the contract; and
- recognize revenue when or as the Company satisfies a performance obligation.

Disaggregated Revenue - We disaggregate our revenues into two categories: (i) software and related services; and (ii) engineered products and related services. Software and related services revenues are primarily derived from our Application Software and Network Software & Systems reportable segments. Engineered products and related services revenues are derived from all of our reportable segments except Application Software and comprise substantially all of the revenues generated in our Measurement & Analytical Solutions and Process Technologies reportable segments. See details in the table below.

	Year ended December 31,	
	2019	2018
Software and related services	\$ 2,477.7	\$ 2,165.9
Engineered products and related services	2,889.1	3,025.3
Net revenues	\$ 5,366.8	\$ 5,191.2

Software and related services

SaaS - SaaS subscriptions and ongoing related support are generally accounted for as a single performance obligation and recognized ratably over the contractual term. In addition, SaaS arrangements may include implementation services which are accounted for as a separate performance obligation and recognized over time, using the input method. Payment is generally required within 30 days of the commencement of the SaaS subscription period, which is primarily offered to customers over a one-year timeframe.

Licensed Software - Performance obligations in our customer contracts may include:

- Perpetual or time-based (“term”) software licenses
- Post contract support (“PCS”)
- Implementation/installation services

Software licenses may be combined with implementation/installation services as a single performance obligation if the implementation/installation significantly modifies or customizes the functionality of the software license.

We recognize revenue over time or at a point in time depending on our evaluation of when the customer obtains control over the promised products or services. For software arrangements that include multiple performance obligations, we allocate revenue to each performance obligation based on estimates of the price that we would charge the customer for each promised product or service if it were sold on a standalone basis.

Payment for software licenses is generally required within 30 to 60 days of the transfer of control. Payment for PCS is generally required within 30 to 60 days of the commencement of the service period, which is primarily offered to customers over a one-year timeframe. Payment terms do not contain a significant financing component. Payment for implementation/installation services that are recognized over time are typically commensurate with milestones defined in the contract, or billable hours incurred.

Engineered products and related services

Revenue from product sales is recognized when control transfers to the customer, which is generally when the product is shipped.

Non-project-based installation and repair services are performed by certain of our businesses for which revenue is recognized upon completion.

Payment terms are generally 30 to 60 days from the transfer of control. Payment terms do not contain a significant financing component.

Preventative maintenance service revenues are recognized over time using the input method. If we determine our efforts or inputs are expended evenly throughout the performance period, we generally recognize revenue on a straight-line basis. Payment for preventative maintenance services are typically commensurate with milestones defined in the contract.

We offer customers return rights and other credits subject to certain restrictions. We estimate variable consideration generally based on historical experience to arrive at the transaction price, or the amount to which we ultimately expect to be entitled from the customer.

Revenues from our project-based businesses, including toll and traffic systems and control systems, are generally recognized over time using the input method, primarily utilizing the ratio of costs incurred to total estimated costs, as the measure of performance. For these projects, payment is typically commensurate with certain performance milestones defined in the contract. Retention and down payments are also customary in these contracts. Estimated losses on any projects are recognized as soon as such losses become probable and reasonably estimable. The impact on revenues due to changes in estimates was immaterial for the year ended December 31, 2019. The Company recognized revenues of \$247.8, \$245.9 and \$249.3 for the years ended December 31, 2019, 2018 and 2017, respectively, using this method.

Accounts receivable, net - Accounts receivable, net includes amounts billed and currently due from customers. The amounts due are stated at their net estimated realizable value. Accounts receivable are stated net of an allowance for doubtful accounts and sales allowances of \$20.3 and \$23.1 at December 31, 2019 and 2018, respectively. Outstanding accounts receivable balances are reviewed periodically, and allowances are provided at such time that management believes it is probable that an account receivable is uncollectible.

Unbilled receivables - Our unbilled receivables include unbilled amounts typically resulting from sales under project-based contracts when the input method of revenue recognition is utilized and revenue recognized exceeds the amount billed to the customer, and right to payment is not solely due to the passage of time. Amounts may not exceed their net realizable value.

Deferred revenues - We record deferred revenues when cash payments are received or due in advance of our performance. Our deferred revenues relate primarily to software and related services. In most cases, we recognize these deferred revenues ratably over time as the SaaS or PCS performance obligation is satisfied. The non-current portion of deferred revenue is included in "Other liabilities" in our Consolidated Balance Sheets.

Our unbilled receivables and deferred revenues are reported in a net position on a contract-by-contract basis at the end of each reporting period. We classify these balances as current or non-current based on the timing of when we expect to recognize revenue.

Deferred commissions - Our incremental direct costs of obtaining a contract, which consist of sales commissions primarily for our software sales, are deferred and amortized on a straight-line basis over the period of contract performance or a longer period, depending on facts and circumstances. We classify deferred commissions as current or non-current based on the timing of when we expect to recognize the expense. The current and non-current portions of deferred commissions are included in "Other current assets" and "Other assets," respectively, in our Consolidated Balance Sheets. At December 31, 2019 and December 31, 2018, we had \$31.4 and \$28.0 of deferred commissions, respectively. We recognized \$30.1 of expense related to deferred commissions in the year ended December 31, 2019.

Remaining performance obligations - Remaining performance obligations represents the transaction price of firm orders for which work has not been performed and excludes unexercised contract options. As of December 31, 2019, the aggregate amount of the transaction price allocated to remaining performance obligations was \$3,553.5. We expect to recognize revenue on approximately 56% of our remaining performance obligations over the next 12 months, with the remainder to be recognized thereafter.

Capitalized Software - The Company accounts for capitalized software under applicable accounting guidance which, among other provisions, requires capitalization of certain internal-use software costs once certain criteria are met. Overhead, general and administrative and training costs are not capitalized. Capitalized software balances, net of accumulated amortization, were \$30.0 and \$22.0 at December 31, 2019 and 2018, respectively.

Stock-Based Compensation - The Company recognizes expense for the grant date fair value of its employee stock awards on a straight-line basis (or, in the case of performance-based awards, on a graded basis) over the employee's requisite service period (generally the vesting period of the award). The fair value of option awards is estimated using the Black-Scholes option valuation model.

(2) Business Acquisitions and Assets and Liabilities Held for Sale

Roper completed four business acquisitions in the year ended December 31, 2019, with an aggregate purchase price of \$2,387.6, net of cash acquired. The results of operations of the acquired businesses are included in Roper's Consolidated Financial Statements since the date of each acquisition. Supplemental pro forma information has not been provided as the acquisitions did not have a material impact on Roper's Consolidated Results of Operations individually or in aggregate.

Acquisition of Foundry - On April 18, 2019, Roper acquired 100% of the shares of Foundry, a leading provider of software technologies used to deliver visual effects and 3D content for the entertainment, digital design, and visualization industries. The results of Foundry are reported in the Network Software & Systems reportable segment.

Acquisition of ComputerEase - On August 19, 2019, Roper acquired substantially all of the assets of ComputerEase Software, a leading provider of integrated accounting, project management and field-to-office solutions for commercial construction firms. ComputerEase is integrating into our Deltek business and its results are reported in the Application Software reportable segment.

Acquisition of iPipeline - On August 22, 2019, Roper acquired 100% of the shares of iPipeline Holdings, Inc., a leading provider of cloud-based software solutions for the life insurance and financial services industries. The results of iPipeline are reported in the Network Software & Systems reportable segment.

Acquisition of Bellefield - On December 18, 2019, Roper acquired substantially all of the assets of Bellefield Systems which provides SaaS solutions targeting the front office of law firms, specifically focused on professional service automation, compliance and timekeeping. Bellefield is integrating into our Aderant business and its results are reported in the Application Software reportable segment.

The Company recorded \$1,447.0 in goodwill and \$1,181.9 of other identifiable intangibles in connection with the acquisitions; however, purchase price allocations are preliminary pending final tax-related adjustments. The majority of the goodwill is not expected to be deductible for tax purposes. The amortizable intangible assets include customer relationships of \$1,020.0 (15.8 year weighted average useful life) and technology of \$109.3 (6.8 year weighted average useful life).

Assets and Liabilities Held for Sale

During the second quarter of 2018, Roper and Thermo Fisher Scientific, Inc. (“Thermo Fisher”) entered into a definitive agreement under which Thermo Fisher would acquire 100% of the shares of Gatan, a wholly owned subsidiary of Roper, for approximately \$925.0 in cash. On June 10, 2019, Roper and Thermo Fisher announced a mutual termination of this agreement due to the challenges in obtaining regulatory approval in the United Kingdom.

The Company closed on its sale of Gatan to AMETEK on October 29, 2019 for approximately \$925.0 in cash. The sale resulted in a pretax gain of \$801.1, which is reported within “Gain on disposal of businesses” in the Consolidated Statements of Earnings. In addition, we recognized income tax expense of \$201.2 in connection with the sale, which is included within “Income taxes” in the Consolidated Statements of Earnings.

The Company closed on its sale of the Imaging businesses to Teledyne on February 5, 2019 for approximately \$225.0 in cash. The results of the Imaging businesses are reported in the Measurement & Analytical Solutions segment through such date. The sale resulted in a pretax gain of \$119.6, which is reported within “Gain on disposal of businesses” in the Consolidated Statements of Earnings. In addition, we recognized income tax expense of \$32.2 in connection with the sale, which is included within “Income taxes” in the Consolidated Statements of Earnings.

The assets and liabilities of the Imaging businesses and Gatan were classified as held for sale on Roper’s Consolidated Balance Sheet at December 31, 2018.

2018 Acquisitions - Roper completed seven business acquisitions in the year ended December 31, 2018, with an aggregate purchase price of \$1,279.0, net of cash acquired. The results of operations of the acquired businesses are included in Roper’s consolidated results of operations since the date of each acquisition. Supplemental pro forma information has not been provided as the acquisitions did not have a material impact on Roper’s consolidated results of operations individually or in aggregate.

Roper completed three business acquisitions which provide software solutions that support the development of cost estimates in the construction industry: Quote Software, PlanSwift Software, and Smartbid. These three businesses are integrated into our ConstructConnect business and its results are reported in the Network Software & Systems reportable segment.

Acquisition of PowerPlan - On June 4, 2018, Roper acquired 100% of the shares of PowerPlan, a provider of financial and compliance management software and solutions to large complex companies in asset-intensive industries, for a purchase price of \$1,111.4, net of cash acquired. The results of PowerPlan are reported in the Application Software reportable segment.

Acquisition of ConceptShare - On June 7, 2018, Roper acquired 100% of the shares of ConceptShare, a provider of cloud-based software for marketing agencies, marketing departments and other creative teams to streamline the review and approval of online work and content. ConceptShare is integrated into our Deltek business and its results are reported in the Application Software reportable segment.

Acquisition of BillBlast - On July 10, 2018, Roper acquired 100% of the shares of BillBlast, a provider of software and ancillary services for the automation of invoicing and reporting for law firms. BillBlast is integrated into our Aderant business and its results are reported in the Application Software reportable segment.

Acquisition of Avitru - On December 31, 2018, Roper acquired 100% of the shares of Avitru, a provider of software that supports the design, development and/or delivery of construction specification solutions and related services. Avitru is integrated into our Deltek business and its results are reported in the Application Software reportable segment.

The Company recorded \$717.5 in goodwill and \$711.3 of other identifiable intangibles in connection with the acquisitions. The majority of the goodwill is not expected to be deductible for tax purposes. The amortizable intangible assets include customer relationships of \$635.1 (19 year weighted average useful life) and technology of \$48.6 (7 year weighted average useful life).

2017 Acquisitions – During the year ended December 31, 2017, Roper completed four business acquisitions, with an aggregate purchase price of \$152.0, net of cash acquired. The results of operations of the acquired businesses did not have a material impact on Roper’s consolidated results of operations.

Acquisition of Phase Technology - On June 21, 2017, Roper acquired the assets of Phase Technology, a business engaged in the design, manufacture, marketing and sales of test instruments. Phase Technology is integrated into our PAC business and their results are reported in the Process Technologies reportable segment.

Acquisition of Handshake Software, Inc. - On August 4, 2017, Roper acquired 100% of the shares of Handshake Software, Inc., a provider of search products, portals and services for legal professionals. Handshake Software Inc. is integrated into our Aderant business and its results are reported in the Application Software reportable segment.

The results of the following acquisitions are integrated into our Deltek business and their results are reported in the Application Software reportable segment:

Acquisition of Workbook Software A/S - On September 15, 2017, Roper acquired 100% of the shares of Workbook Software A/S, a provider of software solutions for customer relationship management, project management and finance/accounting.

Acquisition of Onvia, Inc. - On November 17, 2017, Roper acquired 100% of the outstanding shares of Onvia, Inc. (“Onvia”) common stock for \$9.00 per share in an all-cash tender offer. Onvia provides enterprise, mid-market and small business customers with sales lead generation technologies into federal, state and local government markets.

The Company recorded \$82.7 in goodwill and \$85.0 of other identifiable intangibles in connection with the acquisitions. The amortizable intangible assets include primarily customer relationships of \$68.0 (15 year weighted average useful life) and technology of \$13.0 (6 year weighted average useful life).

Sale of Product Line - On May 15, 2017, Roper completed the sale of a product line in our Process Technologies segment for \$10.4. The pretax gain on the sale was \$9.4, which is reported within “Other income/(expense), net” in the Consolidated Statements of Earnings.

(3) Inventories

The components of inventories at December 31 were as follows:

	<u>2019</u>	<u>2018</u>
Raw materials and supplies	\$ 125.1	\$ 120.3
Work in process	30.9	26.2
Finished products	76.0	74.6
Inventory reserves	(33.4)	(30.3)
	<u>\$ 198.6</u>	<u>\$ 190.8</u>

(4) Property, Plant and Equipment

The components of property, plant and equipment at December 31 were as follows:

	<u>2019</u>	<u>2018</u>
Land	\$ 2.2	\$ 2.2
Buildings	84.7	76.7
Machinery and other equipment	218.1	218.0
Computer equipment	96.4	79.4
Software	73.3	64.4
	<u>474.7</u>	<u>440.7</u>
Accumulated depreciation	(334.8)	(312.0)
	<u>\$ 139.9</u>	<u>\$ 128.7</u>

Depreciation and amortization expense related to property, plant and equipment was \$49.2, \$49.5 and \$49.5 for the years ended December 31, 2019, 2018 and 2017, respectively.

(5) Goodwill and Other Intangible Assets

The carrying value of goodwill by segment was as follows:

	<u>Application Software</u>	<u>Network Software & Systems</u>	<u>Measurement & Analytical Solutions</u>	<u>Process Technologies</u>	<u>Total</u>
Balances at December 31, 2017	\$ 4,565.4	\$ 2,591.3	\$ 1,345.4	\$ 318.2	\$ 8,820.3
Goodwill acquired	684.4	33.1	—	—	717.5
Goodwill related to assets held for sale	—	—	(156.2)	—	(156.2)
Currency translation adjustments	(17.0)	(2.3)	(14.5)	(5.9)	(39.7)
Reclassifications and other	3.3	1.6	—	—	4.9
Balances at December 31, 2018	\$ 5,236.1	\$ 2,623.7	\$ 1,174.7	\$ 312.3	\$ 9,346.8
Goodwill acquired	143.4	1,303.6	—	—	1,447.0
Currency translation adjustments	8.3	8.8	3.3	2.2	22.6
Reclassifications and other	1.6	(2.6)	—	—	(1.0)
Balances at December 31, 2019	\$ 5,389.4	\$ 3,933.5	\$ 1,178.0	\$ 314.5	\$ 10,815.4

Reclassifications and other during the year ended December 31, 2019 were due primarily to tax adjustments for acquisitions in 2019 and 2018. See Note 2 for information regarding acquisitions.

Other intangible assets were comprised of:

	<u>Cost</u>	<u>Accum. amort.</u>	<u>Net book value</u>
Assets subject to amortization:			
Customer related intangibles	\$ 3,926.8	\$ (1,083.6)	\$ 2,843.2
Unpatented technology	504.0	(199.5)	304.5
Software	172.0	(93.2)	78.8
Patents and other protective rights	9.7	(7.5)	2.2
Trade names	7.3	(2.8)	4.5
Assets not subject to amortization:			
Trade names	608.9	—	608.9
Balances at December 31, 2018	\$ 5,228.7	\$ (1,386.6)	\$ 3,842.1
Assets subject to amortization:			
Customer related intangibles	\$ 4,955.4	\$ (1,349.4)	\$ 3,606.0
Unpatented technology	613.0	(279.6)	333.4
Software	172.2	(111.5)	60.7
Patents and other protective rights	12.0	(8.0)	4.0
Trade names	7.9	(4.1)	3.8
Assets not subject to amortization:			
Trade names	659.8	—	659.8
Balances at December 31, 2019	\$ 6,420.3	\$ (1,752.6)	\$ 4,667.7

Amortization expense of other intangible assets was \$364.7, \$316.5, and \$294.3 during the years ended December 31, 2019, 2018 and 2017, respectively. Amortization expense is expected to be \$400 in 2020, \$383 in 2021, \$379 in 2022, \$347 in 2023 and \$321 in 2024.

(6) Accrued Liabilities

Accrued liabilities at December 31 were as follows:

	<u>2019</u>	<u>2018</u>
Interest	\$ 34.4	\$ 26.9
Customer deposits	22.4	22.3
Commissions	6.6	7.7
Warranty	10.0	9.3
Accrued dividend	54.3	48.5
Rebates	47.1	29.1
Billings in excess of revenues	9.0	13.9
Operating lease liability	56.8	—
Other	105.6	100.3
	<u>\$ 346.2</u>	<u>\$ 258.0</u>

(7) Income Taxes

Earnings before income taxes for the years ended December 31, 2019, 2018 and 2017 consisted of the following components:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
United States	\$ 1,902.2	\$ 924.2	\$ 783.6
Other	325.2	274.2	251.1
	<u>\$ 2,227.4</u>	<u>\$ 1,198.4</u>	<u>\$ 1,034.7</u>

Components of income tax expense for the years ended December 31, 2019, 2018 and 2017 were as follows:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Current:			
Federal	\$ 391.6	\$ 155.4	\$ 316.0
State	78.3	56.2	29.8
Foreign	79.8	105.1	89.9
Deferred:			
Federal	(43.1)	(24.2)	(358.3)
State	2.6	(25.8)	(3.7)
Foreign	(49.7)	(12.7)	(10.8)
	<u>\$ 459.5</u>	<u>\$ 254.0</u>	<u>\$ 62.9</u>

Reconciliations between the statutory federal income tax rate and the effective income tax rate for the years ended December 31, 2019, 2018 and 2017 were as follows:

	2019	2018	2017
Federal statutory rate	21.0 %	21.0 %	35.0 %
Foreign rate differential	(0.1)	0.3	(2.6)
R&D tax credits	(0.6)	(0.9)	(0.8)
State taxes, net of federal benefit	1.6	2.4	1.9
Section 199 deduction	—	—	(1.3)
Stock-based compensation	(1.3)	(3.1)	(3.9)
Tax Cuts and Jobs Act of 2017 - enactment date and measurement period adjustments	—	(1.2)	(20.8)
Global intangible low taxed income (GILTI) inclusion	0.2	1.1	—
Foreign-derived intangible income (FDII) deduction	(0.5)	(1.2)	—
Tax on planned remittances of foreign earnings	0.3	1.3	—
Divestitures	1.8	—	—
Foreign entity restructuring	(1.8)	—	—
Other, net	—	1.5	(1.4)
	<u>20.6 %</u>	<u>21.2 %</u>	<u>6.1 %</u>

The deferred income tax balance sheet accounts arise from temporary differences between the amount of assets and liabilities recognized for financial reporting and tax purposes.

Components of the deferred tax assets and liabilities at December 31 were as follows:

	2019	2018
Deferred tax assets:		
Reserves and accrued expenses	\$ 175.2	\$ 156.5
Inventories	4.3	4.5
Net operating loss carryforwards	111.2	67.9
R&D credits	4.1	6.1
Valuation allowance	(36.3)	(26.4)
Outside basis difference on investments held for sale	—	2.7
Lease liability ¹	64.0	—
Total deferred tax assets	<u>\$ 322.5</u>	<u>\$ 211.3</u>
Deferred tax liabilities:		
Reserves and accrued expenses	\$ 15.5	\$ 14.3
Amortizable intangible assets	1,229.9	1,043.0
Plant and equipment	10.8	6.6
Accrued tax on unremitted foreign earnings	17.1	16.3
Outside basis difference on investments held for sale	—	10.0
ROU asset ¹	61.7	—
Total deferred tax liabilities	<u>\$ 1,335.0</u>	<u>\$ 1,090.2</u>

¹ Upon adoption of ASC 842, deferred taxes associated with previously recognized deferred rent liabilities were reclassified into deferred taxes for ROU asset and lease liability.

As of December 31, 2019, the Company had approximately \$19.0 of tax-effected U.S. federal net operating loss carryforwards. Some of these net operating loss carryforwards have an indefinite carryforward period, and those that do not will begin to expire in 2021 if not utilized. The majority of the U.S. federal net operating loss carryforwards are subject to limitation under the Internal Revenue Code of 1986, as amended (“IRC”) Section 382; however, the Company expects to utilize such losses in their entirety prior to expiration. The U.S. federal net operating loss carryforwards decreased from 2018 to 2019 primarily due to current year utilization. The Company has approximately \$33.7 of tax-effected state net operating loss carryforwards (without regard to federal benefit of state). Some of these net operating loss carryforwards have an indefinite carryforward period, and those that do not will begin to expire in 2020 if not utilized. The state net operating loss carryforwards are primarily related to Florida and New Jersey, but the Company has smaller net operating losses in various other states. The Company has approximately \$65.6 of tax-effected foreign net operating loss carryforwards. Some of these net operating loss carryforwards have an indefinite carryforward period, and those that do not will begin to expire in 2020 if not utilized. The foreign net operating loss carryforwards increased from 2018 to 2019 primarily due to the recognition of a discrete tax benefit of \$41.0 in connection with a foreign restructuring plan allowing the future realization of net operating losses. Additionally, the Company has \$5.0 of U.S. federal and state research and development tax credit carryforwards (without regard to federal benefit of state). Some of these research and development credit carryforwards have an indefinite carryforward period, and those that do not will begin to expire in 2020 if not utilized.

As of December 31, 2019, the Company determined that a total valuation allowance of \$36.3 was necessary to reduce U.S. federal and state deferred tax assets by \$15.4 and foreign deferred tax assets by \$20.9, where it was more likely than not that all of such deferred tax assets will not be realized. As of December 31, 2019, the Company believes it is more likely than not that the remaining net deferred tax assets will be realized based on the Company’s estimates of future taxable income and any applicable tax-planning strategies within various tax jurisdictions.

The Company recognizes in the Consolidated Financial Statements only those tax positions determined to be “more likely than not” of being sustained upon examination based on the technical merits of the positions. A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	2019	2018	2017
Beginning balance	\$ 63.6	\$ 52.2	\$ 38.7
Additions for tax positions of prior periods	2.9	2.4	24.8
Additions for tax positions of the current period	4.2	6.9	4.2
Additions due to acquisitions	1.9	4.4	—
Reductions for tax positions of prior periods	(0.3)	(0.4)	(11.2)
Reductions attributable to settlements with taxing authorities	—	—	(1.5)
Reductions attributable to lapses of applicable statute of limitations	(2.5)	(1.9)	(2.8)
Ending balance	<u>\$ 69.8</u>	<u>\$ 63.6</u>	<u>\$ 52.2</u>

The total amount of unrecognized tax benefits that, if recognized, would impact the effective tax rate is \$68.2. Interest and penalties related to unrecognized tax benefits were \$1.8 in 2019 and are classified as a component of income tax expense. Accrued interest and penalties were \$8.7 at December 31, 2019 and \$6.9 at December 31, 2018. During the next twelve months, it is reasonably possible that the unrecognized tax benefits may decrease by a net \$6.3, mainly due to anticipated statute of limitations lapses in various jurisdictions.

The Company and its subsidiaries are subject to examinations for U.S. federal income tax as well as income tax in various state, city and foreign jurisdictions. The Company’s federal income tax returns for 2016 through the current period remain open to examination and the relevant state, city and foreign statutes vary. The Company does not expect the assessment of any significant additional tax in excess of amounts reserved.

The Tax Act was signed into U.S. law on December 22, 2017. The Tax Act contains provisions which impact the Company’s income taxes including a reduction in the U.S. federal corporate income tax rate from 35% to 21%, a one-time deemed mandatory repatriation tax imposed on all undistributed foreign earnings, and the introduction of a modified territorial taxation system.

The SEC released Staff Accounting Bulletin No. 118 (“SAB 118”) on December 22, 2017 to provide guidance where the accounting under ASC 740, *Income Taxes*, is incomplete for certain income tax effects of the Tax Act upon issuance of financial statements for the reporting period in which the Tax Act was enacted. SAB 118 provides that if a company could determine a reasonable estimate, that estimate should be reported as a provisional amount and adjusted during a measurement period. If a company is unable to determine a reasonable estimate, no related provisional amounts would be recorded until a reasonable estimate can be determined, within the measurement period. The measurement period extends until all necessary information has been obtained, prepared, and analyzed, but no longer than 12-months from the date of enactment of the Tax Act.

The Company intends to distribute all historical unremitted foreign earnings up to the amount of excess foreign cash, as well as all future foreign earnings that can be repatriated without incremental U.S. federal tax cost. Any remaining outside basis differences relating to the Company’s investments in foreign subsidiaries are no longer expected to be material and will be indefinitely reinvested.

(8) Long-Term Debt

On September 23, 2016, Roper entered into a five-year \$2.5 billion unsecured credit facility, as amended December 2, 2016, (the “2016 Facility”) with JPMorgan Chase Bank, N.A., as administrative agent, and a syndicate of lenders, which replaced its previous \$1.85 billion unsecured credit facility dated as of July 27, 2012, as amended as of October 28, 2015 (the “2012 Facility”). The 2016 Facility comprises a five year \$2.5 billion revolving credit facility, which includes availability of up to \$150.0 for letters of credit. Roper may also, subject to compliance with specified conditions, request term loans or additional revolving credit commitments in an aggregate amount not to exceed \$500.0. At December 31, 2019, there were \$0.0 of outstanding borrowings under the 2016 Facility.

The 2016 Facility contains affirmative and negative covenants which, among other things, limit Roper’s ability to incur new debt, enter into certain mergers and acquisitions, sell assets and grant liens, make restricted payments (including the payment of dividends on our common stock) and capital expenditures, or change its line of business. Roper is also subject to financial covenants which require the Company to limit its consolidated total leverage ratio and to maintain a consolidated interest coverage ratio. The most restrictive covenant is the consolidated total leverage ratio which is limited to 3.50 to 1.

The 2016 Facility provides that the consolidated total leverage ratio may be increased, no more than twice during the term of the 2016 Facility, to 4.00 to 1 for a consecutive four quarter fiscal period per increase (or, for any portion of such four quarter fiscal period in which the maximum would be 4.25 to 1). In conjunction with the Deltek acquisition in December of 2016, we increased the maximum consolidated total leverage ratio covenant to 4.25 to 1 through June 30, 2017 and 4.00 to 1 through December 31, 2017.

The Company was in compliance with its debt covenants throughout the years ended December 31, 2019 and 2018.

On August 26, 2019, the Company completed a public offering of \$500.0 aggregate principal amount of 2.35% senior unsecured notes due September 15, 2024 and \$700.0 aggregate principal amount of 2.95% senior unsecured notes due September 15, 2029 (the “2019 Offering”). The notes bear interest at a fixed rate and are payable semi-annually in arrears on March 15 and September 15 of each year, beginning March 15, 2020. The net proceeds were used to fund a portion of the purchase of iPipeline Holdings, Inc.

On August 28, 2018, the Company completed a public offering of \$700.0 aggregate principal amount of 3.65% senior unsecured notes due September 15, 2023 and \$800.0 aggregate principal amount of 4.20% senior unsecured notes due September 15, 2028 (the “2018 Offering”). The notes bear interest at a fixed rate and are payable semi-annually in arrears on March 15 and September 15 of each year, beginning March 15, 2019.

On December 19, 2016, the Company completed a public offering of \$500.0 aggregate principal amount of 2.80% senior unsecured notes due December 15, 2021 and \$700.0 aggregate principal amount of 3.80% senior unsecured notes due December 15, 2026. The notes bear interest at a fixed rate and are payable semi-annually in arrears on June 15 and December 15 of each year, beginning June 15, 2017.

On December 7, 2015, the Company completed a public offering of \$600.0 aggregate principal amount of 3.00% senior unsecured notes due December 15, 2020 and \$300.0 aggregate principal amount of 3.85% senior unsecured notes due December 15, 2025. The notes bear interest at a fixed rate and are payable semi-annually in arrears on June 15 and December 15 of each year, beginning June 15, 2016.

On November 21, 2012, the Company completed a public offering of \$500.0 aggregate principal amount of 3.125% senior unsecured notes due November 15, 2022. The notes bear interest at a fixed rate and are payable semi-annually in arrears on May 15 and November 15 of each year, beginning May 15, 2013.

In September 2009, the Company completed a public offering of \$500.0 aggregate principal amount of 6.25% senior unsecured notes due September 1, 2019 (the "2019 Notes"). During 2018 a portion of the net proceeds of the 2018 Offering were used to redeem all of the \$500.0 of outstanding 2019 Notes. The Company incurred a debt extinguishment charge in connection with the redemption of the 2019 Notes of \$15.9, which represents the make-whole premium and unamortized deferred financing costs.

Roper may redeem some or all of these notes at any time or from time to time, at 100% of their principal amount, plus a make-whole premium based on a spread to U.S. Treasury securities.

The Company's senior notes are unsecured senior obligations of the Company and rank equally in right of payment with all of Roper's existing and future unsecured and unsubordinated indebtedness. The notes are effectively subordinated to any of its existing and future secured indebtedness to the extent of the value of the collateral securing such indebtedness. The notes are not guaranteed by any of Roper's subsidiaries and are effectively subordinated to all existing and future indebtedness and other liabilities of Roper's subsidiaries.

Total debt at December 31 consisted of the following:

	2019	2018
2016 Facility	\$ —	\$ 865.0
\$600 3.000% senior notes due 2020	600.0	600.0
\$500 2.800% senior notes due 2021	500.0	500.0
\$500 3.125% senior notes due 2022	500.0	500.0
\$700 3.650% senior notes due 2023	700.0	700.0
\$500 2.350% senior notes due 2024	500.0	—
\$300 3.850% senior notes due 2025	300.0	300.0
\$700 3.800% senior notes due 2026	700.0	700.0
\$800 4.200% senior notes due 2028	800.0	800.0
\$700 2.950% senior notes due 2029	700.0	—
Other	7.7	3.0
Less unamortized debt issuance costs	(32.4)	(26.3)
Total debt	5,275.3	4,941.7
Less current portion	602.2	1.5
Long-term debt	\$ 4,673.1	\$ 4,940.2

The 2016 Facility and Roper's \$5.3 billion senior notes provide substantially all of Roper's daily external financing requirements. The interest rate on the borrowings under the 2016 Facility is calculated based upon various recognized indices plus a margin as defined in the credit agreement. At December 31, 2019, Roper's fixed debt consisted of \$5.3 billion of senior notes, \$7.7 of other debt in the form of finance leases, several smaller facilities that allow for borrowings or the issuance of letters of credit in foreign locations to support Roper's non-U.S. businesses and \$74.0 of outstanding letters of credit at December 31, 2019.

Future maturities of total debt during each of the next five years ending December 31 and thereafter were as follows:

2020	\$ 603.1
2021	502.3
2022	502.3
2023	700.0
2024	500.0
Thereafter	2,500.0
Total	\$ 5,307.7

(9) Fair Value

Roper's debt at December 31, 2019 included \$5,300 of fixed-rate senior notes with the following fair values:

\$600 3.000% senior notes due 2020	605
\$500 2.800% senior notes due 2021	507
\$500 3.125% senior notes due 2022	514
\$700 3.650% senior notes due 2023	735
\$500 2.350% senior notes due 2024	502
\$300 3.850% senior notes due 2025	324
\$700 3.800% senior notes due 2026	754
\$800 4.200% senior notes due 2028	880
\$700 2.950% senior notes due 2029	710

The fair values of the senior notes are based on the trading prices of the notes, which the Company has determined to be Level 2 in the FASB fair value hierarchy.

(10) Retirement and Other Benefit Plans

Roper maintains four defined contribution retirement plans under the provisions of Section 401(k) of the IRC covering substantially all U.S. employees. Roper partially matches employee contributions. Costs related to all such plans were \$36.9, \$31.2 and \$27.6 for 2019, 2018 and 2017, respectively.

Roper also maintains various defined benefit retirement plans covering employees of non-U.S. and certain U.S. subsidiaries and a plan that supplements certain employees for the contribution ceiling applicable to the Section 401(k) plans. The costs and accumulated benefit obligations associated with each of these plans were not material.

(11) Stock-Based Compensation

The Roper Technologies, Inc. 2016 Incentive Plan ("2016 Plan") is a stock-based compensation plan used to grant incentive stock options, nonqualified stock options, restricted stock, stock appreciation rights or equivalent instruments to Roper's employees, officers and directors. At December 31, 2019, 4,544 shares were available to grant under the 2016 Plan.

Under the Roper Technologies, Inc., Employee Stock Purchase Plan ("ESPP"), all employees in the U.S. and Canada are eligible to designate up to 10% of eligible earnings to purchase Roper's common stock at a 5% discount to the average closing price of its common stock at the beginning and end of a quarterly offering period. Common stock sold to the employees may be either treasury stock, stock purchased on the open market, or newly issued shares.

Stock based compensation expense for the years ended December 31, 2019, 2018 and 2017 was as follows:

	2019	2018	2017
Stock based compensation	\$ 104.5	\$ 133.8	\$ 83.1
Tax benefit recognized in net earnings	22.0	28.1	29.1

During 2019, in connection with the sale of Gatan we recognized \$9.6 associated with accelerated vestings, which was recognized within "Gain on disposal of businesses" within the Consolidated Statements of Earnings. In 2018, this expense included \$29.4 associated with accelerated vesting due to the passing of our former executive chairman.

Stock Options – Stock options are typically granted at prices not less than 100% of market value of the underlying stock at the date of grant. Stock options typically vest over a period of 3 to 5 years from the grant date and expire 10 years after the grant date. The Company recorded \$32.0, \$23.2, and \$18.3 of compensation expense relating to outstanding options during 2019, 2018 and 2017, respectively, as a component of general and administrative expenses at Corporate.

The Company estimates the fair value of its option awards using the Black-Scholes option valuation model. The stock volatility for each grant is measured using the weighted-average of historical daily price changes of the Company's common stock over the most recent period equal to the expected life of the grant. The expected term of options granted is derived from historical data to estimate option exercises and employee forfeitures, and represents the period of time that options granted are expected to be outstanding. The risk-free rate for periods within the contractual life of the option is based on the U.S. Treasury yield curve in effect at the time of grant. The weighted-average fair value of options granted in 2019, 2018 and 2017 were calculated using the following weighted-average assumptions:

	2019	2018	2017
Weighted-average fair value (\$)	68.05	57.75	40.87
Risk-free interest rate (%)	2.37	2.65	2.03
Average expected option life (years)	5.42	5.32	5.26
Expected volatility (%)	19.22	18.05	18.74
Expected dividend yield (%)	0.58	0.59	0.67

The following table summarizes the Company's activities with respect to its share-based compensation plans for the years ended December 31, 2019 and 2018:

	Number of shares	Weighted-average exercise price per share	Weighted-average contractual term	Aggregate intrinsic value
Outstanding at December 31, 2017	3.196	\$ 140.68		
Granted	0.723	279.10		
Exercised	(0.650)	90.43		
Canceled	(0.064)	211.57		
Outstanding at December 31, 2018	3.205	180.69	6.58	\$ 284.0
Granted	0.764	320.65		
Exercised	(0.527)	122.94		
Canceled	(0.093)	273.64		
Outstanding at December 31, 2019	3.349	219.14	6.66	\$ 452.8
Exercisable at December 31, 2019	1.611	\$ 150.31	4.74	\$ 328.6

The following table summarizes information for stock options outstanding at December 31, 2019:

Exercise price	Outstanding options			Exercisable options	
	Number	Average exercise price	Average remaining life (years)	Number	Average exercise price
\$51.11 - \$125.17	0.370	\$ 95.34	2.0	0.370	\$ 95.34
\$125.18 - \$154.16	0.371	137.31	4.1	0.371	137.31
\$154.17 - \$170.58	0.269	164.82	5.2	0.269	164.82
\$170.59 - \$183.97	0.393	173.20	6.4	0.362	172.75
\$183.98 - \$212.18	0.439	202.41	7.1	0.198	199.20
\$212.19 - \$279.31	0.357	261.80	8.3	0.039	233.39
\$279.32 - \$279.44	0.460	279.39	8.2	0.002	279.39
\$279.45 - \$327.91	0.597	321.33	9.1	—	—
\$327.92 - \$366.76	0.093	351.80	9.5	—	—
\$51.11 - \$366.76	3.349	\$ 219.14	6.7	1.611	\$ 150.31

At December 31, 2019, there was \$59.9 of total unrecognized compensation expense related to nonvested options granted under the Company's share-based compensation plans. That cost is expected to be recognized over a weighted-average period of 2.1 years. The total intrinsic value of options exercised in 2019, 2018 and 2017 was \$109.4, \$124.6 and \$90.6, respectively. Cash received from option exercises under all plans in 2019 and 2018 was \$64.9 and \$58.8, respectively.

Restricted Stock Grants - During 2019 and 2018, the Company granted 0.321 and 0.410 shares, respectively, of restricted stock to certain employee and director participants under its share-based compensation plans. Restricted stock grants generally vest over a period of 1 to 4 years. The Company recorded \$72.5, \$109.7 and \$63.0 of compensation expense related to outstanding shares of restricted stock held by employees and directors during 2019, 2018 and 2017, respectively. In 2018, this expense included \$29.4 associated with accelerated vesting due to the passing of our former executive chairman. A summary of the Company's nonvested shares activity for 2019 and 2018 is as follows:

	Number of shares	Weighted-average grant date fair value
Nonvested at December 31, 2017	0.859	\$ 187.01
Granted	0.410	278.29
Vested	(0.492)	204.24
Forfeited	(0.038)	191.51
Nonvested at December 31, 2018	0.739	\$ 225.93
Granted	0.321	318.75
Vested	(0.290)	209.05
Forfeited	(0.061)	225.23
Nonvested at December 31, 2019	0.709	\$ 275.00

At December 31, 2019, there was \$77.9 of total unrecognized compensation expense related to nonvested awards granted to both employees and directors under the Company's share-based compensation plans. That cost is expected to be recognized over a weighted-average period of 1.8 years. Unrecognized compensation expense related to nonvested shares of restricted stock grants is recorded as a reduction to additional paid-in capital in stockholder's equity at December 31, 2019.

Employee Stock Purchase Plan - During 2019, 2018 and 2017, participants of the ESPP purchased 0.021, 0.020 and 0.020 shares, respectively, of Roper's common stock for total consideration of \$6.8, \$5.4, and \$4.2, respectively. All of these shares were purchased from Roper's treasury shares.

(12) Contingencies

Roper, in the ordinary course of business, is the subject of, or a party to, various pending or threatened legal actions, including product liability and employment practices that, in general, are based upon claims of the kind that have been customary over the past several years and which the Company is vigorously defending. After analyzing the Company's contingent liabilities on a gross basis and, based upon past experience with resolution of its product liability and employment practices claims and the limits of the primary, excess, and umbrella liability insurance coverages that are available with respect to pending claims, management believes that adequate provision has been made to cover any potential liability not covered by insurance, and that the ultimate liability, if any, arising from these actions should not have a material adverse effect on Roper's consolidated financial position, results of operations or cash flows.

Roper or its subsidiaries have been named defendants along with numerous industrial companies in asbestos-related litigation claims in certain U.S. states. No significant resources have been required by Roper to respond to these cases and Roper believes it has valid defenses to such claims and, if required, intends to defend them vigorously. Given the state of these claims, it is not possible to determine the potential liability, if any. In April 2018, a stockholder derivative complaint was filed in Sarasota County, Florida against the Company, nominally, and its directors and former chairman & chief executive officer ("CEO"), alleging the directors breached their fiduciary duties and were unjustly enriched by the compensation earned by the nonexecutive directors and the CEO in 2015 and 2016. The matter was settled in June 2019, and the settlement was approved by the court in September. Under the terms of the settlement, the Company agreed to, among other things, expand future disclosures regarding its compensation practices, submit a new director compensation plan to shareholders for approval in 2020, and pay plaintiff's attorneys' fees and expenses.

As of December 31, 2019, Roper had \$74.0 of letters of credit issued to guarantee its performance under certain services contracts or to support certain insurance programs and \$732.7 of outstanding surety bonds. Certain contracts, primarily those involving public sector customers, require Roper to provide a surety bond as a guarantee of its performance of contractual obligations.

(13) Segment and Geographic Area Information

During the first quarter of 2019, we implemented a realignment of our reportable segment structure. The new reportable segments continue to provide a transparent view into Roper's operations and capital deployment strategy and objectives. The Company's new reporting segment structure reinforces Roper's diversified, niche market strategy by reporting based upon business models instead of end markets. The four new reportable segments (and businesses within each; including changes due to acquisitions and divestitures since the realignment) are as follows:

- **Application Software** - Aderant, CBORD, CliniSys, Data Innovations, Deltek, Horizon, IntelliTrans, PowerPlan, Strata, Sunquest
- **Network Software & Systems** - ConstructConnect, DAT, Foundry, Inovonics, iPipeline, iTradeNetwork, Link Logistics, MHA, RF IDEas, SHP, SoftWriters, TransCore
- **Measurement & Analytical Solutions** ⁽¹⁾ - Alpha, CIVCO Medical Solutions, CIVCO Radiotherapy, Dynisco, FMI, Hansen, Hardy, IPA, Logitech, Neptune, Northern Digital, Struers, Technolog, Uson, Verathon
- **Process Technologies** - AMOT, CCC, Cornell, FTL, Metrix, PAC, Roper Pump, Viatran, Zetec

⁽¹⁾ The Measurement & Analytical Solutions segment includes the results of the divestitures completed in 2019 through the transaction date for (i) the Imaging businesses, sold to Teledyne on February 5, 2019 and (ii) Gatan sold to AMETEK on October 29, 2019.

There were no material transactions between Roper's business segments during 2019, 2018 and 2017. Sales between geographic areas are primarily of finished products and are accounted for at prices intended to represent third-party prices. Operating profit by business segment and by geographic area is defined as net revenues less operating costs and expenses. These costs and expenses do not include unallocated corporate administrative expenses. Items below income from operations on Roper's Consolidated Statements of Earnings are not allocated to business segments.

Operating assets are those assets used primarily in the operations of each business segment or geographic area. Corporate assets are principally comprised of cash and cash equivalents, deferred tax assets, recoverable insurance claims, deferred compensation assets and property and equipment.

Selected financial information by business segment for 2019, 2018 and 2017 follows:

	Application Software	Network Software & Systems	Measurement & Analytical Solutions	Process Technologies	Corporate	Total
2019						
Net revenues	\$ 1,588.0	\$ 1,529.5	\$ 1,596.4	\$ 652.9	\$ —	\$ 5,366.8
Operating profit	405.4	538.5	501.1	225.8	(172.4)	1,498.4
Assets:						
Operating assets	382.2	472.0	347.0	205.7	4.4	1,411.3
Intangible assets, net	7,833.6	5,871.8	1,420.0	357.7	—	15,483.1
Other	168.5	62.5	120.4	69.0	794.1	1,214.5
Total						18,108.9
Capital expenditures	17.4	15.1	17.3	2.7	0.2	52.7
Capitalized software expenditures	9.7	0.5	—	—	—	10.2
Depreciation and other amortization	230.2	132.9	40.3	12.0	0.6	416.0
2018						
Net revenues	\$ 1,452.7	\$ 1,345.2	\$ 1,705.6	\$ 687.7	\$ —	\$ 5,191.2
Operating profit	358.0	484.4	523.9	233.6	(203.5)	1,396.4
Assets:						
Operating assets	392.6	338.3	336.2	196.4	6.1	1,269.6
Intangible assets, net	7,799.9	3,582.0	1,444.5	362.5	—	13,188.9
Other ¹	163.6	38.4	391.2	94.5	103.3	791.0
Total						15,249.5
Capital expenditures	19.0	8.3	15.4	6.3	0.1	49.1
Capitalized software expenditures	9.1	0.4	—	—	—	9.5
Depreciation and other amortization	212.8	98.1	42.6	12.7	0.8	367.0
2017						
Net revenues	\$ 1,222.2	\$ 1,254.1	\$ 1,531.3	\$ 599.9	\$ —	\$ 4,607.5
Operating profit	279.0	438.7	446.0	188.3	(141.8)	1,210.2
Assets:						
Operating assets	288.1	318.3	402.7	189.7	7.4	1,206.2
Intangible assets, net	6,668.1	3,598.7	1,649.7	379.0	—	12,295.5
Other	180.4	45.6	184.8	185.1	218.8	814.7
Total						14,316.4
Capital expenditures	17.9	13.3	13.5	3.1	1.0	48.8
Capitalized software expenditures	9.9	0.8	0.1	—	—	10.8
Depreciation and other amortization	183.5	99.9	47.5	13.5	0.6	345.0

¹ Includes Operating assets of \$91.8 and Intangible assets, net of \$159.4 associated with the Gatan business and Imaging businesses classified as held for sale. See Note 2 of the Notes to Consolidated Financial Statements included in this Annual Report.

Summarized data for Roper's U.S. and foreign operations (principally in Canada, Europe and Asia) for 2019, 2018 and 2017, based upon the country of origin of the Roper entity making the sale, was as follows:

	<u>United States</u>	<u>Non-U.S.</u>	<u>Eliminations</u>	<u>Total</u>
2019				
Sales to unaffiliated customers	\$ 4,342.6	\$ 1,024.2	\$ —	\$ 5,366.8
Sales between geographic areas	124.9	139.3	(264.2)	—
Net revenues	<u>\$ 4,467.5</u>	<u>\$ 1,163.5</u>	<u>\$ (264.2)</u>	<u>\$ 5,366.8</u>
Long-lived assets	<u>\$ 164.6</u>	<u>\$ 33.2</u>	<u>\$ —</u>	<u>\$ 197.8</u>
2018				
Sales to unaffiliated customers	\$ 4,176.2	\$ 1,015.0	\$ —	\$ 5,191.2
Sales between geographic areas	143.9	137.0	(280.9)	—
Net revenues	<u>\$ 4,320.1</u>	<u>\$ 1,152.0</u>	<u>\$ (280.9)</u>	<u>\$ 5,191.2</u>
Long-lived assets ¹	<u>\$ 145.2</u>	<u>\$ 30.0</u>	<u>\$ —</u>	<u>\$ 175.2</u>
2017				
Sales to unaffiliated customers	\$ 3,679.1	\$ 928.4	\$ —	\$ 4,607.5
Sales between geographic areas	133.2	187.7	(320.9)	—
Net revenues	<u>\$ 3,812.3</u>	<u>\$ 1,116.1</u>	<u>\$ (320.9)</u>	<u>\$ 4,607.5</u>
Long-lived assets	<u>\$ 144.0</u>	<u>\$ 31.4</u>	<u>\$ —</u>	<u>\$ 175.4</u>

¹ Excludes Long-lived assets of \$7.6 associated with the Gatan business and Imaging businesses classified as held for sale. See Note 2 of the Notes to Consolidated Financial Statements included in this Annual Report.

Export sales from the U.S. during the years ended December 31, 2019, 2018 and 2017 were \$531.8, \$578.0 and \$512.5, respectively. In the year ended December 31, 2019, these exports were shipped primarily to Asia (33%), Europe (24%), Canada (18%), Middle East (13%) and other (12%).

Sales to customers outside the U.S. accounted for a significant portion of Roper’s revenues. Sales are attributed to geographic areas based upon the location where the product is ultimately shipped. Roper’s net revenues for the years ended December 31, 2019, 2018 and 2017 are shown below by region, except for Canada, which is presented separately as it is the only country in which Roper has had greater than 4% of total revenues for any of the three years presented:

	Application Software	Network Software & Systems	Measurement & Analytical Solutions	Process Technologies	Total
2019					
Canada	\$ 41.0	\$ 71.1	\$ 81.4	\$ 28.9	\$ 222.4
Europe	188.8	36.7	307.2	113.8	646.5
Asia	3.5	18.8	185.0	108.0	315.3
Middle East	8.6	37.5	13.1	44.4	103.6
Rest of the world	25.8	9.5	45.3	55.2	135.8
Total	<u>\$ 267.7</u>	<u>\$ 173.6</u>	<u>\$ 632.0</u>	<u>\$ 350.3</u>	<u>\$ 1,423.6</u>
2018					
Canada	\$ 38.5	\$ 58.5	\$ 79.3	\$ 35.0	\$ 211.3
Europe	188.6	12.2	361.7	117.5	680.0
Asia	3.2	11.0	220.3	115.4	349.9
Middle East	4.7	48.6	14.4	34.4	102.1
Rest of the world	29.5	7.8	42.5	55.0	134.8
Total	<u>\$ 264.5</u>	<u>\$ 138.1</u>	<u>\$ 718.2</u>	<u>\$ 357.3</u>	<u>\$ 1,478.1</u>
2017					
Canada	\$ 26.6	\$ 52.9	\$ 72.9	\$ 34.7	\$ 187.1
Europe	176.5	11.0	310.6	98.1	596.2
Asia	2.4	7.3	205.9	109.8	325.4
Middle East	4.8	58.8	13.4	35.5	112.5
Rest of the world	23.2	6.1	42.0	48.7	120.0
Total	<u>\$ 233.5</u>	<u>\$ 136.1</u>	<u>\$ 644.8</u>	<u>\$ 326.8</u>	<u>\$ 1,341.2</u>

(14) Concentration of Risk

Financial instruments which potentially subject the Company to credit risk consist primarily of cash and cash equivalents, trade receivables and unbilled receivables.

The Company maintains cash and cash equivalents with various major financial institutions around the world. The Company limits the amount of credit exposure with any one financial institution and believes that no significant concentration of credit risk exists with respect to cash and cash equivalent balances.

Trade and unbilled receivables subject the Company to the potential for credit risk with customers. To reduce credit risk, the Company performs ongoing evaluations of its customers’ financial condition.

(15) Contract Balances

Contract balances at December 31 are set forth in the following table:

Balance Sheet Account	2019	2018	Change
Unbilled receivables	\$ 183.5	\$ 169.4	\$ 14.1
Contract liabilities - current ⁽¹⁾	(840.8)	(714.1)	(126.7)
Deferred revenue - non-current	(33.2)	(29.8)	(3.4)
Net contract assets/(liabilities)	<u>\$ (690.5)</u>	<u>\$ (574.5)</u>	<u>\$ (116.0)</u>

⁽¹⁾ Consists of “Deferred revenue,” and billings in-excess of revenues (“BIE”). BIE are reported in “Other accrued liabilities” in our Consolidated Balance Sheets.

The change in our net contract assets/(liabilities) from December 31, 2018 to December 31, 2019 was due primarily to the timing of payments and invoicing relating to SaaS and PCS renewals, partially offset by revenues recognized in the year ended December 31, 2019 of \$674.2, related to our contract liability balances at December 31, 2018. In addition, the impact of the 2019 business acquisitions increased net contract liabilities by \$96.2.

In order to determine revenues recognized in the period from contract liabilities, we allocate revenue to the individual deferred revenue or BIE balance outstanding at the beginning of the year until the revenue exceeds that balance.

Impairment losses recognized on our accounts receivable and unbilled receivables were immaterial in the year ended December 31, 2019.

(16) Leases

The Company's operating leases are primarily for real property in support of our business operations. Although many of our leases contain renewal options, we generally are not reasonably certain to exercise these options at the commencement date. Accordingly, renewal options are generally not included in the lease term for determining the ROU asset and lease liability at commencement. Variable lease payments generally depend on an inflation-based index and such payments are not included in the original estimate of the lease liability. These variable lease payments are not material.

For the years ended December 31, 2019, 2018 and 2017, the Company recognized \$65.9, \$66.9 and \$64.6 in operating lease expense, respectively.

The following table presents the supplemental cash flow information related to the Company's operating leases for the year ended December 31, 2019:

Operating cash flows used for operating leases	\$	66.7
Right-of-use assets obtained in exchange for operating lease obligations		60.4

The following table presents the lease balances within the Consolidated Balance Sheet related to the Company's operating leases as of December 31, 2019:

Lease Assets and Liabilities	Balance Sheet Account	
ASSETS:		
Operating lease ROU assets	Other assets	\$ 266.9
LIABILITIES:		
Current operating lease liabilities	Other accrued liabilities	\$ 56.8
Operating lease liabilities	Other liabilities	220.0
Total operating lease liabilities		\$ 276.8

Future minimum lease payments under non-cancellable leases were as follows:

2020	\$	63.7
2021		55.9
2022		42.8
2023		35.3
2024		29.9
Thereafter		77.5
Total operating lease payments		305.1
Less: Imputed interest		28.3
Total operating lease liabilities	\$	276.8

Weighted average remaining lease term - operating leases (years)	7
Weighted average discount rate (%)	3.0

(17) Quarterly Financial Data (unaudited)

	<u>First Quarter</u>	<u>Second Quarter</u>	<u>Third Quarter</u>	<u>Fourth Quarter</u>
2019				
Net revenues	\$ 1,287.2	\$ 1,330.3	\$ 1,354.5	\$ 1,394.8
Gross profit	810.6	850.0	873.6	892.9
Income from operations	346.4	368.4	385.2	398.4
Net earnings	369.6	249.7	277.5	871.1
Earnings per share:				
Basic	\$ 3.57	\$ 2.40	\$ 2.67	\$ 8.37
Diluted	\$ 3.53	\$ 2.38	\$ 2.64	\$ 8.28
2018				
Net revenues	\$ 1,202.5	\$ 1,293.7	\$ 1,318.7	\$ 1,376.3
Gross profit	750.5	815.9	840.0	873.1
Income from operations	300.2	354.3	377.5	364.4
Net earnings	211.3	228.4	247.6	257.1
Earnings per share:				
Basic	\$ 2.05	\$ 2.21	\$ 2.39	\$ 2.49
Diluted	\$ 2.03	\$ 2.19	\$ 2.37	\$ 2.46

The sum of the four quarters may not agree with the total for the year due to rounding.

ROPER TECHNOLOGIES, INC. AND SUBSIDIARIES

Schedule II – Consolidated Valuation and Qualifying Accounts
Years ended December 31, 2019, 2018 and 2017

	Balance at beginning of year	Additions charged to costs and expenses	Deductions	Other	Balance at end of year
	(in millions)				
Allowance for doubtful accounts and sales allowances					
2019	\$ 23.1	\$ 8.4	\$ (7.9)	\$ (3.3)	\$ 20.3
2018	12.7	11.9	(7.3)	5.8	23.1
2017	14.5	4.3	(5.9)	(0.2)	12.7
Reserve for inventory obsolescence					
2019	\$ 30.3	\$ 6.3	\$ (3.2)	\$ —	\$ 33.4
2018	38.1	6.7	(4.5)	(10.0)	30.3
2017	37.2	5.3	(6.3)	1.9	38.1

Deductions from the allowance for doubtful accounts represented the net write-off of uncollectible accounts receivable. Deductions from the inventory obsolescence reserve represented the disposal of obsolete items.

Other included the allowance for doubtful accounts and reserve for inventory obsolescence of acquired businesses, the effects of foreign currency translation adjustments for those companies whose functional currency was not the U.S. dollar, reclassifications as held for sale and other.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None

ITEM 9A. CONTROLS AND PROCEDURES

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control-Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our evaluation under the framework in Internal Control-Integrated Framework, our management concluded that our internal control over financial reporting was effective as of December 31, 2019. Our internal control over financial reporting as of December 31, 2019 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is included herein.

Our management excluded the four acquisitions completed during 2019 from its assessment of internal control over financial reporting as of December 31, 2019. These acquisitions are wholly-owned subsidiaries whose excluded aggregate assets represent 1%, and whose aggregate total revenues represent 2% of the related Consolidated Financial Statement amounts as of and for the year ended December 31, 2019.

Evaluation of Disclosure Controls and Procedures

As required by SEC rules, we have evaluated the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the period covered by this report. This evaluation was carried out under the supervision and with the participation of our management, including our principal executive officer and principal financial officer. Based on this evaluation, we have concluded that our disclosure controls and procedures were effective as of December 31, 2019.

Disclosure controls and procedures are our controls and other procedures designed to ensure that information required to be disclosed by us in the reports that 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. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act are accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting that occurred during the fourth quarter of 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None

PART III

Except as otherwise indicated, the following information required by the Instructions to Form 10-K is incorporated herein by reference from the sections of the Roper Proxy Statement for the annual meeting of shareholders (“2020 Proxy Statement”), which we anticipate filing with the SEC within 120 days after the end of the fiscal year to which this report relates, as specified below:

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information about our directors required by this *Item 10 - Directors, Executive Officers, and Corporate Governance* is contained under the caption “Proposal 1 - Election of Directors” is contained in the 2020 Proxy Statement.

Information regarding our audit committee, code of ethics, executive officers and compliance with Section 16(a) of the Exchange Act is contained in the 2020 Proxy Statement under the captions “Corporate Governance,” “Board Committees and Meetings,” “Executive Officers,” and “Delinquent Section 16(a) Reports.”

ITEM 11. EXECUTIVE COMPENSATION

The information required by this *Item 11 - Executive Compensation* is contained in the 2020 Proxy Statement under the captions “Compensation Discussion and Analysis,” “Executive Compensation,” “Director Compensation,” “Compensation Committee Report,” and “Compensation Committee Interlocks, and Insider Participation.”

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

(All share amounts are in millions)

Other than as set forth below, the information required by this *Item 12 - Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters* and not otherwise set forth below is contained in the 2020 Proxy Statement under the caption “Beneficial Ownership.”

Securities Authorized for Issuance under Equity Compensation Plans

The following table provides information as of December 31, 2019 regarding compensation plans (including individual compensation arrangements) under which our equity securities are authorized for issuance.

Plan Category	(a) Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	(b) Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights	(c) Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a))
Equity Compensation Plans Approved by Shareholders ⁽¹⁾			
Stock options	3.349	\$ 219.14	
Restricted stock awards ⁽²⁾	0.709	—	
Subtotal	4.058		4.544
Equity Compensation Plans Not Approved by Shareholders	—	—	—
Total	4.058	\$ —	4.544

⁽¹⁾ Consists of the Amended and Restated 2006 Incentive Plan (no additional equity awards may be granted under this plan) and the 2016 Incentive Plan.

⁽²⁾ The weighted-average exercise price is not applicable to restricted stock awards.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

The information required by this *Item 13 - Certain Relationships and Related Transactions, and Director Independence* is contained in the 2020 Proxy Statement under the captions “Director Independence” and “Review and Approval of Related Person Transactions.”

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this *Item 14 - Principal Accounting Fees and Services* is contained in the 2020 Proxy Statement under the captions “Proposal 3 - Ratification of Selection of Independent Registered Public Accounting Firm,” “Independent Public Accountants Fees.”

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

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

(1) Consolidated Financial Statements: The following Consolidated Financial Statements are included in Part II, Item 8 of this report.

Consolidated Balance Sheets as of December 31, 2019 and 2018

Consolidated Statements of Earnings for the Years ended December 31, 2019, 2018 and 2017

Consolidated Statements of Comprehensive Income for the Years ended December 31, 2019, 2018 and 2017

Consolidated Statements of Stockholders' Equity for the Years ended December 31, 2019, 2018 and 2017

Consolidated Statements of Cash Flows for the Years ended December 31, 2019, 2018 and 2017

Notes to Consolidated Financial Statements

(2) Consolidated Valuation and Qualifying Accounts for the Years ended December 31, 2019, 2018 and 2017

(b) Exhibits

Exhibit No.	Description of Exhibit
(a)2.1	Agreement and Plan of Merger, dated as of August 5, 2019, by and among iPipeline Holdings, Inc., Roper Technologies, Inc., Project Purpose Merger Sub, Inc. and Thoma Bravo, LLC, as representative of the stockholders and optionholders of iPipeline Holdings, Inc.
(b)3.1	Restated Certificate of Incorporation as amended through April 24, 2015.
(c)3.2	Amended and Restated By-Laws.
(d)4.1	Indenture between Registrant and Wells Fargo Bank, dated as of August 4, 2008.
(e)4.2	Indenture between Registrant and Wells Fargo Bank, dated as of November 26, 2018.
(f)4.7	Form of Note.
(g)4.8	Form of 3.650% Senior Notes due 2023.
4.9	Form of 4.200% Senior Notes due 2028 (included in Exhibit 4.8).
(h)4.10	Form of 3.125% Senior Notes due 2022.
(i)4.11	Form of 3.00% Senior Notes due 2020.
4.12	Form of 3.85% Senior Notes due 2025 (included in Exhibit 4.11).
(j)4.13	Form of 2.800% Senior Notes due 2021.
4.14	Form of 3.800% Senior Notes due 2026 (included in Exhibit 4.13).
(k)4.15	Form of 2.350% Senior Notes due 2024.
4.16	Form of 2.950% Senior Notes due 2029 (included in Exhibit 4.15).
4.17	Description of Registrant's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934, filed herewith.
(l)10.01	Form of Amended and Restated Indemnification Agreement. †
(m)10.02	Employee Stock Purchase Plan, as amended and restated. †
(n)10.03	Non-Qualified Retirement Plan, as amended. †
(o)10.04	Brian D. Jellison Employment Agreement, dated as of December 29, 2008. †
(p)10.05	Credit Agreement, dated as of September 23, 2016 among Registrant, the financial institutions from time to time party thereto, JPMorgan Chase Bank, N.A., as administrative agent, Wells Fargo Bank, N.A. and Bank of America, N.A. as syndication agents, and The Bank of Tokyo-Mitsubishi UFJ, Ltd. and Mizuho Bank, Ltd., PNC Bank, National Association, SunTrust Bank and TD Bank, N.A. as co-documentation agents.
(q)10.06	Amendment No. 1 to Credit Agreement dated December 2, 2016, to Credit Agreement dated as of September 23, 2016 by and among Registrant, the foreign subsidiary borrowers party thereto from time to time, the lenders party thereto from time to time, JP Morgan Chase Bank, N.A., as Administrative Agent, and the other agents and parties thereto.
(r)10.07	Amended and Restated 2006 Incentive Plan. †
(s)10.08	Form of Restricted Stock Agreement for Non-Employee Directors. †
(s)10.9	Form of Restricted Stock Agreement for Employees. †
(s)10.10	Form of Non-Statutory Stock Option Agreement. †
(t)10.11	Offer letter to John K. Stipancich. †
(u)10.12	Form of director and officer indemnification agreement. †
(v)10.13	2016 Incentive Plan. †
(w)10.14	Amendment No. 1 to the 2016 Incentive Plan.†
(x)10.15	Form of Cash Settled Restricted Stock Unit Award Agreement for Non-US Employees, under the 2016 Incentive Plan.
(y)10.16	Form of Non-Statutory Stock Option Agreement, under the 2016 Incentive Plan.†

(z)	10.17	Form of Restricted Stock Award Agreement, under the 2016 Incentive Plan.†
(aa)	10.18	Form of Performance Based Restricted Stock Award Agreement, under the 2016 Incentive Plan.†
(bb)	10.19	Director Compensation Plan, under 2016 Incentive Plan. †
	10.20	Form of Restricted Stock Unit Award Agreement for Non-Employee Directors, under the 2016 Incentive Plan (included in Exhibit 10.19).
(cc)	10.21	First Amendment to the Roper Technologies, Inc. Director Compensation Plan.
(dd)	10.22	Second Amendment to the Roper Technologies, Inc. Director Compensation Plan.
(ee)	10.23	Offer Letter to Neil Hunn. †
(ee)	10.24	Offer Letter to Robert Crisci. †
(ff)	10.25	Long-Term Incentive Opportunity Agreement for Neil Hunn. †
(gg)	10.26	Retirement Agreement and General Release, dated February 1, 2019, by and between the Company and Paul Soni. †
	21.1	List of Subsidiaries, filed herewith.
	23.1	Consent of Independent Registered Public Accountants, filed herewith.
	31.1	Rule 13a-14(a)/15d-14(a) Certification of Chief Executive Officer, filed herewith.
	31.2	Rule 13a-14(a)/15d-14(a) Certification of Chief Financial Officer, filed herewith.
	32.1	Section 1350 Certification of Chief Executive and Chief Financial Officers, filed herewith.
101	INS	XBRL Instance Document, furnished herewith.
101	SCH	XBRL Taxonomy Extension Schema Document, furnished herewith.
101	CAL	XBRL Taxonomy Extension Calculation Linkbase Document, furnished herewith.
101	DEF	XBRL Taxonomy Extension Definition Linkbase Document, furnished herewith.
101	LAB	XBRL Taxonomy Extension Label Linkbase Document, furnished herewith.
101	PRE	XBRL Taxonomy Extension Presentation Linkbase Document, furnished herewith.
	104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).
	a)	Incorporated herein by reference to Exhibit 2.1 to the Roper Technologies, Inc. Current Report on Form 8-K filed August 19, 2019 (file no. 1-12273).
	b)	Incorporated herein by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed on April 24, 2015 (file no. 1-12273).
	c)	Incorporated herein by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed June 8, 2018 (file no. 1-12273).
	d)	Incorporated herein by reference to Exhibit 4.2 to the Company's Quarterly Report on Form 10-Q filed on November 7, 2008 (file no. 1-12273).
	e)	Incorporated herein by reference to Exhibit 4.1 to the Registration Statement on Form S-3/ASR filed November 26, 2018 (file no. 333-228532).
	f)	Incorporated herein by reference to Exhibit 4.2 to the Registration Statement on Form S-3/ASR filed November 25, 2015 (file no. 333-208200).
	g)	Incorporated herein by reference to Exhibit 4.1 to the Roper Technologies, Inc. Current Report on Form 8-K filed August 28, 2018 (file no. 1-12273).
	h)	Incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed November 21, 2012 (file no. 1-12273).
	i)	Incorporated herein by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed December 7, 2015 (file no. 1-12273).
	j)	Incorporated herein by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed December 19, 2016 (file no. 1-12273).
	k)	Incorporated herein by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed August 26, 2019 (file no. 1-12273).
	l)	Incorporated herein by reference to Exhibit 10.04 to the Company's Quarterly Report on Form 10-Q filed August 31, 1999 (file no. 1-12273).
	m)	Incorporated herein by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed March 5, 2017. (file no. 1-12273).
	n)	Incorporated herein by reference to Exhibit 10.06 to the Company's Annual Report on Form 10-K filed March 2, 2009 (file no. 1-12273).
	o)	Incorporated herein by reference to Exhibit 10.07 to the Company's Annual Report on Form 10-K filed March 2, 2009 (file no. 1-12273).
	p)	Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed September 23, 2016 (file no. 1-12273).
	q)	Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed December 7, 2016 (file no. 1-12273).
	r)	Incorporated herein by reference to Appendix A to the Company's Definitive Proxy Statement on Schedule 14A filed April 30, 2012 (file no. 1-12273).
	s)	Incorporated herein by reference to Exhibits 10.2, 10.3 and 10.4 to the Company's Current Report on Form 8-K filed December 6, 2006 (file no. 1-12273).
	t)	Incorporated herein by reference to Exhibit 10.17 to the Company's Annual Report on Form 10-K filed on February 27, 2017 (file no. 1-12273).
	u)	Incorporated herein by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed November 5, 2018 (file no. 1-12273).
	v)	Incorporated by reference to Appendix B to the Company's Definitive Proxy Statement on Schedule 14A filed April 26, 2016 (file no. 1-12273).
	w)	Incorporated herein by reference to Exhibit 10.20 to the Company's Annual Report on Form 10-K filed on February 27, 2017 (file

- no. 1-12273).
- x) Incorporated herein by reference to Exhibit 10.21 to the Company's Annual Report on Form 10-K filed on February 27, 2017 (file no. 1-12273).
- y) Incorporated herein by reference to Exhibit 10.16 to the Company's Annual Report on Form 10-K filed on February 25, 2019 (file no. 1-12273).
- z) Incorporated herein by reference to Exhibit 10.17 to the Company's Annual Report on Form 10-K filed on February 25, 2019 (file no. 1-12273).
- aa) Incorporated herein by reference to Exhibit 10.18 to the Company's Annual Report on Form 10-K filed on February 25, 2019 (file no. 1-12273).
- bb) Incorporated by reference to Exhibit 10.2 to the Company's Form 10-Q filed August 5, 2016 (file no. 1-12273).
- cc) Incorporated by reference to Exhibit 10.1 to the Company's Form 10-Q filed May 4, 2018 (file no. 1-12273).
- dd) Incorporated by reference to Exhibit 10.1 to the Company's Form 10-Q filed August 2, 2019 (file no. 1-12273).
- ee) Incorporated herein by reference to Exhibits 10.22 and 10.23 to the Company's Annual Report on Form 10-K filed on February 23, 2018 (file no. 1-12273).
- ff) Incorporated herein by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed November 25, 2019 (file no. 1-12273).
- gg) Incorporated herein by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 1, 2019 (file no. 1-12273).
- † Management contract or compensatory plan or arrangement.

ITEM 16. FORM 10-K SUMMARY

None

Signatures

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

ROPER TECHNOLOGIES, INC.
(Registrant)

By: /S/ L. Neil Hunn February 28, 2020
L. Neil Hunn, President and Chief Executive Officer

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

<u>/S/ L. NEIL HUNN</u>	President and Chief Executive Officer	
L. Neil Hunn	(Principal Executive Officer)	February 28, 2020
<u>/S/ ROBERT C. CRISCI</u>	Executive Vice President and Chief Financial Officer	
Robert C. Crisci	(Principal Financial Officer)	February 28, 2020
<u>/S/ JASON P. CONLEY</u>	Vice President and Controller	
Jason P. Conley	(Principal Accounting Officer)	February 28, 2020
<u>/S/ WILBUR J. PREZZANO</u>	Chairman of the Board of Directors	
Wilbur J. Prezzano		February 28, 2020
<u>/S/ SHELLYE L. ARCHAMBEAU</u>	Director	
Shellye L. Archambeau		February 28, 2020
<u>/S/ AMY WOODS BRINKLEY</u>	Director	
Amy Woods Brinkley		February 28, 2020
<u>/S/ JOHN F. FORT, III</u>	Director	
John F. Fort, III		February 28, 2020
<u>/S/ ROBERT D. JOHNSON</u>	Director	
Robert D. Johnson		February 28, 2020
<u>/S/ ROBERT E. KNOWLING</u>	Director	
Robert E. Knowling		February 28, 2020
<u>/S/ LAURA G. THATCHER</u>	Director	
Laura G. Thatcher		February 28, 2020
<u>/S/ RICHARD F. WALLMAN</u>	Director	
Richard F. Wallman		February 28, 2020
<u>/S/ CHRISTOPHER WRIGHT</u>	Director	
Christopher Wright		February 28, 2020

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

As of February 28, 2020, Roper Technologies, Inc. (the “company,” “we,” or “our”) has one class of securities, our common stock, registered under Section 12 of the Securities Exchange Act of 1934, as amended.

DESCRIPTION OF COMMON STOCK

The description of our common stock is a summary and does not purport to be complete. It is subject to and qualified in its entirety by reference to our restated certificate of incorporation, as amended (“Certificate of Incorporation”) and amended and restated by-laws (“By-laws”), each of which are incorporated by reference as an exhibit to the Annual Report on Form 10-K of which this Exhibit 4.17 is a part. We encourage you to read our Articles of Incorporation, our By-laws and the applicable provisions of the Delaware General Corporation Law (“DGCL”) for additional information.

Authorized Capital Stock

Our authorized capital stock consists of 350,000,000 shares of common stock, par value \$0.01 per share, and 1,000,000 shares of preferred stock, par value \$0.01 per share.

Common Stock

Voting. Each holder of shares of our common stock is entitled to one vote on each matter properly submitted to a vote of our stockholders. Holders of shares of our common stock do not have cumulative voting rights.

Dividend Rights. Holders of shares of our common stock may receive dividends when declared by our board of directors out of our funds that we can legally use to pay dividends. We may pay dividends in cash, stock or other property. In certain cases, holders of common stock may not receive dividends until we have satisfied our obligations to holders of any outstanding preferred stock.

Liquidation. In the event of a liquidation, dissolution or winding up of our affairs, whether voluntary or involuntary, after payment of our liabilities and obligations to creditors, our remaining assets will be distributed ratably among the holders of shares of our common stock on a per share basis. If we have any preferred stock outstanding at such time, holders of shares of our preferred stock may be entitled to distribution and/or liquidation preferences. In either such case, we will need to pay the applicable distribution to the holders of our preferred stock before distributions are paid to the holders of our common stock.

Rights and Preferences. Our common stock has no preemptive, redemption, conversion, sinking fund, or subscription rights. The rights, powers, preferences and privileges of holders of our common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Listing. Our common stock is listed on the New York Stock Exchange (NYSE) under the symbol “ROP.”

Transfer agent and registrar. The transfer agent and registrar for the common stock is Computershare Trust Company, N.A.

Fully Paid. All of our outstanding shares of common stock are fully paid and nonassessable, which means that the full purchase price for the outstanding shares of our common stock has been paid and the holders of such shares will not be assessed any additional monies for such shares.

Certain Anti-Takeover Effects of Delaware Law

General. Certain provisions of our Certificate of Incorporation, By-laws and applicable law may make it less likely that our management would be changed or someone would acquire our company without the consent of our board of directors. These provisions may delay, deter or prevent tender offers or takeover attempts that stockholders may believe are in their best interests, including tender offers or takeover attempts that might allow stockholders to receive a premium over the market price of their common stock.

Preferred Stock. Under our Certificate of Incorporation, our board of directors can at any time, and without stockholder approval, issue one or more new series of preferred stock. In some cases, the issuance of preferred stock without stockholder approval could discourage or make more difficult attempts to take control of our company through a merger, tender offer, proxy contest or otherwise. Preferred stock with special voting rights or other features issued to persons favoring our management could stop a takeover by preventing the person trying to take control of our company from acquiring enough shares necessary to take control.

Proposal and Nominating Procedures; Proxy Access. Stockholders can propose that business be considered at an annual meeting of stockholders, and, in addition to our board of directors, can nominate candidates for our board of directors. However, a stockholder must follow the advance notice procedures described in Section 1.08 of our By-laws. In general, a stockholder must submit a written notice of the proposal and the stockholder's interest in the proposal, or of the nomination, to our corporate secretary at least 90 days and at most 120 days before the first anniversary date of the annual meeting for the preceding year. In addition to the proposal and director nomination process described above, our By-laws permit a shareholder, or a group of up to 20 shareholders, that has owned at least 3% of our outstanding common stock continuously for at least three years to nominate and include in our proxy materials up to the greater of two directors or 20% of the number of our directors then in office, provided that the shareholders and the nominees satisfy the requirements specified in the By-laws.

Removal of Directors; Vacancies. Any director may be removed from office at any time, with or without cause, only by the affirmative vote of the holders of at least a majority of the voting power of all of the shares of the corporation entitled to vote for the election of directors. Our By-laws further provide that only our board of directors may fill vacant directorships, except in limited circumstances.

Elimination of Stockholder Action through Written Consent. Our Certificate of Incorporation provides that stockholder action can be taken only at an annual or special meeting of stockholders and cannot be taken by written consent in lieu of a meeting.

Elimination of the Ability to Call Special Meetings. Our By-laws provide that special meetings of our stockholders can only be called by order of the board of directors or the executive committee. Stockholders are not authorized to call a special meeting or to require our board of directors to call a special meeting.

Amendment of By-laws. Under our Certificate of Incorporation and By-laws, our board of directors can adopt, amend or repeal the By-laws by a majority vote of the directors then in office. Our stockholders also have the power to amend or repeal our By-laws at any meeting at which a quorum is present by a vote of two-thirds of the number of shares of stock entitled to vote present in person or by proxy at such meeting.

Business Combination Statute. We are subject to Section 203 of the DGCL. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in various "business combination" transactions with any interested stockholder for a period of three years following the date of the transactions in which the person became an interested stockholder, unless:

- the transaction is approved by the board of directors prior to the date the interested stockholder obtained such status;
- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced; or
- on or subsequent to such date the business combination is approved by the board and authorized at an annual or special meeting of stockholders by the affirmative vote of at least 66 2/3% of the outstanding voting stock which is not owned by the interested stockholder.

A "business combination" is defined to include mergers, asset sales, and other transactions resulting in financial benefit to a stockholder. In general, an "interested stockholder" is a person who, together with affiliates and associates, owns (or within three years, did own) 15% or more of a corporation's voting stock. The statute could prohibit or delay mergers or other takeover or change in control attempts with respect to our company and, accordingly, may discourage attempts to acquire us even though such a transaction may offer our stockholders the opportunity to sell their stock at a price above the prevailing market price.

Name of Subsidiary	Jurisdiction of Incorporation/Organization
3089554 Nova Scotia ULC	Canada
AC Analytical Controls B.V.	Netherlands
AC Analytical Controls Holding B.V.	Netherlands
AC Analytical Controls Services B.V.	Netherlands
Acumen PM, LLC	Texas
Aderant Canada Company	Canada
Aderant Case Management, LLC	Delaware
Aderant CM, LLC	Delaware
Aderant CompuLaw, LLC	Delaware
Aderant CRM, LLC	Delaware
Aderant DoD, LLC	Delaware
Aderant Enterprise Holdings, Inc.	Delaware
Aderant FM, LLC	Delaware
Aderant Holdings, Inc.	Delaware
Aderant Imaging, LLC	Delaware
Aderant International Holdings, Inc.	Delaware
Aderant Legal Holdings, Inc.	Delaware
Aderant Legal Holdings (AUS) Pty Ltd	Australia
Aderant Legal Holdings (NZ) ULC	New Zealand
Aderant Legal (UK) Limited	United Kingdom
Aderant North America, Inc.	Florida
Aderant Parent Holdings, Inc.	Delaware
Aderant RainMaker, LLC	Delaware
Aderant Redwood, LLC	Delaware
Advanced Sensors Limited	United Kingdom
Alpha Holdings of Delaware I LLC	Delaware
Alpha Holdings of Delaware II LLC	Delaware
Alpha Technologies B.V.	Netherlands
Alpha Technologies GmbH	Germany
Alpha Technologies Japan LLC	Delaware
Alpha Technologies Services LLC	Delaware
Alpha Technologies U.K.	United Kingdom
Alpha Technologies, s.r.o.	Czech Republic
Alpha Trust Corporation	Delaware
Alpha UK Holdings LLC	Delaware
Amot Controls Corporation	Delaware
Amot Controls GmbH	Germany
Amot/Metrix Investment Company, Inc.	Delaware
Amphire Solutions, Inc.	Delaware
Amtech Systems (Hong Kong) Limited	Hong Kong
Amtech Systems, LLC	Delaware
Amtech World Corporation	Delaware
Aplifi, Inc.	Delaware
Ascension Technology Corporation	Delaware

Atlantic Health Partners, Inc.	Delaware
Atlas Healthcare Software India Private Limited	India
Avitru, LLC	Utah
Axium Holdco, Inc.	Delaware
CBORD Holdings Corp.	Delaware
Centurion Research Solutions, LLC	Virginia
Civco Holding, Inc.	Delaware
Civco Medical Instruments Co., Inc.	Iowa
CIVCO Medical Solutions B.V.	Netherlands
Clinisys Group Limited	United Kingdom
Clinisys Scotland Limited	United Kingdom
Clinisys Solutions Limited	United Kingdom
Compressor Controls (Beijing) Corporation Ltd.	China
Compressor Controls Corporation	Iowa
Compressor Controls Corporation B.V.	Netherlands
Compressor Controls Corporation Middle East	Delaware
Compressor Controls Corporation S.r.l.	Italy
Compressor Controls Mauritius Ltd.	Mauritius
Compressor Controls Pty Ltd.	Australia
Cointec Ingenieros y Consultores, S.L.	Spain
ConstructConnect, Inc.	Delaware
ConstructConnect Canada, Inc.	Canada
Cornell Pump Company	Delaware
C/S Solutions, Inc.	California
DAP Technologies LTD	Canada
Dash I, Inc.	Delaware
DAT Solutions, LLC	Delaware
Data Innovations LLC	Delaware
Data Innovations Canada Ltd.	Canada
Data Innovations Cooperatief U.A.	Netherlands
Data Innovations Europe S.A.	Belgium
Data Innovations Latin America Ltda	Brazil
Dawning Technologies, LLC	Delaware
DCMH Group Holdings, Inc.	Delaware
DCMH Group Holdings, LLC	Delaware
DCMH Holdings, Inc.	Delaware
Deltek Ajera Inc.	Oregon
Deltek Asia Pacific (HK) Limited	Hong Kong
Deltek Australia Pty Ltd.	Australia
Deltek Danmark A/S	Denmark
Deltek France SAS	France
Deltek GB Limited	United Kingdom
Deltek GmbH	Germany
Deltek, Inc.	Delaware
Deltek Nederland B.V.	Netherlands
Deltek Netherlands B.V.	Netherlands

Deltek Norge AS	Norway
Deltek Systems (Canada), Inc.	Canada
Deltek Systems (Colorado) Inc.	Wyoming
Deltek Systems (Philippines) Ltd.	Virginia
Deltek Sverige AB	Sweden
Deltek WST LLC	Texas
DI Acquisition Subsidiary, Inc.	Delaware
DI Dutch Holdings LLC	Delaware
DI Hong Kong Limited	Hong Kong
Dominion I, Inc.	Delaware
Dynamic Instruments, Inc.	California
Dynisco Enterprises GmbH	Germany
Dynisco Enterprises, LLC	Delaware
Dynisco Europe GmbH	Germany
Dynisco Holding GmbH	Germany
Dynisco Hong Kong Holdings, Limited	Hong Kong
Dynisco Instruments LLC	Delaware
Dynisco Instruments S.a.r.l.	France
Dynisco LLC	Delaware
Dynisco Parent, Inc.	Delaware
Dynisco S.r.l.	Italy
Dynisco Shanghai Sensor and Instrument Co., Ltd.	China
Dynisco –Viatran (M) Sdn Bhd	Malaysia
Dynisco Viatran LLC	Delaware
Dynisco-Viatran Instrument Sdn Bhd	Malaysia
Fluid Metering, Inc.	Delaware
FMS Purchasing & Services, Inc.	Florida
Foodlink Holdings, Inc.	California
Foodlink IT India Private Limited	India
FSI Holdings, Inc.	Virginia
FTI Flow Technology, Inc.	Delaware
GeneInsight, Inc.	Delaware
Getloaded Corporation	Delaware
Handshake Software, Inc.	Georgia
Hansco Automatisering B.V.	Netherlands
Hansen Technologies Corporation	Illinois
Hansen Technologies Europe GmbH	Germany
Harbour Holding Corp.	Delaware
Hardy Process Solutions	California
Horizon Software International, LLC	Georgia
HRsmart Canada Inc.	Canada
HRsmart Czech Republic	Czech Republic
HRsmart France SAS	France
HRsmart Germany GmbH	Germany
HRsmart, Inc.	Delaware
HRsmart International	Cayman Islands

HRsmart International Holdings LLC	Texas
HRsmart Mexico	Mexico
HRsmart SA (Pty) Ltd.	South Africa
HRsmart Talent Management Solutions Europe Limited	United Kingdom
HRsmart Ventures LLC	Texas
Innovative Product Achievements, LLC	Delaware
Inovonics Corporation	Colorado
INPUT, Inc.	Delaware
Instill Corporation	Delaware
Intellitrans Canada Ltd.	Canada
IntelliTrans Limited	United Kingdom
Intellitrans Sweden AB	Sweden
Intellitrans, LLC	Delaware
IPA Acquisition Subsidiary, Inc.	Delaware
iPipeline Co., Ltd.	Japan
iPipeline Canada Inc	Quebec
iPipeline, Inc	Delaware
iPipeline Holdings, Inc	Delaware
iPipeline Limited	United Kingdom
ISL Finance SAS	France
ISL Holding, SAS	France
ISL Scientifique de Laboratoire - ISL, S.A.S.	France
iSqFt Holdings, Inc.	Delaware
iSqFt Parent Corporation	Delaware
iSqFt Sub, Inc.	Delaware
IT Canada Holdings, LLC	Delaware
iTradeNetwork, Inc.	Delaware
Job Access LTDA	Brazil
K/S Roper Holding	Denmark
K/S Roper Investments	Denmark
Laser App, Inc.	Delaware
Link Logistics Holding LLC	Delaware
Loadlink Technologies Corporation	Canada
Logitech Limited	United Kingdom
Managed Health Care Associates, Inc.	Delaware
Marumoto Struers K.K.	Japan
MED Professional Services, LLC	Delaware
Media Cybernetics, Inc.	Delaware
Medical Information Professional Systems GmbH	Germany
Medical Information Professional Systems NV	Belgium
Medina Acquisition LLC	Delaware
MEDTEC, Inc.	Iowa
Metrix Instrument Co., L.P.	Delaware
MHA Long Term Care Network, Inc.	Delaware
MIPS Austria GesmbH	Austria
MIPS CZ s.r.o	Czech Republic

MIPS Deutschland GmbH & Co. KG	Germany
MIPS Deutschland Holding GmbH	Germany
MIPS France Sarl	France
MIPS Nederland B.V.	Netherlands
MIPS Schweiz AG	Switzerland
MIPS Software Iberica SL	Spain
MPR Readers Inc.	Delaware
mySBX Corporation	Delaware
Navigator Group Purchasing, Inc.	Tennessee
NDI Europe GmbH	Germany
Neptune Technology Group (Canada) Co.	Canada
Neptune Technology Group Inc.	Delaware
Neptune Technology Group Mexico S.de R.L. de C.V.	Mexico
Neptune Technology Group Mexico Services S. de R.L. de C.V.	Mexico
Neptune Technology Group Services Inc.	Delaware
Nippon Roper K.K.	Japan
Northern Digital Inc.	Canada
Off-Campus Advantage, LLC	Delaware
Omega Legal Systems, Inc.	Arizona
PAC Denmark ApS	Netherlands
PAC GmbH	Germany
PAC Instruments Asia PTE. Ltd.	Singapore
PAC Instruments (Thailand) Company Limited	Thailand
PAC (Shanghai) Co. Ltd.	China
PB Bidco Limited	United Kingdom
PB Holdco Limited	United Kingdom
PB Midco Limited	United Kingdom
PB Topco Limited	United Kingdom
Petroleum Analyzer Company L.P.	Delaware
PGP UK Limited	Scotland
Phase Analyzer Company Ltd.	Canada
PowerPlan Canada ULC	Canada
PowerPlan Holdings Inc.	Delaware
PowerPlan Inc.	Delaware
PowerPlan Intermediate Holdings Inc.	Delaware
PowerPlan Operations ANZ Pty Ltd	Australia
PowerPlan Operations Ltd.	United Kingdom
Project Cobalt Acquisition Corp	Canada
Project Diamond Intermediate Holdings Corporation	Delaware
Project Symbol Holding Corporation	Delaware
Project Torque Intermediate Holdings Inc.	Delaware
QSC 1208 Limited	United Kingdom
QSC 1209 Limited	United Kingdom
Rebate Tracking Group, LLC	Florida
Resonant Software, Inc.	Delaware
RF IDEas, Inc.	Delaware

RI Marketing India Private Limited	India
RIL Holding Limited	United Kingdom
RMT, Inc.	Arizona
Roda Deaco Valve Inc.	Canada
Roper Brasil Comercio E Promocao De Produtos E Servicos LTDA	Brazil
Roper Canada Holdings, Inc.	Canada
Roper Canada Holdings LP	Canada
Roper Canada UK Limited	United Kingdom
Roper Denmark UK Limited	United Kingdom
Roper Engineering s.r.o.	Czech Republic
Roper Europe GmbH	Germany
Roper Germany GmbH	Germany
Roper Germany GmbH & Co. KG	Germany
Roper GM Denmark Holdings ApS	Denmark
Roper Holdings Limited	United Kingdom
Roper Holdings, Inc.	Delaware
Roper IH LLC	Delaware
Roper Industrial Products Investment Company	Iowa
Roper Industries, Inc.	Delaware
Roper Industries Denmark ApS	Denmark
Roper Industries Deutschland GmbH	Germany
Roper Industries L.P.	Canada
Roper Industries Limited	United Kingdom
Roper Industries Manufacturing (Shanghai) Co., Ltd.	China
Roper Industries Mauritius Ltd.	Mauritius
Roper Industries UK Limited	United Kingdom
Roper International Holding, Inc.	Delaware
Roper International Holding Limited	United Kingdom
Roper International Holding SCS	Luxembourg
Roper LLC	Russian Federation
Roper Luxembourg Finance S.a.r.l.	Luxembourg
Roper Luxembourg Holdings S.a.r.l.	Luxembourg
Roper Luxembourg S.a.r.l.	Luxembourg
Roper Middle East Ltd.	Dubai (FZE)
Roper NL1 UK Limited	United Kingdom
Roper NL2 UK Limited	United Kingdom
Roper Pte. Ltd.	Singapore
Roper Pump Company	Delaware
Roper Scientific B.V.	Netherlands
Roper Scientific SAS	France
Roper Scot LP	United Kingdom
Roper Southeast Asia LLC	Delaware
Roper Swiss Finance GmbH	Switzerland
Roper UK Investments Limited	United Kingdom
Roper UK, Ltd.	United Kingdom
Roper-Mex, L.P.	Delaware

Ropintassco 1, LLC	Delaware
Ropintassco 2, LLC	Delaware
Ropintassco 3, LLC	Delaware
Ropintassco 4, LLC	Delaware
Ropintassco 5, LLC	Delaware
Ropintassco 6, LLC	Delaware
Ropintassco 7, LLC	Delaware
Ropintassco Holdings, L.P.	Delaware
RT Merger Sub, Inc.	Delaware
Shanghai Roper Industries Trading Co., Ltd.	China
SHP Group Holdings, Inc.	Delaware
Sinmed Holding International B.V.	Netherlands
SIRA, LLC	Delaware
Societe de Distribution de Logiciels Medicaux	France
SoftWriters, Inc.	Delaware
Softwriters Holdings, Inc.	Delaware
Sohnar Pty Ltd	Australia
Star Purchasing Services, LLC	Wisconsin
Strata Acquisition Subsidiary, Inc.	Delaware
Strata Decision Technology Holdings LLC	Delaware
Strata Decision Technology LLC	Illinois
Strata Parallel II Inc.	Delaware
Strategic Healthcare Programs Blocker LLC	Delaware
Strategic Healthcare Programs Blocker 2, Inc.	Delaware
Strategic Healthcare Programs, L.L.C.	Delaware
Strategic Healthcare Programs Holdings, LLC	Delaware
Struers (Shanghai) International Trading Ltd.	China
Struers A/S	Denmark
Struers GmbH	Germany
Struers Inc.	Delaware
Struers Limited	United Kingdom
Struers Limited	Canada
Struers SAS	France
Student Advantage, LLC	Delaware
Sunquest Europe Limited	United Kingdom
Sunquest Holdings, Inc.	Delaware
Sunquest Information Systems (Europe) Limited	United Kingdom
Sunquest Information Systems (International) Limited	United Kingdom
Sunquest Information Systems Canada, Inc.	Canada
Sunquest Information Systems, Inc.	Pennsylvania
Sunquest Information Systems Pty Ltd	Australia
Taupo Holdings, Inc.	Delaware
Technolog Group Limited	United Kingdom
Technolog Holdings Ltd.	United Kingdom
Technolog Limited	United Kingdom
Technolog SARL	France

The CBORD Group, Inc.	Delaware
The Foundry Bidco Limited	United Kingdom
The Foundry Bidco No.2 Limited	United Kingdom
The Foundry Holdco Limited	United Kingdom
The Foundry Holdings Limited	United Kingdom
The Foundry Intermediate Holdings Limited	United Kingdom
The Foundry Midco 3 Limited	United Kingdom
The Foundry Midco No 1 Limited	United Kingdom
The Foundry Midco No 2 Limited	United Kingdom
The Foundry Topco Limited	United Kingdom
The Foundry Topco No.2 Limited	United Kingdom
The Foundry USCo, Inc.	Delaware
The Foundry Visionmongers Ltd.	United Kingdom
The Tidewater Healthcare Shared Services Group, Inc.	Pennsylvania
The Washington Management Group, Inc.	District of Columbia
TLP Holdings, LLC	Delaware
Torque Acquisition Holdco Inc.	Delaware
Transcore Atlantic, Inc.	Delaware
Transcore CNUS, Inc.	Delaware
Transcore Holdings, Inc.	Delaware
Transcore ITS, LLC	Delaware
Transcore Nova Scotia Corporation	Canada
Transcore Partners, LLC	Delaware
Transcore, LP	Delaware
Trinity Integrated Systems Limited	United Kingdom
UHF Purchasing Services, LLC	Delaware
Union Square Software Limited	United Kingdom
Union Square Software (International) Limited	United Kingdom
Union Square Software Pty	Australia
Union Square Software Inc.	Canada
Uson L.P.	Delaware
Uson Limited	United Kingdom
Utilitec Limited	United Kingdom
Utilitec Services Limited	United Kingdom
Utility Data Services Limited	United Kingdom
Verathon Holdings (Delaware) Inc.	Delaware
Verathon Inc.	Washington
Verathon Medical (Australia) Pty Limited	Australia
Verathon Medical (Canada) ULC	Canada
Verathon Medical (Europe) B.V.	Netherlands
Verathon Medical (France) SARL	France
Verathon Medical (Hong Kong) Limited	Hong Kong
Verathon Medical (Japan) K.K.	Japan
Verathon Medical (UK) Ltd.	United Kingdom
ViaStar Services, LP	Texas
Viatran Corporation	New York

Walter Herzog GmbH	Germany
WorkBook APAC Ltd.	Vietnam
Workbook Software A/S	Denmark
Zetec (Shanghai) Co., Ltd.	China
Zetec France	France
Zetec Korea, Inc.	Delaware
Zetec Rental LLC	Delaware
Zetec Services, Inc.	Delaware
Zetec, Inc.	Washington

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-228532) and Form S-8 (Nos. 333-211671, 333-135700, 333-35666, 333-35672, 333-36897, and 333-105920) of Roper Technologies, Inc. of our report dated February 28, 2020 relating to the financial statements, financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/S/ PricewaterhouseCoopers LLP
Tampa, Florida
February 28, 2020

I, L. Neil Hunn, certify that:

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

Date: February 28, 2020

/S/ L. Neil Hunn

L. Neil Hunn

President and Chief Executive Officer

(Principal Executive Officer)

I, Robert C. Crisci, certify that:

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

Date: February 28, 2020

/s/ Robert C. Crisci

Robert C. Crisci

Executive Vice President and Chief Financial Officer

(Principal Financial Officer)

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Roper Technologies, Inc. (the "Company") on Form 10-K for the year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), L. Neil Hunn, Chief Executive Officer of the Company, and Robert C. Crisci, Chief Financial Officer of the Company, each hereby certifies, pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to the best of his knowledge that:

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

Date: February 28, 2020

/S/ L. Neil Hunn

L. Neil Hunn

President and Chief Executive Officer

(Principal Executive Officer)

/S/ Robert C. Crisci

Robert C. Crisci

Executive Vice President and Chief Financial Officer

(Principal Financial Officer)

This certification is being made for the exclusive purpose of compliance of the Company with the requirements of Section 906 of the Sarbanes-Oxley Act of 2002, and may not be disclosed, distributed or used by any person or for any reason other than specifically required by law.