

**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

or

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 0-23081

FARO TECHNOLOGIES, INC.

(Exact name of Registrant as Specified in Its Charter)

Florida
(State or Other Jurisdiction
of Incorporation or Organization)

59-3157093
(I.R.S. Employer
Identification Number)

250 Technology Park,
(Address of Principal Executive Offices)

Lake Mary, Florida

32746
(Zip Code)

Registrant's telephone number, including area code: (407) 333-9911

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbols(s)	Name of each exchange on which registered
Common Stock, par value \$.001	FARO	The Nasdaq Stock Market LLC

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

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

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

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

[Table of Contents](#)

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 (§ 232.405 of this chapter) 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, a smaller reporting company, or an emerging growth company. See the definitions of “large accelerated filer,” “accelerated filer,” “smaller reporting company,” and “emerging growth company” in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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

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

The aggregate market value of the Registrant’s common stock held by non-affiliates of the Registrant on June 28, 2019 (the last business day of the Registrant’s most recently completed second fiscal quarter) was \$895,727,799 based on the closing price of the Registrant’s common stock on such date on the Nasdaq Global Select Market, and assuming solely for the purposes of this calculation that all directors and executive officers of the Registrant are “affiliates.”

As of February 17, 2020, there were outstanding 17,601,851 shares of the Registrant’s common stock.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant’s proxy statement for the 2020 Annual Meeting of Shareholders are incorporated by reference in Part III of this Annual Report on Form 10-K.

TABLE OF CONTENTS

	<u>Page</u>
<u>PART I</u>	<u>4</u>
Item 1. Business	<u>4</u>
Item 1A. Risk Factors	<u>12</u>
Item 1B. Unresolved Staff Comments	<u>24</u>
Item 2. Properties	<u>25</u>
Item 3. Legal Proceedings	<u>25</u>
Item 4. Mine Safety Disclosures	<u>25</u>
 <u>PART II</u>	 <u>26</u>
Item 5. Market For Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	<u>26</u>
Item 6. Selected Financial Data	<u>28</u>
Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations	<u>29</u>
Item 7A. Quantitative and Qualitative Disclosures About Market Risk	<u>42</u>
Item 8. Financial Statements and Supplementary Data	<u>43</u>
Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	<u>79</u>
Item 9A. Controls and Procedures	<u>80</u>
Item 9B. Other Information	<u>82</u>
 <u>PART III</u>	 <u>83</u>
Item 10. Directors, Executive Officers and Corporate Governance	<u>83</u>
Item 11. Executive Compensation	<u>83</u>
Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	<u>83</u>
Item 13. Certain Relationships and Related Transactions, and Director Independence	<u>83</u>
Item 14. Principal Accountant Fees and Services	<u>83</u>
 <u>PART IV</u>	 <u>84</u>
Item 15. Exhibits, Financial Statement Schedules	<u>84</u>
Item 16. Form 10-K Summary	<u>88</u>

PART I

CAUTIONARY STATEMENTS FOR FORWARD-LOOKING INFORMATION

FARO Technologies, Inc. (“FARO,” the “Company,” “us,” “we” or “our”) has made “forward-looking statements” in this Annual Report on Form 10-K within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. Statements that are not historical facts or that describe our plans, beliefs, goals, intentions, objectives, projections, expectations, assumptions, strategies, or future events are forward-looking statements. In addition, words such as “may,” “might,” “would,” “will,” “will be,” “future,” “strategy,” “believe,” “plan,” “should,” “could,” “seek,” “expect,” “anticipate,” “intend,” “estimate,” “goal,” “objective,” “project,” “forecast,” “target” and similar words identify forward-looking statements.

Forward-looking statements are not guarantees of future performance and are subject to a number of known and unknown risks, uncertainties, and other factors that could cause actual results to differ materially from those expressed or implied by such forward-looking statements. Consequently, undue reliance should not be placed on these forward-looking statements. We do not intend to update any forward-looking statements, whether as a result of new information, future events, or otherwise, unless otherwise required by law. Important factors that could cause actual results to differ materially from those contemplated in such forward-looking statements include, among others, the following:

- an economic downturn in the manufacturing industry or the domestic and international economies in the regions of the world where we operate;
- our inability to further penetrate our customer base and target markets;
- our ability to realize the intended benefits of our undertaking to transition to a company that is reorganized around functions to improve the efficiency of our sales organization and to improve operational effectiveness;
- our inability to successfully execute our new strategic plan and restructuring plan, including but not limited to additional impairment charges and/or higher than expected severance costs and exit costs, and our inability to realize the expected benefits of such plans;
- development by others of new or improved products, processes or technologies that make our products less competitive or obsolete;
- our inability to maintain what we believe to be our technological advantage by developing new products and enhancing our existing products;
- the outcome of the U.S. Government’s review of, or investigation into, our potential overcharging of the U.S. Government under our General Services Administration Federal Supply Schedule contracts, any resulting penalties, damages or sanctions imposed on us and the outcome of any resulting litigation to which we may become a party, loss of future government sales and potential impacts on customer and supplier relationships and our reputation;
- risks associated with our international operations, such as difficulties in staffing and managing foreign operations, increased political and economic instability, compliance with potentially evolving import and export regulations, and the burdens and potential exposure of complying with a wide variety of U.S. and foreign laws and labor practices;
- changes in trade regulation, which result in rising prices of imported steel, steel byproducts, aluminum, and aluminum byproducts used as raw materials in the production of measurement devices, and our ability to pass those costs on to our customers or require our suppliers to absorb such costs;
- changes in foreign regulation, which may result in rising prices of our measurement devices sold as exports to our international customers, our customers’ willingness to absorb incremental import tariffs, and the corresponding impact on our profitability;
- our inability to successfully identify and acquire target companies and achieve expected benefits from, and effectively integrate, acquisitions that are consummated;
- the cyclical nature of the industries of our customers and material adverse changes in our customers’ access to liquidity and capital;
- change in the potential for the computer-aided measurement (“CAM2”) market and the potential adoption rate for our products, which are difficult to quantify and predict;
- our inability to protect our patents and other proprietary rights in the United States and foreign countries;
- our inability to adequately establish and maintain effective internal controls over financial reporting;

- fluctuations in our annual and quarterly operating results and the inability to achieve our financial operating targets as a result of a number of factors including, without limitation (i) litigation and regulatory action brought against us, (ii) quality issues with our products, (iii) excess or obsolete inventory, shrinkage or other inventory losses due to product obsolescence, change in demand for our products, scrap or material price changes, (iv) raw material price fluctuations and other inflationary pressures, (v) expansion of our manufacturing capability, (vi) the size and timing of customer orders, (vii) the amount of time that it takes to fulfill orders and ship our products, (viii) the length of our sales cycle to new customers and the time and expense incurred in further penetrating our existing customer base, (ix) manufacturing inefficiencies associated with new product introductions, (x) costs associated with new product introductions, such as product development, marketing, assembly line start-up costs and low introductory period production volumes, (xi) the timing and market acceptance of new products and product enhancements, (xii) customer order deferrals in anticipation of new products and product enhancements, (xiii) the inability of our sales and marketing programs to achieve their sales targets, (xiv) start-up costs associated with opening new sales offices outside of the United States, (xv) fluctuations in revenue without proportionate adjustments in fixed costs, (xvi) inefficiencies in the management of our inventories and fixed assets, and (xvii) compliance with government regulations including health, safety, and environmental matters;
- changes in gross margin due to a changing mix of products sold and the different gross margins on different products and sales channels;
- changes in applicable laws, rules or regulations, or their interpretation or enforcement, or the enactment of new laws, rules or regulations that apply to our business operations or require us to incur significant expenses for compliance;
- our inability to successfully comply with the requirements of the Restriction of Hazardous Substances (“ROHS2”) Directive and the Waste Electrical and Electronic Equipment (“WEEE”) Directive in the European Union;
- the inability of our products to displace traditional measurement devices and attain broad market acceptance;
- the impact of competitive products and pricing on our current offerings;
- our ability to successfully retain our executive officers and other key personnel;
- delays and disruption in delivery of materials and services from suppliers;
- difficulties in recruiting research and development engineers and application engineers;
- the failure to effectively manage the effects of any future growth;
- the impact of reductions or projected reductions in government spending, or uncertainty regarding future levels of government expenditures, particularly in the defense sector;
- variations in our effective income tax rate, which make it difficult to predict our effective income tax rate on a quarterly and annual basis;
- the loss of key suppliers and the inability to find sufficient alternative suppliers in a reasonable period of time or on commercially reasonable terms;
- the impact of fluctuations in exchange rates;
- the effect of estimates and assumptions with respect to critical accounting policies and the impact of the adoption of recently issued accounting pronouncements;
- the effect of changes in political conditions in the U.S. and other countries in which we operate, including the effect of changes in U.S. trade policies or the United Kingdom’s withdrawal from the European Union, on general market conditions, global trade policies and currency exchange rates;
- the magnitude of increased warranty costs from new product introductions and enhancements to existing products;
- the sufficiency of our plants to meet manufacturing requirements;
- the continuation of our share repurchase program;
- the sufficiency of our working capital and cash flow from operations to fund our long-term liquidity requirements;
- the impact of geographic changes in the manufacturing or sales of our products on our effective income tax rate; and
- our ability to comply with the requirements for favorable income tax rates in foreign jurisdictions.

[Table of Contents](#)

A detailed discussion of these and other risks and uncertainties that could cause actual results and events to differ materially from such forward-looking statements is included throughout this filing and particularly in Part I, Item 1A of this Annual Report on Form 10-K. Moreover, new risks and uncertainties emerge from time to time, and we undertake no obligation to update publicly or review the risks and uncertainties included in this Annual Report on Form 10-K, unless otherwise required by law.

ITEM 1. BUSINESS

FARO was founded in 1982 and re-incorporated in Florida in 1992. Our worldwide headquarters are located at 250 Technology Park, Lake Mary, Florida 32746 and our telephone number is (407) 333-9911.

We are a global technology company that designs, develops, manufactures, markets and supports software driven, three-dimensional (“3D”) measurement and imaging solutions. This technology permits high-precision 3D measurement, imaging and comparison of parts and complex structures within production and quality assurance processes. Our devices are used for inspection of components and assemblies, rapid prototyping, reverse engineering, documenting large volume or structures in 3D, surveying and construction, as well as for investigation and reconstruction of accident sites or crime scenes. We sell the majority of our products through a direct sales force across a broad number of customers in a range of manufacturing, industrial, architecture, surveying, building information modeling, construction, public safety forensics, cultural heritage, and other applications. Our FaroArm[®], FARO ScanArm[®], FARO Laser Tracker[™], FARO Laser Projector, and their companion CAM2[®], BuildIT, and BuildIT Projector software solutions, provide for Computer-Aided Design (“CAD”) based inspection, factory-level statistical process control, high-density surveying, and laser-guided assembly and production. Together, these products integrate the measurement, quality inspection, and reverse engineering functions with CAD and 3D software to improve productivity, enhance product quality, and decrease rework and scrap in the manufacturing process, mainly supporting applications in the automotive, aerospace, metal and machine fabrication and other industrial manufacturing markets. Our FARO Focus and FARO ScanPlan, and their companion FARO SCENE, BuildIT, FARO As-Built[™], and FARO Zone public safety forensics software offerings, are utilized for a wide variety of 3D modeling, documentation and high-density surveying applications primarily in the architecture, engineering and construction (“AEC”) and public safety markets. Our FARO ScanArm[®] and its companion SCENE software also enable a fully digital workflow used to capture real world geometry for the purpose of empowering design, enabling innovation, and speeding up the design cycle.

Since the fourth quarter of 2016, we had operated in five verticals—3D Manufacturing, Construction Building Information Modeling (“Construction BIM”), Public Safety Forensics, 3D Design and Photonics—and had three reporting segments—3D Manufacturing, Construction BIM and Emerging Verticals. As discussed in our Quarterly Report on Form 10-Q for the third quarter of 2019, our new management team, led by our new Chief Executive Officer (“CEO”), formulated and began to implement a new comprehensive strategic plan for our business. As part of our strategic planning process, we identified areas of our business that needed enhanced focus or change in order to improve our efficiency and cost structure. As part of our new strategic plan, we have reassessed and redefined our go-to-market strategy, refocused our marketing engagement with our customers and re-evaluated our hardware product portfolio and have begun to focus on other organizational optimization efforts, including the simplification of our overly complex management structure.

As part of our new strategic plan, and based on the recommendation of our CEO, who is also our Chief Operating Decision Maker (“CODM”), in the fourth quarter of 2019, we eliminated our vertical structure and began reorganizing the Company into a functional structure. Our executive leadership team is now comprised of functional leaders in areas such as sales, marketing, operations, research and development and general and administrative, and resources are allocated to each function at a consolidated unit level. We no longer have separate business units, or segment managers or vertical leaders who report to the CODM with respect to operations, operating results or planning for levels or components below the total Company level. Instead, our CODM now allocates resources and evaluates performance on a Company-wide basis. Based on these changes, commencing with the fourth quarter of 2019, we are now reporting as one reporting segment that develops, manufactures, markets, supports and sells CAD-based quality assurance products integrated with CAD-based inspection and statistical process control software and 3D documentation systems. Our reporting segment sells into a variety of end markets, including automotive, aerospace, metal and machine fabrication, architecture, engineering, construction and public safety.

In addition to the reorganization of the Company’s structure, as part of our strategic planning process, we also evaluated our hardware product portfolio and the operations of certain of our recent acquisitions. As a result of this evaluation, we are simplifying our hardware product portfolio, ceasing to sell certain products and evaluating whether or not we will divest or shut down the related operations.

We performed our annual goodwill and intangible asset impairment test in December 2019 in connection with the preparation of our financial statements for the fourth quarter and year ended December 31, 2019. As a result of this test, we recorded an impairment charge of \$35.2 million in the fourth quarter of 2019, which included \$21.2 million in goodwill, \$10.5 million in intangible assets associated with recent acquisitions, \$1.4 million in intangible assets related to capitalized patents and \$2.1 million in other asset write-downs. See Note 7, “Goodwill” and Note 8, “Intangible Assets” to the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for further information. We also recorded a charge of \$12.8 million in the fourth quarter of 2019, increasing our reserve for excess and obsolete inventory, based on our analysis of our inventory reserves in connection with our strategy to simplify our hardware product portfolio and cease selling certain products.

In addition to the implementation of our new strategic plan, on February 14, 2020, our Board of Directors approved a global restructuring plan (the “Restructuring Plan”), which is intended to support our strategic plan in an effort to improve operating performance and ensure that we are appropriately structured and resourced to deliver sustainable value to our shareholders and customers. Key activities under the Restructuring Plan include a continued focus on efficiency and cost-saving efforts, which includes decreasing total headcount by approximately 500 employees upon the completion of the Restructuring Plan.

These activities are expected to be substantially completed by the end of 2021. We estimate that the Restructuring Plan will reduce gross annual pre-tax expenses by approximately \$40 million, to be realized in the fourth quarter of 2020 on an annualized basis. We estimate that the implementation of the Restructuring Plan will result in pre-tax charges of approximately \$26 million to \$36 million, which are in addition to the pre-tax charges of approximately \$49 million recorded in the fourth quarter of 2019 in connection with the implementation of our new strategic plan. We expect \$18 million to \$22 million of these additional charges to be in the form of cash charges. Actual results, including the costs of the Restructuring Plan, may differ materially from our expectations, resulting in our inability to realize the expected benefits of the Restructuring Plan and our new strategic plan and negatively impacting our ability to execute our future plans and strategies, which could have a material adverse effect on our business, financial condition and results of operations.

Industry Background

We believe four principal forces drive the need for our products and services: 1) the widespread use by manufacturers of CAD in product development, which shortens product cycles; 2) the adoption by manufacturers of quality standards such as Six Sigma and ISO 9001 (and its offshoot QS 9000), which stress the measurement of every step in a manufacturing process to reduce or eliminate defects; 3) the inability of traditional measurement devices to address many manufacturing problems such as throughput, efficiency and accuracy, especially with respect to large components for products such as automobiles, aircraft, heavy-duty construction equipment and factory retrofits; and 4) the growing demand to capture and synthesize large volumes of 3D data for modeling, analysis and simulation.

CAD improves the manufacturing process. The creation of physical products involves the processes of design, engineering, production, and measurement and quality inspection. These basic processes have been profoundly affected by the computer hardware and software revolution that began in the 1980s. CAD software was developed to automate the design process, providing manufacturers with computerized 3D design capability and shortening the time between design changes. Today, most manufacturers use some form of CAD software to create designs and engineering specifications for new products and to quantify and modify designs and specifications for existing products. While manufacturers previously designed their products to remain in production for longer periods of time, current manufacturing practices must accommodate more frequent product introductions and modifications, while satisfying more stringent quality and safety standards. Assembly fixtures and measurement tools must be linked to the CAD design to enable production to keep up with the rate of design change.

Quality standards dictate measurement to reduce defects. QS 9000 is the name given to the Quality System requirements of the automotive industry developed by Fiat Chrysler Automobiles N.V. (formerly Chrysler Corporation), Ford Motor Company, General Motors Company and major truck manufacturers. Companies registered under QS 9000 are considered to have higher standards and better quality products. Six Sigma is a set of quality standards that embodies the principles of total quality management, focused on measuring results and reducing product or service failure rates to 3.4 per million. All aspects of a Six Sigma company’s infrastructure must be analyzed and, if necessary, restructured to increase revenues and raise customer satisfaction levels. The all-encompassing nature of these and other quality standards has resulted in manufacturers measuring every aspect of their processes, including stages of product assembly that may never have been measured before, in part, because of the lack of suitable measurement equipment.

Traditional products do not measure up. A significant aspect of the manufacturing process entails measurement and quality inspection. Historically, manufacturers have measured and inspected products using hand-measurement tools such as scales, calipers, micrometers and plumb lines for simple measuring tasks, test (or check) fixtures for certain large manufactured products, and traditional (or fixed) coordinate measurement machines (“CMMs”) for objects that require higher precision measurement. However, the broader utility of each of these measurement methods is limited.

Although hand-measurement tools are often appropriate for simple geometric measurements, including hole diameters or length and width of a rectangular component, their use for complex part measurements, such as the fender of a car, is limited. Also, these devices do not allow for the measurements to be directly compared electronically to the CAD model of the part. Test fixtures (customized fixed tools used to make comparative measurements of complex production parts to “master parts”) are relatively expensive and must be reworked or discarded each time a dimensional change is made in the part being measured. In addition, these manual measuring devices do not permit the manufacturer to electronically compare the dimensions of an object with its CAD model.

Conventional CMMs are generally large, fixed-base machines that provide very high levels of precision and provide a link to the CAD model of the object being measured. However, fixed-base CMMs require that the object being measured be brought to the CMM and fit within the CMM’s measurement grid. As manufactured subassemblies increase in size and become integrated into even larger assemblies, they become less transportable, thus diminishing the utility of a conventional CMM. Consequently, manufacturers must continue to use hand-measurement tools, or expensive customized test fixtures, to measure large or unconventionally shaped objects. In addition, some parts or assemblies are not easily accessible and cannot be measured using traditional devices.

The market demands 3D data. Various factors contribute to market demand for our products and services. Conventional surveying equipment is limited to single-point measurements and does not have the capacity to capture and analyze large volumes of 3D data. As data requirements for construction, civil engineering and public safety applications become more complex, single-point measurement devices will become increasingly more difficult to utilize in those applications.

Escalating global competition has created a demand for higher quality products with shorter life cycles. Customers require more rapid design, greater control of the manufacturing process, tools to compare components to their CAD specifications, the ability to precisely measure components that cannot be measured or inspected by conventional devices, and the ability to capture and analyze large volumes of 3D data. Moreover, they increasingly require measurement capabilities to be integrated into manufacturing processes and to be available on the factory floor. These changing demands have contributed to the demand for our products and services.

FARO Products

FaroArm®. The FaroArm® is a combination of a portable, articulated measurement arm, a computer, and CAM2® software programs, which are described below under “FARO Software” and are primarily sold to customers in the automotive, aerospace, metal and machine fabrication markets.

- **Articulated Arm** – The articulated arm is comprised of three major joints, each of which may consist of one, two or three axes of motion. The articulated arm is available in a variety of sizes, configurations and precision levels suitable for a broad range of applications. To take a measurement, the operator simply touches the object to be measured with a probe at the end of the arm and presses a button. Data can be captured at either individual points or a series of points. Optical encoders, located at each of the joints of the arm, measure the angles at those joints. This rotational measurement data is transmitted to an on-board controller that converts the arm angles to precise locations in 3D space using “xyz” position coordinates and “ijk” orientation coordinates.

In August 2018, we released the FARO 8-Axis FaroArm® which is a comprehensive solution that combines either the portable Quantum FaroArm®, Quantum ScanArm or Design ScanArm® portfolio products with a functionally integrated, yet physically separate, rotating platform that functions as the 8th axis.

- **Computer** – We pre-install our CAM2® software primarily on either a notebook or desktop-style computer, depending on the customer’s need, and the measurement arm, computer and installed software are sold as a system. We purchase the computers sold with our products from various suppliers.

FARO ScanArm®. The FARO ScanArm® is a FaroArm equipped with a combination of a hard probe (like that in the FaroArm®) and a non-contact laser line probe. This product provides our customers with the ability to measure products without touching them. The ScanArm® is used for contact and non-contact measurement applications, including inspection, cloud-to-CAD comparison, rapid prototyping, reverse engineering and 3D modeling. This product is primarily sold to customers in the automotive, aerospace, metal and machine fabrication markets.

FARO Design ScanArm®2.5C and FARO Prizm™. The FARO Design ScanArm®2.5C is a color-capable, portable lightweight 3D ScanArm. Using the FARO Prizm™ full-color Laser Line Probe with 3D design and modeling software, the FARO Design ScanArm®2.5C delivers high-resolution, color point-cloud data, enabling more insight into object design and creation.

FARO Laser Tracker™. The FARO Laser Tracker™ combines a portable, large-volume laser measurement tool, a computer, and CAM2® software programs, representing a product offering primarily sold to customers in the automotive, aerospace, metal and machine fabrication markets.

- **Laser Tracker Vantage** – The FARO Laser Tracker Vantage utilizes a laser beam for ultra-precise measurement of objects of up to 80 meters. It enables manufacturing, engineering, and quality control professionals to measure and inspect large parts, machine tools and other large objects on-site and in-process.
- **6DoF FARO Vantage Laser Tracker** – Together with the hand-held 6Probe, a fully-integrated hand-held probe, the 6DoF FARO Vantage Laser Tracker expands the capabilities of large volume measurement by allowing users to access hidden, hard-to-reach locations by probing and scanning.
- **Computer** – The FARO Laser Tracker™ includes a notebook or desktop-style computer, depending on the customer's requirements, that includes the pre-installed CAM2® Software.

FARO Laser Projector. The FARO Tracer^M and Tracer^{SI} accurately project a laser line onto a surface or object, providing a virtual template that operators and assemblers can use to quickly and accurately position components. The laser template is created using a 3D CAD model that enables the system to visually project a laser outline of parts, reference points, or areas of interest. The result is a virtual and collaborative 3D template to streamline a wide range of assembly and production applications. This product is primarily sold to customers in the aerospace and AEC markets.

FARO Focus. The FARO Focus laser scanner utilizes laser technology to measure and collect a cloud of data points, allowing for the detailed and precise 3D rendering of an object or an area as large as an industrial facility. This technology is currently used for factory planning, facility life-cycle management, quality control, forensic analysis and capturing large volumes of 3D data. The FARO Focus simplifies modeling, reduces project time and maintains or increases the detail, identifies the colors and measures the dimensions of surrounding structures. The resulting data is used with major CAD systems or our own proprietary FARO SCENE, As-Built™, BuildIT, and FARO Zone, which are described below. This product is primarily sold to customers in the AEC and public safety markets.

FARO ScanPlan. The FARO ScanPlan is a handheld mapper that captures two-dimensional (“2D”) floor plans. The FARO ScanPlan performs real-time capturing and diagramming of as-built floor plans of buildings for threat assessment, pre-incident planning and fire protection engineering. The FARO ScanPlan comes with FARO Zone 2D software to turn any floor plan map into a completed diagram by adding doors, stairs, hazardous materials, notes and dimensions, among others. This product is primarily sold to customers in the AEC and public safety markets.

FARO Software. We provide a family of proprietary CAD-based measurement and laser scanner software used with our measurement and scanning devices.

- **CAM2® 2019** allows customers to complete measurement jobs quickly and gives customers the freedom to measure as required by the application.
- **CAM2 SmartInspect** is our CAM2 solution for measuring geometry and building dimensions. The software allows customers to quickly measure geometric features and report dimensions for control.
- **BuildIT** is a CAD-to-part inspection software that enables quick and easy dimensional verification of manufactured parts and assemblies for tool building, assembly, alignment, process automation, reverse engineering and quality control. BuildIT's advanced analysis and reporting capabilities combine measurement data from multiple sources to produce detailed graphical and textual reports that are used to quickly identify manufacturing and production trends. With both numerical and graphical feedback of real-time deviations, BuildIT allows users to position parts with micrometer accuracy for high-precision assembly and alignment applications.
- **FARO SCENE** software combines ease-of-use, networking, and an enhanced 3D experience to deliver a complete scan processing solution. With SCENE, customers can display, analyze, administer and edit 3D measurements in point clouds.
- **FARO Zone** software makes diagramming and pre-planning easier for law enforcement officers, firefighters and loss control engineers by allowing the users who need to draw site plans or crash or crime scene diagrams to be able to do so in a fast and efficient manner.
- **FARO As-Built™** software products enable and simplify the use of real world objects in CAD applications. Primarily serving the surveying and architecture, engineering and construction spaces, the offering allows the user to integrate 3D laser scan data with CAD environments.

Warranties, Software Maintenance and Services. We warrant our products against defects in design, materials and workmanship for one year. To support our product lines, we also separately sell hardware service plans that typically range from one year to three years, software maintenance renewals that typically range from one year to three years, and comprehensive support, training and technology consulting services to our customers.

Customers

Our sales are diversified across a broad number of over 14,000 customers worldwide in a range of metrology, reverse engineering, factory automation, building information modeling, public safety and other applications. Our metrology, reverse engineering and factory automation applications are purchased primarily by customers in the automotive and aerospace markets and a diverse array of manufacturing customers from small machine shops to large industrial manufacturers. Applications are used by these customers for alignment, part inspection, dimensional analysis, first article inspection, incoming and in-process inspection, machine calibration, non-contact inspection, robot calibration, tool building and setup, and assembly guidance. Our building information modeling applications are purchased primarily by customers in the AEC markets. Applications are used by these customers for as-built documentation, construction monitoring, surveying, asset and facility management, and heritage preservation. Our public safety applications are purchased primarily by law enforcement agencies, private investigators, and forensic experts and are used for capturing environmental or situational scenes, crash and fire scene investigations and environmental safety evaluations. Our ten largest customers by revenue represented an aggregate of approximately 4.0% of our total sales in 2019. No customer represented more than 1.0% of our sales in 2019.

Sales and Marketing

We sell our products worldwide through direct sales and service offices, as well as third-party distributors and resellers. We have direct sales personnel in Australia, Brazil, Canada, China, France, Germany, India, Italy, Japan, Malaysia, Mexico, the Netherlands, Poland, Portugal, Singapore, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey, the United Kingdom, and the United States. Our sales and marketing efforts use a process of integrated lead qualification and sales demonstration. Once a customer opportunity is identified, we employ a team-based sales approach involving inside and outside sales personnel. Each team has the ability to sell multiple product lines. We employ a variety of marketing techniques to promote brand awareness and customer identification. As of December 31, 2019, we employed 804 sales and marketing specialists globally.

Research and Development

We believe that our future success depends, in part, on our ability to maintain what we believe to be our technological leadership, which will require ongoing enhancements of both our hardware and software products and the development of new applications and products that provide 3D measurement and imaging solutions. The field of 3D measurement and imaging continues to expand, and new technologies and applications will be essential to competing in this market. Accordingly, we intend to continue to make substantial investments in the development of new technologies, the commercialization of new products that build on our existing technological base, and the enhancement and development of additional applications for our products.

Our research and development efforts are directed primarily at enhancing the functional adaptability of our current products and developing new and innovative products that respond to specific requirements of the emerging market for 3D measurement and imaging solutions. Research and development activities, especially with respect to new products and technologies, are subject to significant risks, and there can be no assurance that any of our research and development activities will be completed successfully or on schedule, or, if completed, will be commercially accepted.

At December 31, 2019, we employed 242 scientists and technicians in our research and development efforts. Research and development expenses were approximately \$44.2 million in 2019, compared to \$46.1 million in 2018 and \$41.1 million in 2017.

Intellectual Property

We own approximately 640 patents and pending patent applications worldwide, which generally expire on a rolling basis between 2020 and 2042. We also own approximately 83 trademark registrations worldwide, with 4 pending trademark applications.

Our success and ability to maintain a competitive position depends, in large part, on our ability to protect our intellectual property. We rely on a combination of contractual provisions and trade secret laws to protect our proprietary information. However, there can be no assurance that the steps taken by us to protect our trade secrets and proprietary information will be sufficient to prevent misappropriation of our proprietary information or preclude third-party development of similar intellectual property.

Despite our efforts to protect our proprietary rights, unauthorized parties may attempt to copy aspects of our products or to obtain and use information that we regard as proprietary. We intend to vigorously defend our proprietary rights against infringement by third parties. However, policing unauthorized use of our products is difficult, particularly in foreign countries, and we may be unable to determine the extent, if any, to which unauthorized uses of our products exist. In addition, the laws of some foreign countries do not protect our proprietary rights to the same extent as the laws of the United States.

We do not believe that any of our products infringe on the valid, proprietary rights of third parties. There can be no assurance, however, that third parties will not claim infringement by us with respect to current or future products. Such claims, with or without merit, could be time consuming, result in costly litigation, cause product shipment delays or require us to enter into royalty or licensing agreements, which could have a material adverse effect upon our business, operating results and financial condition. In addition, such royalty or licensing agreements, if required, may not be available on terms acceptable to us, if at all.

Manufacturing and Assembly

Manufacturing consists primarily of assembling and integrating components and subassemblies purchased from suppliers into finished products. The primary components, which include machined parts and electronic circuit boards, are produced by subcontractors according to our specifications. Products are assembled, calibrated and tested for accuracy and functionality before shipment. We perform limited in-house circuit board assembly and component part machining. Typically, we enter into purchase commitments for manufacturing components to cover production requirements for 60 to 120 days. We have entered, and may continue to enter, into longer agreements to purchase sufficient inventory to satisfy warranty commitments or to ensure adequate component availability. To date, we have not experienced any significant difficulty in locating and obtaining the materials necessary to fulfill our production schedules.

Our manufacturing, engineering, and design headquarters have been registered to the ISO 9001 standard since July 1998. Semi-annual surveillance audits have documented continuous improvement to this multinational standard. Currently, our manufacturing sites in Lake Mary, Florida; Exton, Pennsylvania; Stuttgart, Germany; Schaffhausen, Switzerland; and Singapore are jointly registered to ISO 9001. Our FARO Laser Tracker™ and FaroArm® products are all registered to ISO 17025:2005. We continue to examine our scope of registration as our business evolves, and we have chosen English as the standard business language for our operations.

Our efforts to register our manufacturing, engineering and design headquarters to the ISO 9001 standard in concert with the ISO 9001:2015 Quality Management System Certification verifies our commitment to quality through an internationally recognized standard. Additionally, we take a global approach to ISO 17025:2005 regarding the recognition of the Competence of Calibration and Testing Laboratories, seeking to have all locations registered with similar scopes of accreditation and capabilities for the products generated and serviced.

We manufacture our FaroArm® and FARO ScanArm® products in our manufacturing facility located in Switzerland for customer orders from Europe, the Middle East and Africa (“EMEA”), in our manufacturing facility located in Singapore for customer orders from the Asia-Pacific region, and in our manufacturing facility located in Florida for customer orders from the Americas. We manufacture our FARO Focus in our manufacturing facilities located in Germany and Switzerland for customer orders from EMEA and the Asia-Pacific region, and in our manufacturing facility located in Pennsylvania for customer orders from the Americas. We manufacture our FARO Laser Tracker™ and our FARO Laser Projector products in our facility located in Pennsylvania. We expect all of our existing manufacturing facilities to have the production capacity necessary to support our volume requirements during 2020.

Competition

Our measurement systems compete in the broad and highly competitive market for measurement devices for manufacturing and industrial applications, which, in addition to portable articulated arms, laser trackers, 3D imaging and laser scanner products, consist of fixed-base CMMs, templates and go/no-go gages, check fixtures, handheld measurement tools, and various categories of surveying equipment. In the FaroArm®, FARO ScanArm®, FARO Laser Tracker™, and FARO Focus product lines, we compete primarily with Hexagon Manufacturing Intelligence, a division of Hexagon AB; Automated Precision, Inc.; Artec Europe, S.a.r.l.; Leica Geosystems AG, a division of Hexagon AB; and Trimble Inc. In the FARO Laser Projector product line, we compete primarily with Virtek Vision International, a division of Gerber Technology LLC. We also compete in these product lines with a number of other smaller companies. We compete on the basis of technical innovation, product performance, quality and price with respect to all of our products.

We will be required to make continued investments in technology and product development to maintain and extend the technological advantage that we believe we currently have over our competition. However, we cannot be certain that our technology or our product development efforts will allow us to successfully compete as the industry evolves. As the market for our measurement systems expands, additional competition may emerge, and our existing and future competitors may commit more resources to the markets in which we participate.

Government Regulation

Our operations are subject to numerous governmental laws and regulations, including those governing antitrust and competition, the environment, collection, recycling, treatment and disposal of covered electronic products and components, import and export of products, currency conversions and repatriation, taxation of foreign earnings, and the use of local employees and suppliers. Our foreign operations are subject to the U.S. Foreign Corrupt Practices Act, or FCPA, and similar foreign anti-corruption laws, which makes illegal any payments to government officials or government employees that are intended to induce their influence to assist us or to gain any improper advantage for us. We operate in certain regions in the Middle East, Africa, Latin America and Asia-Pacific that are more prone to risk under these anti-corruption laws.

Manufacturers of electrical goods are subject to the European Union's RoHS2 and WEEE directives, which took effect during 2006. RoHS2 prohibits the use of lead, mercury and certain other specified substances in electronics products, and WEEE makes producers of electrical goods financially responsible for specified collection, recycling, treatment, and disposal of covered electronic products and components. Parallel initiatives are being proposed in other jurisdictions, including several states in the United States and China. We currently hold RoHS2 and WEEE registration, and we believe we are in compliance with such directives of the European Union.

In addition, a number of data protection laws impact, or may impact, the manner in which we collect, process and transfer personal data. Most notably, the European Union's General Data Protection Regulation ("GDPR"), which went into effect in May 2018, expands data protection compliance obligations and authorizes significantly increased fines for noncompliance, requiring additional compliance resources and efforts on our part. Further, a number of other regions where we do business, including the United States, the Asia-Pacific region and Latin America, have enacted or are considering new data protection regulations that may impact our business activities that involve the processing of personal data. Compliance with enhanced data protection laws requires additional resources and efforts, and noncompliance with personal data protection regulations could result in increased regulatory enforcement and significant monetary fines and costs.

We currently sell our products and related services to the U.S. Government (the "Government") under two General Services Administration ("GSA") Federal Supply Schedule contracts (the "GSA Contracts"). The Government, as well as state and local governments, can typically terminate or modify their contracts with us either at their discretion or if we default by failing to perform under the terms of the applicable contract, which could expose us to liability and impede our ability to compete in the future for contracts and orders. Our sales to the Government under the GSA Contracts represented approximately 4.0% of our total sales for 2019.

Backlog and Seasonality

At December 31, 2019, we had orders representing approximately \$28.0 million in sales outstanding, of which \$8.0 million related to services that we expect to deliver within one year. The product-related outstanding orders as of December 31, 2019 were \$20.0 million, of which \$9.4 million were shipped by February 17, 2020. As of February 17, 2020, we had orders representing approximately \$25.1 million in sales outstanding, inclusive of 2019 open and undelivered orders, of which \$7.8 million related to service orders and \$17.4 million were product-related orders. We believe that a significant portion of the outstanding product-related orders as of February 17, 2020 will be shipped during 2020. At December 31, 2018 and 2017, we had orders representing approximately \$17.5 million and \$18.0 million in sales outstanding, respectively.

We typically experience greater order volume during the fourth quarter, as customers spend the remaining balances of their capital expenditure budgets.

Employees

At December 31, 2019, we had 1,818 full-time employees, consisting of 804 sales and marketing professionals, 308 customer service/training/application engineering specialists, 250 production and supply chain staff, 242 research and development staff, and 214 administrative staff. We are not a party to any collective bargaining agreements and believe our employee relations are satisfactory. Management believes that our future growth and success will depend in part on our ability to retain and continue to attract highly-skilled personnel.

Available Information

We make available, free of charge on our Internet website at www.faro.com, our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and any amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after they are electronically filed with, or furnished to, the Securities and Exchange Commission, or the SEC. You can find these reports on our website at www.faro.com by first clicking “Investor Relations” and then “SEC Filings.” We have included our website address throughout this filing as textual references only. The information on, or accessible through, our website is not a part of, or incorporated into, this Annual Report on Form 10-K. You may also access this information at the SEC’s website at <http://www.sec.gov>. This site contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC.

ITEM 1A. RISK FACTORS

The statements under this heading describe the most significant risks to our business identified by management and should be considered carefully in conjunction with the discussion in Management's Discussion and Analysis of Financial Condition and Results of Operations included in Part II, Item 7 of this Annual Report on Form 10-K and in our Consolidated Financial Statements and notes thereto included in Part II, Item 8 of this Annual Report on Form 10-K before deciding to invest in, or retain, shares of our common stock.

Any of the following risks and uncertainties could materially and adversely affect our business, results of operations, liquidity, and financial condition. These are not the only risks we face. Our operations could also be affected by additional factors that are not presently known by us or by factors that we currently do not consider to be material to our business.

Competitors may develop products that make our products obsolete or less competitive.

The 3D measurement and imaging solutions market is characterized by rapid technological change. Competitors may develop new or improved products, processes or technologies that may make our products obsolete or less competitive.

As a result, our success depends, in part, on our ability to maintain our technological advantage by developing new products and applications and enhancing our existing products, which can be complex and time-consuming and require substantial investment. Significant delays in new product releases or difficulties in developing new products could adversely affect our business and results of operations. We can provide no assurance that we will be able to adapt to evolving markets and technologies or maintain our technological advantage.

Our financial performance is dependent on the conditions of various industries, including the automotive, aerospace, and heavy-equipment industries, which have from time to time experienced, and may again experience, significant disruptions in the economic environment.

A significant portion of our sales are to manufacturers in the automotive, aerospace, and heavy equipment industries. We are dependent upon the continued viability and financial stability of our customers in these industries, which are highly cyclical and dependent upon the general health of the economy and consumer spending.

Because a significant portion of our revenues and expenses are denominated in foreign currencies, we face significant exposure to foreign exchange rate risk.

Our results of operations are affected by fluctuations in exchange rates, which have caused, and may in the future cause, significant fluctuations in our quarterly and annual results of operations. Fluctuations in exchange rates may have a material adverse effect on our results of operations and financial condition and could result in potentially significant foreign exchange gains and losses. Additionally, currency fluctuations could require us to increase prices to foreign customers, which could result in lower net sales by us to those customers. If we do not adjust the prices for our products in response to unfavorable currency fluctuations, we could be forced to sell our products at a lower margin or at a net loss. To the extent that the percentage of our non-U.S. dollar revenues derived from international sales increases in the future, our exposure to risks associated with fluctuations in foreign exchange rates will increase.

We may be unable to recognize the anticipated benefits of our Restructuring Plan and our new strategic plan.

On February 14, 2020, our Board of Directors approved a global Restructuring Plan, which is intended to support our new strategic plan in an effort to improve operating performance and ensure that we are appropriately structured and resourced to deliver sustainable value to our shareholders and customers. Key activities under the Restructuring Plan include a continued focus on efficiency and cost-saving efforts, which includes decreasing total headcount by approximately 500 employees upon completion of the Restructuring Plan. In addition, as part of our new strategic plan, we have reassessed and redefined our go-to-market strategy, refocused our marketing engagement with our customers and re-evaluated our hardware product portfolio and have begun to focus on other organizational optimization efforts, including the simplification of our overly complex management structure. These activities are expected to be substantially completed by the end of 2021. Actual results, including the costs of the Restructuring Plan, may differ materially from our expectations, resulting in our inability to realize the expected benefits of the Restructuring Plan and our new strategic plan and negatively impacting our ability to execute our future plans and strategies, which could have a material adverse effect on our business, financial condition and results of operations.

Product failures or product availability and performance issues could result in increased warranty costs and delays in new product introductions and enhancements, and could adversely affect our business and financial condition.

We regularly introduce new products and enhance existing products. The impact of new product introductions, including the costs associated with new product introductions, such as product development, marketing, assembly line start-up costs and low introductory period production volumes, and manufacturing inefficiencies associated with new product introductions could have an adverse effect on our business and financial condition. Failures in, or performance issues impacting, our new or existing products could result in increased warranty costs, product recall costs, delays in new product introductions or existing product enhancements, and a loss of sales and customers, which would have an adverse effect on our business and financial condition. The supply of raw materials for a new or existing product could be delayed or constrained, or a key vendor could delay shipments, which may decrease product availability, causing a loss of sales and customers.

Our growth depends on the ability of our products to attain broad market acceptance.

The market for traditional fixed-base CMMs, check fixtures, handheld measurement tools, and surveying equipment is mature. Part of our strategy is to continue to displace these traditional measurement devices. Displacing traditional measurement devices and achieving broad market acceptance for our products requires significant effort to convince customers to reevaluate their historical measurement procedures and methodologies.

We market closely interdependent hardware products (FaroArm[®], FARO ScanArm[®], FARO Laser Tracker[™], FARO Laser Projector, FARO Focus and FARO ScanPlan) and related software for use in measurement, inspection, and high density surveying applications. Substantially all of our revenues are currently derived from sales of these products and software, and we plan to continue our business strategy of focusing on the software-driven, 3D measurement and imaging solutions market. Consequently, our financial performance will depend, in large part, on computer-based measurement, inspection and high density surveying products achieving broad market acceptance. If our products cannot attain broad market acceptance, we will not grow as anticipated and may be required to make increased expenditures on research and development for new applications or new products.

Increases in the cost of raw materials or components used in our products could negatively impact our business and profitability.

Our products contain various raw materials, including steel, steel byproducts, aluminum and aluminum byproducts. We use raw materials directly in manufacturing and in components that we purchase from our suppliers. These raw materials are subject to extensive laws, governmental regulations and policies, including tariffs and other import restrictions. Changes to the laws, governmental regulations and policies governing these raw materials, including tariffs and other import restrictions, have increased and could continue to increase the cost of such raw materials and, correspondingly, the cost of manufacturing our products. If the costs of our raw materials further increase, whether due to changes in laws, governmental regulations or policies or for other reasons, we may not be able to pass on these costs to our customers, which could have a material adverse effect on our business, results of operations and financial condition. Even in the event that increased costs can be passed through to our customers, our gross margin percentages would decline. Additionally, our suppliers are also subject to fluctuations in the prices of raw materials and may attempt to pass all or a portion of such increases on to us. In the event they are successful in doing so, our margins would decline.

Changes in tariffs and other export regulations could increase the cost of our products sold to our international customers, which could negatively impact our sales and profitability.

Our international sales operations are subject to extensive laws, governmental regulations and policies, including but not limited to tariffs and other export regulations. Changes in export regulations could increase the cost of our products sold as exports to our international customers. If our international customers are not willing to absorb the incremental costs resulting from those tariffs or other export regulations, it could negatively impact our sales to such customers, as well as our profitability.

We may not be able to identify or consummate acquisitions or achieve expected benefits from or effectively integrate acquisitions, which could harm our growth.

Our growth strategy partly depends on our ability to obtain additional technologies, complementary product lines and sales channels through selective acquisitions and strategic investments. We may not be able to identify and successfully negotiate suitable acquisitions, obtain financing for future acquisitions, if necessary, on satisfactory terms or otherwise complete acquisitions in the future. In the past, we have used our stock as consideration for acquisitions. Our common stock may not remain at a price at which it can be used as consideration for acquisitions without diluting our existing shareholders, and potential acquisition candidates may not view our stock attractively.

In addition, realization of the benefits of acquisitions often requires integration of some or all of the sales and marketing, distribution, manufacturing, engineering, software development, customer service, finance and administrative organizations of the acquired companies. The integration of acquisitions demands substantial attention from senior management and the management of the acquired companies. Our recent acquisitions are, and any future acquisitions may be, subject to a variety of risks and uncertainties including:

- the inability to assimilate effectively the operations, products, technologies and personnel of the acquired companies (some of which may be located in diverse geographic regions);
- the inability of the acquired business to meet our performance expectations;
- the inability to maintain uniform standards, controls, procedures and policies;
- the need or obligation to divest portions of the acquired companies; and
- the potential impairment of relationships with customers.

We cannot offer any assurance that we will be able to identify, complete or successfully integrate any suitable acquisitions, that any acquired companies will operate profitably, or that we will realize the expected synergies and other benefits from any acquisition.

The buying process for most of our customers for our measurement products is highly decentralized and typically requires significant time and expense for us to further penetrate the potential market of a specific customer, which may delay our ability to generate additional revenue.

Our success depends, in part, on our ability to further penetrate our customer base. During 2019, approximately 76% of our revenue was attributable to sales to our existing customers. If we are not able to continue to further penetrate our existing customer base, our future sales may decline. However, most of our customers have a decentralized buying process for measurement devices, and we must spend significant time and resources to increase revenues from a specific customer. For example, we may provide products to only one of our customer's manufacturing facilities or for a specific product line within a manufacturing facility. We cannot offer any assurance that we will be able to maintain or increase the amount of sales to our existing customers, which could adversely affect our financial results.

We have experienced a significant transition in our executive management team in the last year. Any delay in the integration of our executive management team or our failure to successfully attract and retain qualified personnel could have an adverse effect on our business and results of operations.

Our executive management team has gone through a significant transition in the last year, including the hiring of a new President and Chief Executive Officer and the hiring of a new Chief Financial Officer. Any delay in the integration of our executive management team could affect our ability to develop, implement and execute our business strategies and plans, which could have an adverse effect on our business and results of operations.

In addition, if we fail to successfully attract qualified personnel or to retain our executive management team and other key personnel, our sales, profitability and growth and our ability to execute our business strategies and plans could be adversely impacted. Turnover of management could also adversely impact our stock price and our client relationships and could make recruiting for future management positions more difficult. We face competition for qualified personnel, which could result in increased salaries and other compensation expenses and could negatively affect our profitability.

Any failure to protect our patents and proprietary rights in the United States and foreign countries could adversely affect our revenues.

Our success depends, in large part, on our ability to obtain and maintain patents and other proprietary rights protection for our processes and products in the United States and other countries. We also rely upon trade secrets, technical know-how and continuing inventions to maintain our competitive position. We seek to protect our technology and trade secrets, in part, by confidentiality agreements with our employees and contractors. However, our employees may breach these agreements, or our trade secrets may otherwise become known or be independently discovered by inventors. If we are unable to obtain or maintain protection of our patents, trade secrets and other proprietary rights, we may not be able to prevent third parties from using our proprietary rights, which could have a material adverse effect on our results of operations.

In addition, despite our efforts to protect our patents and other proprietary rights, unauthorized parties may attempt to copy aspects of our products or to obtain and use information that we regard as proprietary. Policing unauthorized use of our products is difficult, particularly in foreign countries, and we may be unable to determine the extent, if any, to which unauthorized uses of our products exist. In addition, the laws of some foreign countries do not protect our proprietary rights to the same extent as the laws of the United States.

Our patent protection involves complex legal and technical questions. Our patents may be challenged, narrowed, invalidated or circumvented. Further, we may be able to protect our proprietary rights from infringement by third parties only to the extent that our proprietary processes and products are covered by valid and enforceable patents or are effectively maintained as trade secrets. Furthermore, others may independently develop similar or alternative technologies or design around our patented technologies. Litigation or other proceedings to defend or enforce our intellectual property rights could require us to spend significant time and money, which could have an adverse impact on our financial condition.

Claims from others that we infringed on their intellectual property rights may adversely affect our business and financial condition.

From time to time, we receive notices from others claiming that we infringed on their intellectual property rights. Resolving these claims may require us to enter into royalty or licensing agreements on unfavorable terms, require us to stop selling or to redesign affected products, or require us to pay damages. In addition, from time to time, we are involved in intellectual property lawsuits. We could, in the future, incur judgments or enter into settlements of lawsuits and claims that could have a material adverse effect on our financial condition. Any litigation or interference proceedings, regardless of their outcome, may be costly and may require significant time and attention of our management and technical personnel.

Our operations are vulnerable to the effects of epidemics, such as the coronavirus, which could materially disrupt our business.

We are vulnerable to the general economic effects of epidemics and other public health crises, including the ongoing coronavirus outbreak that has surfaced in China. Due to the recent outbreak of the coronavirus, there has been a substantial curtailment of business activities, particularly to and from China, and China has also limited the shipment of products in and out of its borders, which could negatively impact our ability to receive products from our China-based suppliers and our ability to ship products to customers in that region. Further, the virus could have a negative impact on operations outside of China, and if it is not contained or otherwise continues, the impact of the epidemic could have a material adverse effect on our business.

We may not be able to achieve financial results within our target goals, and our operating results may fluctuate due to a number of factors, many of which are beyond our control.

Our ability to achieve financial results that are within our goals is subject to a number of factors beyond our control. Moreover, our annual and quarterly operating results have varied significantly in the past and likely will vary significantly in the future. Factors that cause our financial results to fluctuate include, but are not limited to, the following:

- adverse changes in the manufacturing industry and general economic conditions;
- the effectiveness of sales promotions;
- geographic expansion in our regions;
- training and ramp-up time for new sales people;
- investments in strategic sales, product or other initiatives;
- investments in technologies and new products and product enhancements, including costs associated with new development and product introductions, and the timing and market acceptance of new products and product enhancements;
- manufacturing inefficiencies related to new product introductions;
- excess or obsolete inventory, shrinkage or other inventory losses due to product obsolescence, change in demand for our products, scrap or material price changes;
- impairment charges of goodwill or intangible assets;
- expansion of our manufacturing capability;
- the size and timing of customer orders, many of which are received towards the end of a quarter;
- the amount of time that it takes to fulfill orders and ship our products;
- the length of our sales cycle to new customers;
- customer order deferrals in anticipation of new products and product enhancements;
- start-up costs and ramp-up time associated with opening new sales offices outside of the United States;
- variations in our effective income tax rate and difficulty in predicting our effective tax rate on a quarterly and annual basis; and
- litigation and regulatory action brought against us.

Any one or a combination of these factors could adversely affect our annual and quarterly operating results in the future and could cause us to fail to achieve our target financial results.

Future impairments of our goodwill, intangible and long-lived assets could adversely affect our financial condition and results of operations.

Because the historical and projected future performance of certain of our recently acquired operations were lower than our expectations, the technologies, intellectual property, know-how and related intangibles are no longer aligned with our go-forward strategies, and due to other initiatives in connection with our new strategic plan, in the fourth quarter of 2019, we recorded an impairment of \$35.2 million on our non-current assets, which charge was included in operating expenses. See Note 7, “Goodwill” and Note 8, “Intangible Assets” to the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for further information regarding the impairment. We held a total of \$14.5 million in intangible assets, net of accumulated amortization, and \$49.7 million in goodwill at December 31, 2019 after recording such impairment. Events may occur or circumstances may change such that the carrying value is not recoverable or it becomes more likely than not that the fair value of long-lived assets is reduced below the carrying value of the assets, which could result in a further write-down of our assets.

In addition, certain of our long-lived assets such as leasehold improvements, machinery, equipment, and sales demonstration assets may experience impairment as a result of events such as the closure of sites, introduction of new products, decisions to exit certain products or markets, and changes in technology. We depreciate long-lived assets and amortize intangible assets at levels we believe are adequate; however, an impairment of these assets could have a material adverse impact on our business, financial condition and results of operations.

An impairment of our investments could reduce our available liquidity.

Our investment portfolio is comprised of debt securities issued by U.S. governmental agencies. These investments are intended to be highly liquid and low risk. If the markets for these securities deteriorated for any reason, including as a result of a downgrade in the credit rating of U.S. government securities, the liquidity and value of these investments could be negatively affected, which could result in impairment charges and could have a material adverse effect on our financial condition and results of operations.

We compete with manufacturers of measurement systems and traditional measurement devices, many of which have more resources than us and may develop new products and technologies.

Our measurement systems compete in the broad and highly competitive market for measurement devices for manufacturing and industrial applications, which, in addition to portable articulated arms, laser trackers, 3D imaging and laser scanner products, consist of fixed-base CMMs, templates and go/no-go gages, check fixtures, handheld measurement tools, and various categories of surveying equipment. In the FaroArm®, FARO ScanArm®, FARO Laser Tracker™, and FARO Focus product lines, we compete primarily with Hexagon Manufacturing Intelligence, a division of Hexagon AB; Automated Precision, Inc.; Artec Europe, S.a.r.l.; Leica Geosystems AG, a division of Hexagon AB; and Trimble Inc. In the FARO Laser Projector product line, we compete primarily with Virtek Vision International, a division of Gerber Technology LLC. We also compete in these product lines with a number of other smaller companies. We compete on the basis of technical innovation, product performance, quality and price with respect to all of our products.

We will be required to make continued investments in technology and product development to maintain the technological advantage that we believe we currently have over our competition. Some of our competitors possess substantially greater financial, technical, and marketing resources than we possess. Moreover, we cannot be certain that our technology or our product development efforts will allow us to successfully compete as the industry evolves. If the market for our measurement systems expands, additional competition may emerge and our existing and future competitors may commit more resources to the markets in which we participate. Our results of operations could be adversely affected by pricing strategies pursued by competitors or technological or product developments by competitors.

If we fail to establish and maintain effective internal controls over financial reporting, our financial statements could contain a material misstatement, which could adversely affect our business and financial condition.

Under Section 404 of the Sarbanes-Oxley Act of 2002 and the rules promulgated by the SEC, companies are required to conduct a comprehensive evaluation of their internal controls over financial reporting. As part of this process, we are required to document and test our internal controls over financial reporting, management is required to assess and issue a report concerning our internal controls over financial reporting, and our independent registered public accounting firm is required to attest to the effectiveness of our internal controls over financial reporting. Our internal controls over financial reporting may not prevent or detect misstatements because of their inherent limitations, including the possibility of human error, the circumvention or overriding of controls, or fraud. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and may not be prevented or detected on a timely basis. Even effective internal controls over financial reporting can provide only reasonable assurance with respect to the preparation and fair presentation of financial statements. If we fail to adequately establish and maintain effective internal controls over financial reporting, our financial statements may contain material misstatements, and we could be required to restate our financial results. This could cause us to fail to meet our reporting obligations, lead to a loss of investor confidence and adversely affect our business, our financial condition, and the trading price of our common stock.

We derive a substantial part of our revenues from our international operations, which are subject to greater volatility and often require more management time and expense to achieve profitability than our domestic operations.

We derive more than half of our revenues from international operations. Our international operations are subject to various risks, including:

- difficulties in staffing and managing foreign operations;
- political and economic instability;
- unexpected changes in regulatory requirements and laws;
- longer customer payment cycles and difficulty collecting accounts receivable;
- compliance with export and import regulations, including tariffs, and trade restrictions;
- governmental restrictions on the transfer of funds to us from our operations outside the United States; and
- burdens of complying with a wide variety of foreign laws and labor practices.

Several of the countries where we operate have emerging or developing economies, which may be subject to greater currency volatility, negative growth, high inflation, limited availability of foreign exchange and other risks. These factors may harm our results of operations and any measures that we may implement to reduce the effect of volatile currencies and other risks of our international operations may not be effective.

Our financial results may be adversely affected by exposure to additional tax liabilities.

As a multinational corporation, we are subject to income tax in the United States and numerous foreign jurisdictions. Our effective tax rate is directly impacted by the application of complex tax laws and regulations and is highly dependent upon the geographic mix of our worldwide earnings or losses, the tax regulations in each country or geographic region in which we operate, and the availability of tax credits and loss carry-forwards. Our provision for income taxes and tax liability in the future could be adversely affected by many factors including, but not limited to, income before taxes being lower than anticipated in countries with lower statutory tax rates and higher than anticipated in countries with higher statutory tax rates, changes in the valuation of deferred tax assets and liabilities, and changes in tax laws, regulations, accounting principles or interpretation of accounting principles. Application of tax laws and regulations is also subject to legal and factual interpretation, judgment, and uncertainty. Further, tax laws are subject to change as a result of changes in fiscal policy and legislation and the evolution of regulations and court rulings.

The income and non-income tax regimes we are subject to or operate under may be subject to significant change. Changes in tax laws or tax rulings, or changes in interpretations of existing laws, could materially affect our financial position and results of operations. Certain countries in Europe, as well as a number of other countries and organizations, have recently proposed or recommended changes to existing tax laws that could significantly increase our tax obligations in many countries where we do business or require us to change the manner in which we operate our business. The Organization for Economic Cooperation and Development (“OECD”) has continued to issue guidelines and proposals related to its Base Erosion and Profit Sharing initiative, which could potentially result in legislative changes to the tax treatment of our foreign operations, as well as impact our effective tax rate and the value of our deferred tax assets.

Developments relating to the United Kingdom’s (“UK”) exit from European Union membership could adversely impact our business.

On June 23, 2016, the UK held a referendum in which voters approved an exit from the European Union, commonly referred to as “Brexit.” Following a protracted period of negotiation, the UK ceased to be a member of the European Union on January 31, 2020, after the ratification and approval of a withdrawal agreement by the European Union and the UK. The withdrawal agreement provides for a transition period until December 31, 2020 (the “Transition Period”), during which the terms of the future trading relationship between the European Union and the UK will be negotiated. Throughout the Transition Period, the legal and regulatory framework as between the UK and the European Union will remain the same.

Brexit and the perceptions as to its potential impact have and may continue to adversely affect business activity and economic conditions in Europe and globally and could contribute to instability in global financial and foreign exchange markets both during and after the Transition Period. Brexit could also have the effect of imposing greater restrictions on, and costs associated with, imports and exports between the UK and European Union member states, including, without limitation, the imposition of tariffs and increased regulatory complexities. The hiring and retention of skilled labor may also become more challenging if the free movement of workers between the European Union and the UK ends. We may also be impacted by exchange rate volatility during and after the Transition Period. Any of these factors could adversely affect our business and operating results by adversely affecting customer demand and our relationships with customers in the UK and the European Union. In addition, as a result of Brexit, other European countries may seek to conduct referenda with respect to their continuing membership with the European Union. If there is no agreed upon long-term trading arrangement by the end of the Transition Period (a so-called “hard Brexit”), it would likely have a significant adverse impact on labor and trade and create significant short-term currency volatility.

Given these possibilities and others we may not anticipate, as well as the lack of comparable precedent, the full extent to which we will be affected by Brexit is uncertain. Any of the potential negative effects of Brexit could adversely affect our business, results of operations and financial condition.

Reductions in defense spending could adversely affect our business.

Certain of our customers operate in the defense sector and depend significantly on U.S. government spending. In August 2011, Congress enacted the Budget Control Act of 2011, which imposed spending caps and certain reductions in defense spending through 2021. Automatic spending reductions, referred to as sequestration, were implemented in March 2013. Ongoing budgetary discussions in the federal government may result in other cuts to defense spending. Reductions in defense spending that impact the aerospace and defense industries, or uncertainty regarding future levels of government expenditures, could have an adverse effect on our results of operations. Additionally, if Congress is unable to pass appropriations bills in a timely manner, a government shutdown could result, which may have impacts in addition to those resulting from budget cuts, sequestration impacts or program-level appropriations, including payment delays, impairment of our ability to perform work on existing contracts and reductions in future orders.

We are subject to the impact of governmental and other similar certification processes and regulations, which could adversely affect our business and results of operations.

Our operations are subject to numerous governmental laws and regulations, including those governing antitrust and competition, the environment, collection, recycling, treatment and disposal of covered electronic products and components, import and export of products, currency conversions and repatriation, taxation of foreign earnings and use of local employees and suppliers. An inability to comply with these regulations or obtain any necessary certifications in a timely manner could have an adverse effect on our business and results of operations.

Manufacturers of electrical goods are subject to the European Union's RoHS2 and WEEE directives, which took effect during 2006. RoHS2 prohibits the use of lead, mercury and certain other specified substances in electronics products, and WEEE makes producers of electrical goods financially responsible for specified collection, recycling, treatment, and disposal of covered electronic products and components. While we currently hold WEEE registration and believe we are in compliance with the directives of the European Union, including the RoHS2 directive, parallel initiatives are being proposed in other jurisdictions, including several states in the United States and China. If we do not comply with any such initiatives, our sales and results of operations could be materially impacted.

In addition, a number of data protection laws impact, or may impact, the manner in which we collect, process and transfer personal data. Most notably, the GDPR, which went into effect in May 2018, expands data protection compliance obligations and authorizes significantly increased fines for noncompliance, requiring additional compliance resources and efforts on our part. Further, a number of other regions where we do business, including the United States, the Asia-Pacific region and Latin America, have enacted or are considering new data protection regulations that may impact our business activities that involve the processing of personal data. Compliance with enhanced data protection laws requires additional resources and efforts, and noncompliance with personal data protection regulations could result in increased regulatory enforcement and significant monetary fines and costs, which could have an adverse effect on our business, results of operations and financial condition.

Our sales to the U.S. government are subject to compliance with regulatory and contractual requirements, and noncompliance could expose us to liability or impede current or future business.

The Government, as well as state and local governments, can typically terminate or modify their contracts with us either at their discretion or if we default by failing to perform under the terms of the applicable contract, which could expose us to liability and impede our ability to compete in the future for contracts and orders. The failure to comply with regulatory and contractual requirements could subject us to investigations, price reductions, up to treble damages, fines or other sanctions and penalties. Additionally, violations of certain regulatory and contractual requirements could also result in us being suspended or debarred from future government contracting.

We have sold our products and related services to the Government under General Services Administration Federal Supply Schedule contracts since 2002 and are currently selling our products and related services to the Government under two such GSA Contracts. Our sales to the Government under the GSA Contracts were approximately \$15.2 million, or approximately 4.0% of our total sales, for the year ended December 31, 2019. Each GSA Contract is subject to extensive legal and regulatory requirements and includes, among other provisions, a price reduction clause (the "Price Reduction Clause"), which generally requires us to reduce the prices billed to the Government under the GSA Contracts to correspond to the lowest prices billed to certain benchmark customers.

Late in the fourth quarter of 2018, during an internal review we preliminarily determined that certain of our pricing practices may have resulted in the Government being overcharged under the Price Reduction Clauses of the GSA Contracts (the "GSA Matter"). On February 14, 2019, we reported the GSA Matter to the GSA and its Office of Inspector General.

As a result of the GSA Matter, for the fourth quarter of 2018, we reduced our total sales by a \$4.8 million estimated cumulative sales adjustment, representative of the last six years of estimated overcharges to the Government under the GSA Contracts. In addition, for the fourth quarter of 2018, we recorded \$0.5 million of imputed interest related to the estimated cumulative sales adjustment, which increased Interest expense, net and resulted in an estimated total liability of \$5.3 million for the GSA Matter. This estimate was based on our preliminary review as of February 20, 2019, the date of our Annual Report on Form 10-K for the year ended December 31, 2018.

On July 15, 2019, we submitted a report to the GSA and its Office of Inspector General setting forth the findings of the review conducted by our outside legal counsel and forensic accountants (the "Review"). Based on the results of the Review, we reduced our total sales for second quarter 2019 by an incremental \$5.8 million sales adjustment, reflecting an estimated aggregate overcharge of \$10.6 million under the GSA Contracts for the period from July 2011 to March 2019. In addition, we recorded an incremental \$0.8 million of imputed interest related to the estimated cumulative sales adjustment during 2019, which increased Interest expense, net and resulted in a \$6.6 million total incremental increase in the estimated total liability for the GSA Matter. As of the date of the filing of this Annual Report on Form 10-K, we have recorded an aggregate estimated total liability for the GSA Matter of \$11.9 million. This estimate is based on the information we have as of the date of this Annual Report on Form 10-K and is subject to change based on discussions with our outside legal counsel and the Government.

In January 2020, we received requests for additional information from the GSA and its Office of Inspector General, and we are working with the GSA in responding to such inquiries. We intend to cooperate fully with this and any other Government inquiries. The Government's review of, or investigation into, this matter could result in civil and criminal penalties, administrative sanctions and contract remedies being imposed on us, including but not limited to, termination of the GSA Contracts, repayments of amounts already received under the GSA Contracts, forfeiture of profits, damages, suspension of payments, fines, and suspension or debarment from doing business with the Government and possibly U.S. state and local governments. We may also be subject to litigation and recovery under the federal False Claims Act and possibly similar state laws, which could include claims for treble damages, penalties, fees and costs. As a result, we cannot reasonably predict the outcome of the Government's review of, or investigation into, this matter at this time or the resulting future financial impact on us. Any of these outcomes could have a material adverse effect on our reputation, our sales, results of operations, cash flows and financial condition, and the trading price of our common stock. In addition, we have incurred, and will continue to incur, legal and related costs in connection with the Review and the Government's response to this matter.

Any failure to comply with the Foreign Corrupt Practices Act or similar anti-corruption laws could subject us to fines and penalties.

In 2012, our monitorship expired pursuant to our settlement with the SEC and the United States Department of Justice, or DOJ, concerning certain payments made by our subsidiary in China that may have violated the FCPA and other applicable laws. We are, of course, still subject to such laws and have adopted and maintain a compliance program designed to ensure compliance with these laws; however, in light of our prior conduct, any future failure to comply with any such continuing obligations could result in the SEC and the DOJ aggressively seeking to impose penalties against us. In addition, many countries in which we operate have increased regulation regarding anti-corruption practices generally. Compliance with such regulations could be costly and could adversely impact our results of operations or delay entry into new markets.

We may face difficulties managing the effects of any future growth.

If our business grows rapidly in the future, we expect it to result in:

- increased complexity;
- increased responsibility for existing and new management personnel; and
- incremental strain on our operations and financial and management systems.

If we are not able to manage the effects of any future growth, our business, financial condition and operating results may be harmed.

Our dependence on suppliers for materials could impair our ability to manufacture our products.

Outside vendors provide key components used in the manufacture of our products. Any supply interruption in a limited source component would hinder our ability to manufacture our products until a new source of supply is identified. In addition, an uncorrected defect or supplier's variation in a component, either known or unknown, or incompatibility with our manufacturing processes, could hinder our ability to manufacture our products. We may not be able to find a sufficient alternative supplier in a reasonable period of time, or on commercially reasonable terms, if at all. If we fail to obtain a supplier for the manufacture of components of our products, we may experience delays or interruptions in our operations, which would adversely affect our business, results of operations and financial condition.

A valuation allowance may be required for our U.S. deferred tax assets, which may reduce our earnings and have a material adverse effect on our business, results of operations and financial condition.

Our balance sheet includes \$18.8 million in deferred tax assets. Approximately half of that amount relates to U.S. deferred tax assets. On a quarterly basis, we assess our ability to realize our deferred tax assets to ensure no valuation allowance is required. The ultimate realization of our U.S. deferred tax assets is dependent upon our ability to generate future U.S. taxable income during the periods in which those deferred tax assets would be deductible. Our inability to realize our U.S. deferred tax assets may reduce our earnings and have a material adverse effect on our business, results of operations and financial condition. Based on an evaluation we conducted, we determined that it was not necessary to establish a valuation allowance against any of our U.S. deferred tax assets as of December 31, 2019. However, we will continue to monitor whether a valuation allowance is necessary, and if we are required to establish a valuation allowance against our deferred tax assets, it could have a material adverse effect on our results of operations and financial condition.

Risks generally associated with our information systems could adversely affect our business reputation and results of operations.

We rely on our information systems to obtain, rapidly process, analyze and manage data to, among other things:

- facilitate the purchase and distribution of thousands of inventory items;
- receive, process and ship orders on a timely basis;
- accurately bill and collect from customers;
- process payments to suppliers and employees; and
- summarize results and manage our business.

Our primary and back-up computer systems are subject to damage or interruption from power outages, computer and telecommunication failures, computer viruses, security breaches, natural disasters and errors by employees. Though losses arising from some of these issues may be covered by insurance, interruptions of our critical business computer systems or failure of our back-up systems could lead to a loss of sales or decreased profitability.

A cyberattack or security breach of our systems may compromise the confidentiality, integrity, or availability of our internal data and the availability of our products and websites designed to support our customers or their data. Computer hackers, foreign governments or cyber terrorists may attempt to penetrate our network security and our website. Unauthorized access to our proprietary business information or customer data may be obtained through break-ins, sabotage, breach of our secure network by an unauthorized party, computer viruses, computer denial-of-service attacks, employee theft or misuse or other misconduct. Because the techniques used by computer programmers who may attempt to penetrate and sabotage our network security or our website change frequently and may not be recognized until launched against a target, we may be unable to anticipate these techniques. It is also possible that unauthorized access to customer data may be obtained through inadequate use of security controls by customers, suppliers or other vendors. Any security breach, cyberattack or cyber security breach, and any incident involving the misappropriation, loss or other unauthorized disclosure of, or access to, sensitive or confidential customer information, whether involving us or involving one of our vendors, could require us to expend significant resources to remediate any damage, could interrupt our operations and damage our reputation, and could also result in regulatory enforcement actions, material fines and penalties, litigation or other actions which could have a material adverse effect on our business, reputation and results of operations.

We are subject to risks of natural disasters and other catastrophic events.

The occurrence of one or more natural disasters, such as fires, explosions, tornadoes, hurricanes, earthquakes, floods and other forms of severe weather, or the occurrence of acts of war, political unrest, terrorist activities or labor issues, including due to public health crises such as pandemics and epidemics, where we have a manufacturing facility could result in physical damage to, and complete or partial closure of, our manufacturing facilities, which could adversely affect our business, operations and financial performance. Interruptions in our manufacturing operations or damage to our manufacturing facilities could reduce our revenues and increase our costs, and the extent of losses from natural disasters, severe weather and such other events will be a function of both the severity of the event and the total amount of insured exposure. Although we maintain insurance coverage, we can offer no assurance that our insurance coverage will be adequate to cover any losses or that we will be able to maintain insurance at a reasonable cost in the future. If losses from business interruption or property damage exceed the amounts for which we are insured, our business, results of operations and financial condition could be adversely affected.

We may experience volatility in our stock price.

The price of our common stock has been, and may continue to be, highly volatile in response to various factors, many of which are beyond our control, including:

- fluctuations in demand for, and sales of, our products or prolonged downturns in the industries that we serve;
- actual or anticipated variations in quarterly or annual operating results;
- general economic uncertainties;
- speculation in the press or investment community; and
- announcements of technological innovations or new products by us or our competitors.

The market price of our common stock may also be affected by our inability to meet analyst and investor expectations and failure to achieve projected financial results. Any failure to meet such expectations or projected financial results, even if minor, could cause the market price of our common stock to decline significantly. Volatility in our stock price may result in the inability of our shareholders to sell their shares at or above the price at which they purchased them.

Our relatively small public float and daily trading volume have in the past caused, and may in the future result in, significant volatility in our stock price. At December 31, 2019, we had approximately 17.5 million shares outstanding held by non-affiliates. Our daily trading volume for the year ended December 31, 2019 averaged approximately 100,645 shares.

In addition, stock markets have experienced in the past and may in the future experience a high level of price and volume volatility, and the market prices of equity securities of many companies have experienced in the past and may in the future experience wide price fluctuations not necessarily related to the operating performance of such companies. These broad market fluctuations may adversely affect the market price of our common stock. In the past, securities class action lawsuits frequently have been instituted against companies following periods of volatility in the market price of such companies' securities. If any such litigation is instigated against us, it could result in substantial costs and a diversion of management's attention and resources, which could have a material adverse effect on our results of operations and financial condition.

Anti-takeover provisions in our articles of incorporation, bylaws and provisions of Florida law could delay or prevent a change of control that you may favor.

Our articles of incorporation, bylaws and provisions of Florida law could make it more difficult for a third party to acquire us. Although we believe such provisions are appropriate to protect long-term value for our shareholders, these provisions could discourage potential takeover attempts and could adversely affect the market price of our shares. Because of these provisions, you might not be able to receive a premium on your investment. These provisions include:

- a limitation on shareholders' ability to call a special meeting of our shareholders;
- advance notice requirements to nominate directors for election to our board of directors or to propose matters that can be acted on by shareholders at shareholder meetings;
- our classified board of directors, which means that approximately one-third of our directors are elected each year; and
- the authority of the board of directors to issue, without shareholder approval, preferred stock with such terms as the board of directors may determine.

The provisions described above could delay or make more difficult transactions involving a change in control of the Company or our management.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

The Americas

Our headquarters is located in a leased building in Lake Mary, Florida containing approximately 46,500 square feet. This facility houses our sales, marketing, customer service/application operations and administrative staff. Our U.S. production, research and development, service operations and manufacturing are located in another leased building in Lake Mary, Florida, which consists of approximately 35,000 square feet, as well as a leased facility consisting of approximately 90,400 square feet located in Exton, Pennsylvania containing research and development, manufacturing and service operations of our FARO Laser Tracker™, FARO Focus, and FARO Laser Projector product lines. We also lease a facility in Nuevo Leon, Mexico containing service and sales operations, which consists of approximately 36,000 square feet.

Europe/Middle East/Africa

In EMEA, our primary operations are located in a leased building in Stuttgart, Germany containing approximately 105,300 square feet. This facility houses the manufacturing, research and development, administration, sales, marketing and service management personnel for our EMEA operations. Additionally, we have a leased facility consisting of approximately 15,900 square feet located in Schaffhausen, Switzerland containing manufacturing operations for our products shipped to customers in EMEA. We also have a leased service and sales facility located in Warwickshire, Great Britain consisting of approximately 12,700 square feet.

Asia-Pacific

In APAC, our primary operations are located in a leased building in Singapore containing approximately 22,000 square feet. This facility houses the administration, sales, marketing, service management personnel and manufacturing for our Asia-Pacific operations. Our Japan operations are located in a leased building in Nagoya, Japan containing approximately 15,900 square feet. This facility houses our Japanese sales, marketing and service operations. Our China operations are located in a leased building in Shanghai, China containing approximately 24,700 square feet for sales, marketing and service operations.

We believe our current facilities will be adequate for our needs in 2020 and that we will be able to locate suitable space for additional regional offices or enhanced production needs as necessary.

The information required by the remainder of this Item is incorporated herein by reference to Exhibit 99.1 to this Annual Report on Form 10-K.

ITEM 3. LEGAL PROCEEDINGS

We are not involved in any legal proceedings other than routine litigation arising in the normal course of business, none of which we believe will have a material adverse effect on our business, financial condition or results of operations.

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

Market Information and Holders

Our common stock is listed and traded on the Nasdaq Global Select Market under the symbol "FARO".

As of February 17, 2020, we had 41 holders of record of our common stock.

Dividends

To date, we have not paid any cash dividends on our common stock. We expect to retain future earnings for use in operating and expanding our business, and we do not anticipate paying any cash dividends in the reasonably foreseeable future.

Recent Sales of Unregistered Securities

During the years ended December 31, 2019, 2018 and 2017, we did not sell any equity securities that were not registered under the Securities Act.

Purchases of Equity Securities

On November 24, 2008, our Board of Directors approved a \$30.0 million share repurchase program. Subsequently, in October 2015, our Board of Directors authorized an increase to the existing share repurchase program from \$30.0 million to \$50.0 million. In December 2018, our Board of Directors authorized management to utilize the share repurchase program, beginning January 1, 2019, to maintain the number of our issued and outstanding shares to address the dilutive impact of stock options exercises and the settlement of restricted stock units. Acquisitions for the share repurchase program may be made from time to time at prevailing prices as permitted by securities laws and other legal requirements and subject to market conditions and other factors under this program. The share repurchase program may be discontinued at any time. There is no expiration date or other restriction governing the period over which we can repurchase shares under the program. We made no stock repurchases during the years ended December 31, 2019, 2018 and 2017 under this program. As of December 31, 2019, we had authorization to repurchase \$18.3 million of the \$50.0 million authorized by our Board of Directors under the existing share repurchase program.

Performance Graph

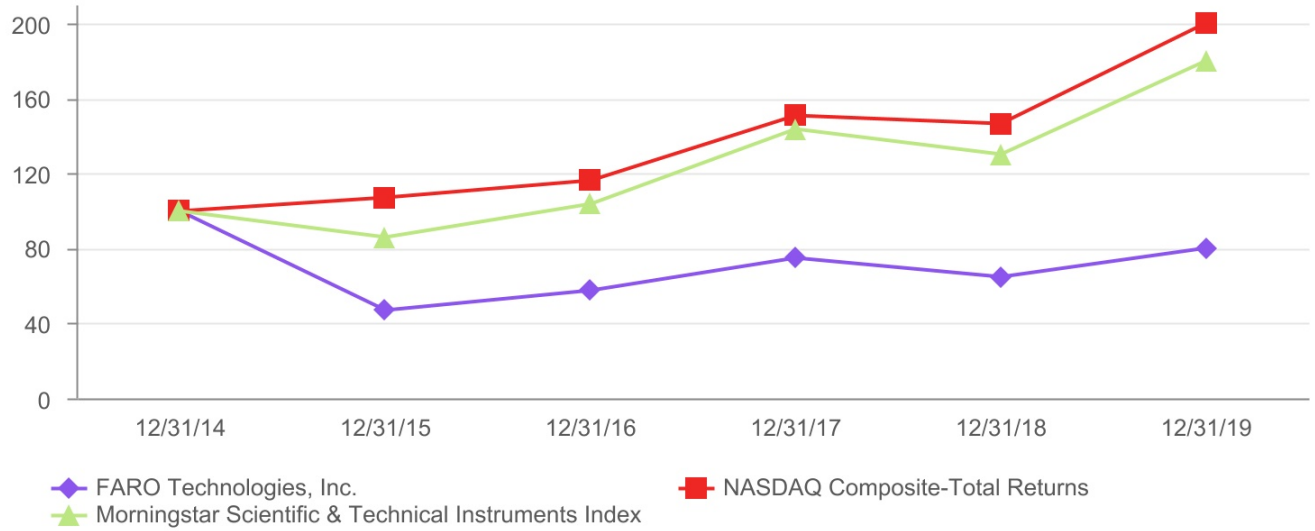
The following performance graph and related information shall not be deemed to be "soliciting material" or to be "filed" with the SEC, nor shall such information be incorporated by reference into any future filing under the Securities Act or the Exchange Act, except to the extent that we specifically incorporate it by reference into such filing.

The following line graph compares the cumulative five-year returns of our common stock with (1) the cumulative returns of the Nasdaq Composite-Total Returns and (2) the Morningstar Scientific & Technical Instruments Index.

For purposes of preparing the graph, we assumed that an investment of \$100 was made at market close on December 31, 2014, the last trading day before the beginning of our fifth preceding fiscal year, with reinvestment of any dividends at the time they were paid. We did not pay any dividends during the period indicated.

The comparison in the graph below is based on historical data. The stock price performance shown on the graph is not necessarily indicative of future price performance. Information used in the graph and table was obtained from Zacks Investment Research, a source believed to be reliable, but we are not responsible for any errors or omissions in such information.

Comparison of 5 Year Cumulative Total Return
Assumes Initial Investment of \$100
December 2019



Company/Market/Peer Group	2014	2015	2016	2017	2018	2019
FARO Technologies, Inc.	\$ 100.00	\$ 47.10	\$ 57.43	\$ 74.99	\$ 64.84	\$ 80.33
Nasdaq Composite-Total Returns	\$ 100.00	\$ 106.96	\$ 116.45	\$ 150.96	\$ 146.67	\$ 200.50
Morningstar Scientific & Technical Instruments Index	\$ 100.00	\$ 85.94	\$ 103.91	\$ 143.93	\$ 130.34	\$ 180.17

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

The following information should be read in conjunction with our Consolidated Financial Statements, including the notes thereto, included in Part II, Item 8 of this Annual Report on Form 10-K.

Overview

We are a global technology company that designs, develops, manufactures, markets and supports software driven, three-dimensional ("3D") measurement and imaging solutions. This technology permits high-precision 3D measurement, imaging and comparison of parts and complex structures within production and quality assurance processes. Our devices are used for inspection of components and assemblies, rapid prototyping, reverse engineering, documenting large volume or structures in 3D, surveying and construction, as well as for investigation and reconstruction of accident sites or crime scenes. We sell the majority of our products through a direct sales force across a broad number of customers in a range of manufacturing, industrial, architecture, surveying, building information modeling, construction, public safety forensics, cultural heritage, and other applications. Our FaroArm[®], FARO ScanArm[®], FARO Laser Tracker[™], FARO Laser Projector, and their companion CAM2[®], BuildIT, and BuildIT Projector software solutions, provide for Computer-Aided Design ("CAD") based inspection, factory-level statistical process control, high-density surveying, and laser-guided assembly and production. Together, these products integrate the measurement, quality inspection, and reverse engineering functions with CAD and 3D software to improve productivity, enhance product quality, and decrease rework and scrap in the manufacturing process, mainly supporting applications in the automotive, aerospace, metal and machine fabrication and other industrial manufacturing markets. Our FARO Focus and FARO ScanPlan laser scanners, and their companion FARO SCENE, BuildIT, FARO As-Built[™], and FARO Zone public safety forensics software offerings, are utilized for a wide variety of 3D modeling, documentation and high-density surveying applications primarily in the architecture, engineering and construction and public safety markets. Our FARO ScanArm[®] and its companion SCENE software also enable a fully digital workflow used to capture real world geometry for the purpose of empowering design, enabling innovation, and speeding up the design cycle.

We derive our revenues primarily from the sale of our measurement equipment and related multi-faceted software programs. Revenue related to these products is generally recognized upon shipment. In addition, we sell extended warranties and training and technology consulting services relating to our products. We recognize the revenue from extended warranties on a straight-line basis over the term of the warranty, and revenue from training and technology consulting services when the services are provided.

We operate in international markets throughout the world and maintain sales offices in Australia, Brazil, Canada, China, France, Germany, India, Italy, Japan, Malaysia, Mexico, the Netherlands, Poland, Portugal, Singapore, South Korea, Spain, Switzerland, Thailand, Turkey, the United Kingdom, and the United States.

We manufacture our FaroArm[®] and FARO ScanArm[®] products in our manufacturing facility located in Switzerland for customer orders from Europe, the Middle East and Africa ("EMEA"), in our manufacturing facility located in Singapore for customer orders from the Asia-Pacific region, and in our manufacturing facility located in Florida for customer orders from the Americas. We manufacture our FARO Focus in our manufacturing facilities located in Germany and Switzerland for customer orders from EMEA and the Asia-Pacific region, and in our manufacturing facility located in Pennsylvania for customer orders from the Americas. We manufacture our FARO Laser Tracker[™] and our FARO Laser Projector products in our facility located in Pennsylvania. We expect all of our existing manufacturing facilities to have the production capacity necessary to support our volume requirements during 2020.

We account for wholly-owned foreign subsidiaries in the currency of the respective foreign jurisdiction; therefore, fluctuations in exchange rates may have an impact on the value of the intercompany account balances denominated in different currencies and reflected in our consolidated financial statements. We are aware of the availability of off-balance sheet financial instruments to hedge exposure to foreign currency exchange rates, including cross-currency swaps, forward contracts and foreign currency options. However, we have not used such instruments in the past, and none were utilized in 2019, 2018 or 2017.

Executive Summary

Our total sales decreased \$21.9 million, or 5.4%, to \$381.8 million for the year ended December 31, 2019 from \$403.6 million for the year ended December 31, 2018. Our product sales decreased \$30.9 million, or 9.6%, primarily driven by a softening in many of our served markets, with particular softness in the automotive and broader Asian markets. Our service revenue increased \$9.0 million, or 10.9%, as we continued to capitalize on the growth of our global installed, serviceable base and focused sales initiatives to maintain customer relationships after the purchase of our measurement devices. Also, foreign exchange rates had a negative impact on sales of \$13.0 million, decreasing our overall sales by approximately 3.2%, primarily due to the weakening of the Euro and Chinese Yuan relative to the U.S. dollar.

Change in Organizational Structure and Segment Reporting

Since the fourth quarter of 2016, we had operated in five verticals—3D Manufacturing, Construction Building Information Modeling (“Construction BIM”), Public Safety Forensics, 3D Design and Photonics—and had three reporting segments—3D Manufacturing, Construction BIM and Emerging Verticals. As discussed in our Quarterly Report on Form 10-Q for the third quarter of 2019, our new management team, led by our new Chief Executive Officer (“CEO”), formulated and began to implement a new comprehensive strategic plan for our business. As part of our strategic planning process, we identified areas of our business that needed enhanced focus or change in order to improve our efficiency and cost structure. In the fourth quarter of 2019, we reassessed and redefined our go-to-market strategy, refocused our marketing engagement with our customers and re-evaluated our hardware product portfolio. We have also begun to focus on other organizational optimization efforts, including the simplification of our overly complex management structure.

As part of our new strategic plan, and based on the recommendation of our CEO, who is also our Chief Operating Decision Maker (“CODM”), in the fourth quarter of 2019, we eliminated our vertical structure and began reorganizing the Company into a functional structure. Our executive leadership team is now comprised of functional leaders in areas such as sales, marketing, operations, research and development and general and administrative, and resources are allocated to each function at a consolidated unit level. We no longer have separate business units, or segment managers or vertical leaders who report to the CODM with respect to operations, operating results or planning for levels or components below the total Company level. Instead, our CODM now allocates resources and evaluates performance on a Company-wide basis. Based on these changes, commencing with the fourth quarter of 2019, we are now reporting as one reporting segment that develops, manufactures, markets, supports and sells CAD-based quality assurance products integrated with CAD-based inspection and statistical process control software and 3D documentation systems. Our reporting segment sells into a variety of end markets, including automotive, aerospace, metal and machine fabrication, architecture, engineering, construction and public safety.

New Strategic Plan and Restructuring Plan

In addition to the reorganization of the Company’s structure, as part of our strategic planning process, we also evaluated our hardware product portfolio and the operations of certain of our recent acquisitions. As a result of this evaluation, we are simplifying our hardware product portfolio, ceasing to sell certain products and evaluating whether or not we will divest or shut down the related operations.

We performed our annual goodwill and intangible asset impairment test in December 2019 in connection with the preparation of our financial statements for the fourth quarter and year ended December 31, 2019. As a result of this test, we recorded an impairment charge of \$35.2 million in the fourth quarter of 2019, which included \$21.2 million in goodwill, \$10.5 million in intangible assets associated with recent acquisitions, \$1.4 million in intangible assets related to capitalized patents and \$2.1 million in other asset write-downs. See Note 7, “Goodwill” and Note 8, “Intangible Assets” to the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for further information. We also recorded a charge of \$12.8 million in the fourth quarter of 2019, increasing our reserve for excess and obsolete inventory, based on our analysis of our inventory reserves in connection with our strategy to simplify our hardware product portfolio and cease selling certain products.

In addition to the implementation of our new strategic plan, on February 14, 2020, our Board of Directors approved a global restructuring plan (the “Restructuring Plan”), which is intended to support our strategic plan in an effort to improve operating performance and ensure that we are appropriately structured and resourced to deliver sustainable value to our shareholders and customers. Key activities under the Restructuring Plan include a continued focus on efficiency and cost-saving efforts, which includes decreasing total headcount by approximately 500 employees upon the completion of the Restructuring Plan.

These activities are expected to be substantially completed by the end of 2021. We estimate that the Restructuring Plan will reduce gross annual pre-tax expenses by approximately \$40 million, to be realized in the fourth quarter of 2020 on an annualized basis. We estimate that the implementation of the Restructuring Plan will result in pre-tax charges of approximately \$26 million to \$36 million, which are in addition to the pre-tax charges of approximately \$49 million recorded in the fourth quarter of 2019 in connection with the implementation of our new strategic plan. We expect \$18 million to \$22 million of these additional charges to be in the form of cash charges. Actual results, including the costs of the Restructuring Plan, may differ materially from our expectations, resulting in our inability to realize the expected benefits of the Restructuring Plan and our new strategic plan and negatively impacting our ability to execute our future plans and strategies, which could have a material adverse effect on our business, financial condition and results of operations.

GSA Matter

We have sold our products and related services to the U.S. Government (the “Government”) under General Services Administration (“GSA”) Federal Supply Schedule contracts (the “GSA Contracts”) since 2002 and are currently selling our products and related services to the Government under two such GSA Contracts. Our sales to the Government under the GSA Contracts represented approximately 4.0% of our total sales for the year ended December 31, 2019. Each GSA Contract is subject to extensive legal and regulatory requirements and includes, among other provisions, a price reduction clause (the “Price Reduction Clause”), which generally requires us to reduce the prices billed to the Government under the GSA Contracts to correspond to the lowest prices billed to certain benchmark customers.

Late in the fourth quarter of 2018, during an internal review we determined that certain of our pricing practices may have resulted in the Government being overcharged under the Price Reduction Clauses of the GSA Contracts (“the GSA Matter”). As a result, we performed remediation efforts, including but not limited to, the identification of additional controls and procedures to ensure future compliance with the pricing and other requirements of the GSA Contracts. We also retained outside legal counsel and forensic accountants to assist with these efforts and to conduct a comprehensive review of our pricing and other practices under the GSA Contracts (the “Review”). On February 14, 2019, we reported the GSA Matter to the GSA and its Office of Inspector General.

As a result of the GSA Matter, for the fourth quarter of 2018, we reduced our total sales by a \$4.8 million estimated cumulative sales adjustment, representative of the last six years of estimated overcharges to the Government under the GSA Contracts. In addition, for the fourth quarter of 2018, we recorded \$0.5 million of imputed interest related to the estimated cumulative sales adjustment, which increased Interest expense, net and resulted in an estimated total liability of \$5.3 million for the GSA Matter, which was based on our preliminary review as of February 20, 2019, the date of our Annual Report on Form 10-K for the year ended December 31, 2018.

On July 15, 2019, we submitted a report to the GSA and its Office of Inspector General setting forth the findings of the Review conducted by our outside legal counsel and forensic accountants. Based on the results of the Review, we reduced our total sales for second quarter 2019 by an incremental \$5.8 million sales adjustment, reflecting an estimated aggregate overcharge of \$10.6 million under the GSA Contracts for the period from July 2011 to March 2019. In addition, we recorded an incremental \$0.8 million of imputed interest related to the estimated cumulative sales adjustment during 2019, which increased Interest expense, net and resulted in a \$6.6 million total incremental increase in the estimated total liability for the GSA Matter. As of the date of the filing of this Annual Report on Form 10-K, we have recorded an aggregate estimated total liability for the GSA Matter of \$11.9 million. This estimate is based on the information we have as of the date of this Annual Report on Form 10-K and is subject to change based on discussions with our outside legal counsel and the Government.

Presentation of Information and Reclassifications

Amounts reported in millions within this Annual Report on Form 10-K are computed based on the amounts in thousands. As a result, the sum of the components reported in millions may not equal the total amount reported in millions due to rounding. Certain columns and rows within the tables that follow may not add due to the use of rounded numbers. Percentages presented are calculated based on the respective amounts in thousands.

Depreciation and amortization expenses are being reported in our statements of operations to reflect departmental costs. Previously, those expenses were reported as a separate line item under operating expenses. Amounts related to depreciation and amortization expenses for years ended December 31, 2018 and 2017 have been restated throughout this Annual Report on Form 10-K to reflect this reclassification of depreciation and amortization expenses and to conform to the current period presentation.

Selling and marketing expenses and general and administrative expenses are now being reported in the accompanying statements of operations together in one line as Selling, general and administrative. Previously, those expenses were reported as two separate line items under operating expenses. Amounts related to selling, general and administrative expenses for the years ended December 31, 2018 and 2017 have been restated throughout this Annual Report on Form 10-K to reflect this reclassification of selling, general and administrative expenses and to conform to the current period presentation.

Software maintenance revenue is now being reported in the accompanying statements of operations as a component of product sales. Previously, these revenues were reported in service sales. Amounts related to software maintenance revenue for the years ended December 31, 2018 and 2017 have been restated throughout this Annual Report on Form 10-K to reflect this reclassification of software maintenance revenue and to conform to the current period presentation.

Software maintenance cost of sales is now being reported in the accompanying statements of operations as a component of product cost of sales. Previously, these cost of sales was reported in service cost of sales. Amounts related to software maintenance cost of sales for the years ended December 31, 2018 and 2017 have been restated throughout this Annual Report on Form 10-K to reflect this reclassification of software maintenance cost of sales and to conform to the current period presentation.

Results of Operations

2019 Compared to 2018

(dollars in millions)	Years ended December 31,				Change 2019 vs 2018
	2019		2018		
		% of Sales		% of Sales	
Product	\$ 289.7	75.9 %	\$ 320.6	79.4 %	\$ (30.9)
Service	92.1	24.1 %	83.0	20.6 %	9.0
Total sales	381.8	100.0 %	403.6	100.0 %	(21.9)
Product	133.2	34.9 %	130.9	32.4 %	2.4
Service	50.4	13.2 %	51.2	12.7 %	(0.8)
Total cost of sales	183.6	48.1 %	182.1	45.1 %	1.6
Gross profit	198.1	51.9 %	221.6	54.9 %	(23.4)
Operating expenses					
Selling, general and administrative	177.4	46.5 %	169.7	42.0 %	7.7
Research and development	44.2	11.6 %	46.1	11.4 %	(1.9)
Impairment loss	35.2	9.2 %	—	— %	35.2
Total operating expenses	256.8	67.3 %	215.8	53.5 %	41.0
Other expense	2.4	0.6 %	1.2	0.3 %	1.2
Income tax expense (benefit)	1.1	0.3 %	(0.4)	(0.1)%	1.5
Net (loss) income	\$ (62.1)	(16.3)%	\$ 4.9	1.2 %	\$ (67.0)

Consolidated Results

Sales. Total sales decreased by \$21.9 million, or 5.4%, to \$381.8 million for the year ended December 31, 2019 from \$403.6 million for the year ended December 31, 2018. Total product sales decreased by \$30.9 million, or 9.6%, to \$289.7 million for the year ended December 31, 2019 from \$320.6 million for the year ended December 31, 2018. Our product sales decrease reflected lower unit sales primarily driven by continuing softness in many of our served markets, with particular softness in the automotive and broader Asian markets. Service sales increased by \$9.0 million, or 10.9%, to \$92.1 million for the year ended December 31, 2019 from \$83.0 million for the year ended December 31, 2018, primarily due to an increase in warranty and customer service revenue driven by the growth of our global installed, serviceable base and focused sales initiatives to maintain customer relationships after the purchase of our measurement devices. Foreign exchange rates had a negative impact on sales of \$13.0 million, decreasing our overall sales by approximately 3.2%, primarily due to the weakening of the Euro and Chinese Yuan relative to the U.S. dollar.

Gross profit. Gross profit decreased by \$23.4 million, or 10.6%, to \$198.1 million for the year ended December 31, 2019 from \$221.6 million for the year ended December 31, 2018. Gross margin decreased to 51.9% for the year ended December 31, 2019 from 54.9% in the prior year period. Gross margin from product revenue decreased by 5.2 percentage points to 54.0% for the year ended December 31, 2019 from 59.2% in the prior year period. This decrease in gross margin from product revenue was primarily due to the \$12.8 million increase in our reserve for excess and obsolete inventory recorded in the fourth quarter of 2019 in connection with our strategic decisions to simplify our hardware product portfolio and cease selling certain products, compared to a \$4.7 million increase in our reserve for excess and obsolete inventory recorded in 2018. Gross margin from service revenue increased by 7.0 percentage points to 45.3% for the year ended December 31, 2019 from 38.3% for the prior year period, primarily due to the leveraging effect of higher warranty and customer service revenue as well as improved efficiencies in our customer service repair process.

Selling, general and administrative expenses. Selling, general and administrative (“SG&A”) expenses increased by \$7.7 million, or 4.5%, to \$177.4 million, for the year ended December 31, 2019 from \$169.7 million for the year ended December 31, 2018. This increase was driven primarily by executive team transition costs, including the acceleration of stock-based compensation expense related to the accelerated vesting of stock options and restricted stock units granted to our prior executive officers and severance costs, professional fees incurred related to the GSA Matter, and an increase in compensation expenses related to our increased selling headcount, partially offset by lower commission expense due to the decrease in product sales. SG&A expenses as a percentage of sales increased to 46.5% for the year ended December 31, 2019 from 42.0% for the year ended December 31, 2018.

Research and development expenses. Research and development expenses decreased \$1.9 million, or 4.1%, to \$44.2 million for the year ended December 31, 2019 from \$46.1 million for the year ended December 31, 2018. This decrease in research and development expenses was mainly due to a decrease in materials and consulting costs, as well as favorable changes in foreign currencies as the U.S. dollar strengthened against the Euro, which decreased the compensation cost of foreign research and development employees. Research and development expenses as a percentage of sales increased to 11.6% for the year ended December 31, 2019 from 11.4% for the year ended December 31, 2018.

Impairment loss. As a result of our annual goodwill and intangible asset impairment test performed in December 2019, we recorded an impairment loss of \$35.2 million in the fourth quarter of 2019, which included \$21.2 million in goodwill, \$10.5 million in intangible assets associated with recent acquisitions, \$1.4 million in intangible assets related to capitalized patents, and \$2.1 million in other asset write-downs. There were no similar impairments in 2018.

Other expense. Other expense was \$2.4 million for the year ended December 31, 2019 compared to \$1.2 million for the year ended December 31, 2018. This increase was primarily driven by the impairment charge related to our equity investment in present4D GmbH (“present4D”) recorded in the second quarter of 2019 and the impairment charge related to our note receivable due from present4D recorded in the fourth quarter of 2019, partially offset by a favorable adjustment to the contingent consideration liability from a prior year acquisition.

Income tax expense (benefit). Income tax expense for the year ended December 31, 2019 was \$1.1 million compared with an income tax benefit of \$0.4 million for the year ended December 31, 2018. Our effective tax rate was 1.9% for the year ended December 31, 2019 compared to (8.2%) for the year ended December 31, 2018. The change in income tax expense (benefit) was primarily due to \$8.5 million of income tax expense recorded in the year ended December 31, 2019 resulting from our determination that it is more likely than not that certain foreign deferred tax assets will not be fully realized and the establishment of a valuation due to a history of cumulative losses in related jurisdictions. Additionally, the year-over-year change in our income tax expense (benefit) and our effective tax rate was partially due to a pretax book loss during the year ended December 31, 2019 as compared with pretax book income in the year ended December 31, 2018, as well as provision-to-return adjustments recorded in 2019 and 2018.

Net (loss) income. Net loss was \$62.1 million for the year ended December 31, 2019 compared with net income of \$4.9 million for the year ended December 31, 2018, reflecting the impact of the factors described above.

2018 Compared to 2017

(dollars in millions)	Years ended December 31,					Change 2018 vs 2017
	2018		2017			
		% of Sales		% of Sales		
Product	\$ 320.6	79.4 %	\$ 287.2	79.6 %	\$ 33.4	
Service	83.0	20.6 %	73.7	20.4 %	9.4	
Total sales	403.6	100.0 %	360.9	100.0 %	42.7	
Product	130.9	32.4 %	115.8	32.1 %	15.1	
Service	51.2	12.7 %	46.5	12.9 %	4.7	
Total cost of sales	182.1	45.1 %	162.2	45.0 %	19.8	
Gross profit	221.6	54.9 %	198.7	55.0 %	22.9	
Operating expenses						
Selling, general and administrative	169.7	42.0 %	152.3	42.2 %	17.4	
Research and development	46.1	11.4 %	41.1	11.4 %	5.0	
Total operating expenses	215.8	53.5 %	193.4	53.6 %	22.4	
Other expense (income)	1.2	0.3 %	(0.5)	(0.1)%	1.7	
Income tax (benefit) expense	(0.4)	(0.1)%	20.3	5.6 %	(20.7)	
Net income (loss)	\$ 4.9	1.2 %	\$ (14.5)	(4.0)%	\$ 19.4	

Consolidated Results

Sales. Total sales increased by \$42.7 million, or 11.8%, to \$403.6 million for the year ended December 31, 2018 from \$360.9 million for the year ended December 31, 2017. Our sales increase was primarily driven by increases in both unit sales and average selling prices and growth in hardware warranty revenue, partially offset by the \$4.8 million reduction of our total sales recorded in the fourth quarter of 2018 as a result of the GSA Matter (the “GSA cumulative sales adjustment”). Total product sales increased by \$33.4 million, or 11.6%, to \$320.6 million for the year ended December 31, 2018 from \$287.2 million for the year ended December 31, 2017. Our product sales increase was primarily driven by increases in both unit sales and average selling prices, partially offset by the GSA cumulative sales adjustment. Service revenue increased by \$9.4 million, or 12.7%, to \$83.0 million for the year ended December 31, 2018 from \$73.7 million for the year ended December 31, 2017, primarily due to an increase in warranty and customer service revenue driven by the growth of our installed, serviceable base and focused sales initiatives, partially offset by the GSA cumulative sales adjustment. Foreign exchange rates had a slightly positive impact on sales of \$2.5 million, increasing our overall sales growth by 0.7 percentage points, primarily due to the strengthening of the Euro, Japanese Yen and Chinese Yuan relative to the U.S. dollar.

Gross profit. Gross profit increased by \$22.9 million, or 11.5%, to \$221.6 million for the year ended December 31, 2018 from \$198.7 million for the year ended December 31, 2017. Gross margin decreased to 54.9% for the year ended December 31, 2018 from 55.0% for the year ended December 31, 2017. This decrease was primarily due to the GSA cumulative sales adjustment recorded in the fourth quarter of 2018 and a \$4.7 million inventory charge recorded in the third quarter of 2018 resulting from an analysis of our inventory reserves in connection with our new product introductions and acquisitions, increasing our reserve for excess and obsolete inventory, partially offset by higher average selling prices of our measurement solutions due to new product introductions, improved manufacturing efficiencies and higher gross margin from service revenue.

Selling, general and administrative expenses. Selling, general and administrative expenses increased by \$17.4 million, or 11.4%, to \$169.7 million, for the year ended December 31, 2018 from \$152.3 million for the year ended December 31, 2017. This increase was due to higher compensation expense from headcount increases, primarily driven by our global sales force headcount increase, an increase in commission expense driven by increased sales and an increase in global system expenses associated with implementing the European Union's General Data Protection Regulation. SG&A expenses as a percentage of sales were 42.0% for the year ended December 31, 2018 compared with 42.2% for the year ended December 31, 2017.

Research and development expenses. Research and development expenses increased \$5.0 million, or 12.2%, to \$46.1 million for the year ended December 31, 2018 from \$41.1 million for the year ended December 31, 2017. This increase in research and development expenses was mainly due to higher compensation expense resulting from increased engineering headcount and higher amortization of intangible assets related to acquisitions and new production tooling for the manufacture of our products.

Other expense (income). Other expense was \$1.2 million for the year ended December 31, 2018 compared to other income of \$0.5 million for the year ended December 31, 2017. This change was primarily driven by the \$0.5 million of imputed interest expense recorded in the fourth quarter of 2018 related to the GSA cumulative sales adjustment and the effect of foreign exchange rates on the value of the current intercompany account balances of our subsidiaries denominated in other currencies.

Income tax (benefit) expense. Income tax benefit for the year ended December 31, 2018 was \$0.4 million compared with income tax expense of \$20.3 million for the year ended December 31, 2017. This change was primarily due to the higher income tax expense for the year ended December 31, 2017 related to the U.S. Tax Cuts and Jobs Act of 2017 (the "U.S. Tax Cuts and Jobs Act").

On December 22, 2017, the United States enacted the U.S. Tax Cuts and Jobs Act, resulting in significant modifications to existing law. We followed the guidance in Securities and Exchange Commission ("SEC") Staff Accounting Bulletin 118 ("SAB 118"), which provided additional clarification regarding the application of Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") Topic 740, Income Taxes ("FASB ASC Topic 740"), if a company did not have the necessary information available, prepared or analyzed in reasonable detail to complete the accounting for certain income tax effects of the U.S. Tax Cuts and Jobs Act for the reporting period in which the U.S. Tax Cuts and Jobs Act was enacted. As a result, in accordance with the U.S. Tax Cuts and Jobs Act, we recorded a provisional amount of \$19.4 million of additional income tax expense in the fourth quarter of 2017, the period in which the legislation was enacted. The portion of this \$19.4 million provisional amount that related to the transition tax on the mandatory deemed repatriation of foreign earnings was \$17.4 million based on our best estimate and guidance available at that time.

As additional guidance was released during the SAB 118 remeasurement period, we completed our transition tax analysis, which resulted in an income tax benefit of \$1.0 million and a \$1.8 million decrease of our deferred tax assets recorded in the fourth quarter of 2018 related to adjustments to the transition tax on mandatory deemed repatriation of foreign earnings.

Net income (loss). Net income was \$4.9 million for the year ended December 31, 2018 compared with a net loss of \$14.5 million for the year ended December 31, 2017, reflecting the impact of the factors described above.

Liquidity and Capital Resources

Cash and cash equivalents increased by \$24.9 million to \$133.6 million at December 31, 2019 from \$108.8 million at December 31, 2018. The increase was primarily driven by net cash provided by operating activities and financing activities, partially offset by net cash used in investing activities.

Cash flows from operating activities provide our primary source of liquidity. We generated positive cash flows from operations of \$32.5 million during the year ended December 31, 2019 compared to \$6.3 million during the year ended December 31, 2018. The increase was mainly due to the non-cash impairment charges recorded in the fourth quarter of 2019, as well as changes in working capital, primarily comprised of a decrease in accounts receivable, an increase in GSA liability and unearned service revenue; partially offset by an increase in inventory.

Cash flows used in investing activities during the year ended December 31, 2019 were \$9.3 million compared with \$55.8 million during the year ended December 31, 2018. The change was primarily due to cash paid for acquisitions of \$27.1 million, for our \$1.8 million equity investment in Present4D, and for the net purchase of \$14.0 million in U.S. Treasury Bills during the year ended December 31, 2018, compared to no such activity in the year ended December 31, 2019.

Cash flows provided by financing activities during the years ended December 31, 2019 and December 31, 2018 were \$2.2 million and \$19.8 million, respectively. The decrease was primarily driven by a reduction in proceeds from the issuance of stock relating to the exercise of stock options during the year ended December 31, 2019 compared to the prior year, increased contingent consideration paid in connection with our recent acquisitions in the year ended December 31, 2019, and increased payments for taxes related to the net share settlement of equity awards in the year ended December 31, 2019.

Of our cash and cash equivalents, \$89.3 million was held by foreign subsidiaries as of December 31, 2019. On December 22, 2017, the United States enacted the U.S. Tax Cuts and Jobs Act, resulting in significant modifications to existing law, which included a transition tax on the mandatory deemed repatriation of foreign earnings. Despite the changes in US tax law, our current intent is to indefinitely reinvest these funds in our foreign operations, as the cash is needed to fund ongoing operations.

On November 24, 2008, our Board of Directors approved a \$30.0 million share repurchase program. Subsequently, in October 2015, our Board of Directors authorized an increase to the existing share repurchase program from \$30.0 million to \$50.0 million. In December 2018, our Board of Directors authorized management to utilize the share repurchase program, beginning January 1, 2019, to maintain the number of our issued and outstanding shares to address the dilutive impact of stock options exercises and the settlement of restricted stock units. Acquisitions for the share repurchase program may be made from time to time at prevailing prices as permitted by securities laws and other legal requirements and subject to market conditions and other factors under this program. The share repurchase program may be discontinued at any time. There is no expiration date or other restriction governing the period over which we can repurchase shares under the program. We made no stock repurchases during the years ended December 31, 2019, 2018 and 2017 under this program. As of December 31, 2019, we had authorization to repurchase \$18.3 million of the \$50.0 million authorized by our Board of Directors under the existing share repurchase program.

We believe that our working capital and anticipated cash flow from operations will be sufficient to fund our long-term liquidity operating requirements for at least the next 12 months.

We have no off-balance sheet arrangements.

Contractual Obligations and Commercial Commitments

We are party to capital leases on equipment with an initial term of 36 to 60 months and other non-cancellable operating leases. These obligations are presented below as of December 31, 2019 (dollars in thousands):

Contractual Obligations	Total	Payments Due by Period			
		< 1 Year	1-3 Years	3-5 Years	> 5 Years
Operating lease obligations	\$ 22,173	\$ 7,188	\$ 7,065	\$ 5,549	\$ 2,371
Capital lease obligations	799	355	401	43	\$ —
Purchase obligations	54,169	52,640	1,529	—	—
Transition tax liability	12,247	1,166	2,333	5,103	3,645
Other obligations	733	733	—	—	—
Total	\$ 90,121	\$ 62,082	\$ 11,328	\$ 10,695	\$ 6,016

We enter into purchase commitments for products and services in the ordinary course of business. These purchases generally cover production requirements for 60 to 120 days as well as materials necessary to service customer units through the product lifecycle and for warranty commitments. As of December 31, 2019, we had approximately \$52.6 million in purchase commitments that are expected to be delivered within the next 12 months. To ensure adequate component availability in preparation for new product introductions, we also had \$1.5 million in long-term commitments for purchases to be delivered after 12 months. During the fourth quarter of 2017, we recorded a provisional amount of \$17.4 million related to the increase to our taxes payable pursuant to the U.S. Tax Cuts and Jobs Act associated with the mandatory deemed repatriation of the earnings of our foreign subsidiaries, or transition tax. During the fourth quarter of 2018, we decreased the provisional estimate of the one-time transition tax by \$2.8 million upon completing our analysis of earnings and profits of our foreign subsidiaries and utilization of foreign tax credits. \$1.8 million of the decrease related to a change in our deferred tax assets, and \$1.0 million was an income tax benefit recorded in the fourth quarter of 2018. We made our first two transition tax payments in 2018 and 2019 and will pay the remaining liability over the next six years. Other obligations included in the table primarily represent estimated payments due for acquisition related earn-outs of \$0.7 million.

Inflation

Inflation did not have a material impact on our results of operations in recent years, and we do not expect inflation to have a material impact on our operations in 2020.

Critical Accounting Policies

The preparation of our consolidated financial statements requires our management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, and expenses, as well as disclosure of contingent assets and liabilities. We base our estimates on historical experience, along with various other factors believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Some of these judgments can be subjective and complex and, consequently, actual results may differ from these estimates under different assumptions or conditions. While for any given estimate or assumption made by our management there may be other estimates or assumptions that are reasonable, we believe that, given the current facts and circumstances, it is unlikely that applying any such other reasonable estimate or assumption would materially impact the financial statements.

In response to the SEC's financial reporting release, FR-60, "Cautionary Advice Regarding Disclosure About Critical Accounting Policies," we have selected our critical accounting policies for purposes of explaining the methodology used in our calculation, in addition to any inherent uncertainties pertaining to the possible effects on our financial condition. The critical policies discussed below are our processes of recognizing revenue, the reserve for excess and obsolete inventory, income taxes, the reserve for warranties, goodwill impairment, business combinations and stock-based compensation. These policies affect current assets, current liabilities and operating results and are therefore critical in assessing our financial and operating status. These policies involve certain assumptions that, if incorrect, could have an adverse impact on our operating results and financial position.

Revenue Recognition

For arrangements with multiple performance obligations, which represent promises within an arrangement that are capable of being distinct, we allocate revenue to all distinct performance obligations based on their relative standalone selling prices ("SSP"). When available, we use observable prices to determine the SSP. When observable prices are not available, SSPs are established that reflect our best estimates of what the selling prices of the performance obligations would be if they were sold regularly on a standalone basis.

Revenue related to our measurement and imaging equipment and related software is generally recognized upon shipment from our facilities or when delivered to the customer's location, as determined by the agreed upon shipping terms, at which time we are entitled to payment and title and control has passed to the customer. Fees billed to customers associated with the distribution of products are classified as revenue. We warrant our products against defects in design, materials and workmanship for one year. A provision for estimated future costs relating to warranty expense is recorded when products are shipped. We separately sell extended warranties. Extended warranty revenues are recognized on a straight-line basis over the term of the warranty. Costs relating to extended warranties are recognized as incurred. Revenue from sales of software only is recognized when no further significant production, modification or customization of the software is required and when the risks and rewards of ownership have passed to the customer. These software arrangements generally include short-term maintenance that is considered post-contract support ("PCS"), which is considered to be a separate performance obligation. We generally establish a standalone sales price for this PCS component based on our maintenance renewal rate. Maintenance renewals, when sold, are recognized on a straight-line basis over the term of the maintenance agreement. Revenues resulting from sales of comprehensive support, training and technology consulting services are recognized as such services are performed and are deferred when billed in advance of the performance of services. Payment for products and services is collected within a short period of time following transfer of control or commencement of delivery of services, as applicable. Revenues are presented net of sales-related taxes.

Reserve for Excess and Obsolete Inventory

Because the value of inventory that will ultimately be realized cannot be known with exact certainty, we rely upon both past sales history and future sales forecasts to provide a basis for the determination of the reserve. Inventory is considered potentially obsolete if we have withdrawn those products from the market or had no sales of the product for the past 12 months and have no sales forecasted for the next 12 months. Inventory is considered potentially excess if the quantity on hand exceeds 12 months of expected remaining usage. The resulting obsolete and excess parts are then reviewed to determine if a substitute usage or a future need exists. Items without an identified current or future usage are reserved in an amount equal to 100% of the first-in first-out cost of such inventory. Our products are subject to changes in technologies that may make certain of our products or their components obsolete or less competitive, which may increase our historical provisions to the reserve.

Income Taxes

We review our deferred tax assets on a regular basis to evaluate their recoverability based upon expected future reversals of deferred tax liabilities, projections of future taxable income, and tax planning strategies that we might employ to utilize such assets, including net operating loss carryforwards. Based on the positive and negative evidence of recoverability, we establish a valuation allowance against the net deferred assets of a taxing jurisdiction in which we operate, unless it is “more likely than not” that we will recover such assets through the above means. Our evaluation of the need for the valuation allowance is significantly influenced by our ability to achieve profitability and our ability to predict and achieve future projections of taxable income.

Significant judgment is required in determining our worldwide provision for income taxes. In the ordinary course of operating a global business, there are many transactions for which the ultimate tax outcome is uncertain. We establish provisions for income taxes when, despite the belief that tax positions are fully supportable, there remain certain positions that do not meet the minimum probability threshold as described by FASB ASC Topic 740, which is a tax position that is more likely than not to be sustained upon examination by the applicable taxing authority. In the ordinary course of business, we are examined by various federal, state, and foreign tax authorities. We regularly assess the potential outcome of these examinations and any future examinations for the current or prior years in determining the adequacy of our provision for income taxes. We assess the likelihood and amount of potential adjustments and adjust the income tax provision, the current tax liability and deferred taxes in the period in which the facts that gave rise to a revision become known.

Reserve for Warranties

We establish at the time of sale a liability for the one-year warranty included with the initial purchase price of our products, based upon an estimate of the repair expenses likely to be incurred for the warranty period. The warranty period is measured in installation-months for each major product group. The warranty reserve is included in accrued liabilities in the accompanying consolidated balance sheets. The warranty expense is estimated by applying the actual total repair expenses for each product group in the prior period and determining a rate of repair expense per installation-month. This repair rate is multiplied by the number of installation-months of warranty for each product group to determine the provision for warranty expenses for the period. We evaluate our exposure to warranty costs at the end of each period using the estimated expense per installation-month for each major product group, the number of units remaining under warranty, and the remaining number of months each unit will be under warranty. We have a history of new product introductions and enhancements to existing products, which may result in unforeseen issues that increase our warranty costs. While such expenses have historically been within expectations, we cannot guarantee this will continue in the future.

Goodwill Impairment

Goodwill represents the excess cost of a business acquisition over the fair value of the net assets acquired. We do not amortize goodwill; however, we perform an annual review each year, or more frequently if indicators of potential impairment exist (i.e., that it is more likely than not that the fair value of the reporting unit is less than the carrying value), to determine if the carrying value of the recorded goodwill or indefinite lived intangible assets is impaired.

We changed the timing of our annual test of goodwill during 2019 to align with our updated strategic plan and annual budgetary process. Accordingly, we performed our annual quantitative test for impairment of our recorded goodwill as of December 10, 2019. As a result of this test, the estimated fair value of each of the Photonics reporting unit, which included goodwill recognized with the Instrument Associates, LLC d/b/a Nutfield Technology (“Nutfield”), Laser Control Systems Limited (“Laser Control Systems”) and Lanmark Controls, Inc. (“Lanmark”) acquisitions, and the 3D Design reporting unit, which included goodwill recognized with the acquisition of Opto-Tech SRL and its subsidiary Open Technologies SRL (collectively, “Open Technologies”), were determined to be significantly less than the carrying value of such reporting unit, indicating a full impairment. This impairment was driven primarily by historical and projected financial performance lower than our expectations and changes in our go-forward strategy in connection with our new strategic plan.

Each period, and for any of our reporting units, we can elect to perform a qualitative assessment to determine whether it is necessary to perform the two-step quantitative goodwill impairment test. If we believe, as a result of our qualitative assessment, that it is not more likely than not that the fair value of a reporting unit containing goodwill is less than its carrying amount, then the quantitative goodwill impairment test is unnecessary. If we elect to bypass the qualitative assessment option, or if the qualitative assessment was performed and resulted in the Company being unable to conclude that it is not more likely than not that the fair value of a reporting unit containing goodwill is greater than its carrying amount, we will perform the quantitative goodwill impairment test. We perform the quantitative goodwill impairment test by calculating the fair value of the reporting unit using a discounted cash flow method and market approach method, and then comparing the respective fair value with the carrying amount of the reporting unit. If the carrying amount of the reporting unit exceeds its fair value, we impair goodwill for the excess amount of the reporting unit compared to its fair value, not to be reduced below zero. Management concluded there was no goodwill impairment for the years ended December 31, 2018 and 2017.

Business Combinations

We allocate the fair value of purchase consideration to the assets acquired and liabilities assumed based on their fair values at the acquisition date. The excess of the fair value of purchase consideration over the fair value of the assets acquired and liabilities assumed is recorded as goodwill. When determining the fair values of assets acquired and liabilities assumed, management makes significant estimates and assumptions, especially with respect to intangible assets. Critical estimates in valuing intangible assets include, but are not limited to, expected future cash flows, which include consideration of future growth rates and margins, customer attrition rates, future changes in technology and brand awareness, loyalty and position, and discount rates. Critical estimates are also made in valuing earn-outs, which represent arrangements to pay former owners based on the satisfaction of performance criteria. Fair value estimates are based on the assumptions management believes a market participant would use in pricing the asset or liability. Amounts recorded in a business combination may change during the measurement period, which is a period not to exceed one year from the date of acquisition, as additional information about conditions existing at the acquisition date becomes available.

Stock-Based Compensation

We measure and record compensation expense using the applicable accounting guidance for share-based payments related to stock options, restricted stock, restricted stock units and performance-based awards granted to our directors and employees. The fair value of stock options, including performance awards, without a market condition is determined by using the Black-Scholes option valuation model. The fair value of restricted stock units and stock options with a market condition is estimated, at the date of grant, using the Monte Carlo Simulation valuation model. The Black-Scholes and Monte Carlo Simulation valuation models incorporate assumptions as to stock price volatility, the expected life of options or awards, a risk-free interest rate and dividend yield. In valuing our stock options, significant judgment is required in determining the expected volatility of our common stock and the expected life that individuals will hold their stock options prior to exercising. Expected volatility for stock options is based on the historical and implied volatility of our own common stock while the volatility for our restricted stock units with a market condition is based on the historical volatility of our own stock and the stock of companies within our defined peer group. The expected life of stock options is derived from the historical actual term of option grants and an estimate of future exercises during the remaining contractual period of the option. While volatility and estimated life are assumptions that do not bear the risk of change subsequent to the grant date of stock options, these assumptions may be difficult to measure, as they represent future expectations based on historical experience. Further, our expected volatility and expected life may change in the future, which could substantially change the grant-date fair value of future awards of stock options and, ultimately, the expense we record. The fair value of restricted stock, including performance awards, without a market condition is estimated using the current market price of our common stock on the date of grant. We elect to account for forfeitures related to the service condition-based awards as they occur.

We expense stock-based compensation for stock options, restricted stock awards, restricted stock units and performance awards over the requisite service period. For awards with only a service condition, we expense stock-based compensation using the straight-line method over the requisite service period for the entire award. For awards with both performance and service conditions, we expense the stock-based compensation on a straight-line basis over the requisite service period for each separately vesting portion of the award, taking into account the probability that we will satisfy the performance condition. Furthermore, we expense awards with a market condition over the three-year vesting period regardless of the value that the award recipients ultimately receive.

Also, beginning in October 2018, our non-employee directors may elect to have their annual cash retainers and annual equity retainers paid in the form of deferred stock units pursuant to the 2014 Equity Incentive Plan and the 2018 Non-Employee Director Deferred Compensation Plan. Each deferred stock unit represents the right to receive one share of our common stock upon the non-employee director's separation of service from the Company. We record compensation cost associated with our deferred stock units over the period of service.

Impact of Recently Adopted Accounting Standards

In February 2016, the FASB issued Accounting Standards Update ("ASU") No. 2016-02, Leases (Topic 842) ("ASU 2016-02"), which is intended to increase transparency and comparability among organizations by recognizing lease assets and lease liabilities on the balance sheet and disclosing key information about leasing arrangements to enable users of financial statements to assess the amount, timing and uncertainty of cash flows arising from leases. ASU No. 2018-11, Leases (Topic 842): Targeted Improvements, was issued by the FASB in July 2018 and allows for a cumulative-effect adjustment transition method of adoption. We adopted ASU 2016-02 effective as of January 1, 2019 utilizing the cumulative-effect adjustment transition method of adoption, which resulted in the recognition on our consolidated balance sheet as of December 31, 2019 of \$18.4 million of right-of-use assets for operating leases, \$19.6 million of lease liability for operating leases, \$0.8 million of property and equipment, net for finance leases and \$0.8 million of lease liability for finance leases under which we function as a lessee. We elected certain practical expedients available under the transition provisions to (i) allow aggregation of non-lease components with the related lease components when evaluating accounting treatment, (ii) apply the modified retrospective adoption method, utilizing the simplified transition option, which allows us to continue to apply the legacy guidance in FASB ASC Topic 840, including its disclosure requirements, in the comparative periods presented in the year of adoption, and (iii) use hindsight in determining the lease term (that is, when considering our options to extend or terminate the lease and to purchase the underlying asset) and in assessing impairment of our right-of-use assets. The adoption of ASU 2016-02 also required us to include any initial direct costs, which are incremental costs that would not have been incurred had the lease not been obtained, in the right-of-use assets. The recognition of these costs in connection with our adoption of this guidance did not have a material impact on our consolidated financial statements.

In January 2017, the FASB issued ASU No. 2017-04, Intangible - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment ("ASU 2017-04"), which is intended to simplify the subsequent measurement of goodwill by eliminating Step 2 from the goodwill impairment test. Under the new guidance, we perform our goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount. An impairment charge is recognized for the amount by which the carrying amount exceeds the reporting unit's fair value up to the amount of the goodwill allocated to the reporting unit. The new guidance also eliminates the requirements for any reporting unit with a zero or negative carrying amount to perform Step 2 of the goodwill impairment test if it fails the qualitative assessment. We adopted this guidance in connection with our annual impairment test for the fiscal year ended December 31, 2019. The adoption of this guidance did not have a material impact on our consolidated financial statements.

Impact of Recently Issued Accounting Standards

In June 2016, the FASB issued ASU No. 2016-13, Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments ("ASU 2016-13"), which requires the measurement and recognition of expected credit losses for financial assets held at amortized cost. ASU 2016-13, and subsequent related amendments to ASU 2016-13, replace the existing incurred loss impairment model with an expected loss model that requires the use of forward-looking information to calculate credit loss estimates. It also eliminates the concept of other-than-temporary impairment and requires credit losses related to available-for-sale debt securities to be recorded through an allowance for credit losses rather than as a reduction in the amortized cost basis of the securities. These changes will result in earlier recognition of credit losses. We adopted ASU 2016-13 effective as of January 1, 2020, and the adoption of the new guidance did not have a material impact on our consolidated financial statements.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Foreign Exchange Exposure

We conduct a significant portion of our business outside the United States. In 2019, 60% of our revenue was invoiced, and a significant portion of our operating expenses were paid, in foreign currencies. At December 31, 2019, 41% of our assets were denominated in foreign currencies. Fluctuations in exchange rates between the U.S. dollar and such foreign currencies may have a material adverse effect on our results of operations and financial condition and could specifically result in foreign exchange gains and losses. The impact of future exchange rate fluctuations on the results of our operations cannot be accurately predicted due to the constantly changing exposure to various currencies, the fact that all foreign currencies do not react in the same manner in relation to the U.S. dollar and the number of currencies involved, although our most significant exposures are to the Euro, Swiss franc, Japanese yen, and Brazilian real. To the extent that the percentage of our non-U.S. dollar revenues derived from international sales increases in the future, our exposure to risks associated with fluctuations in foreign exchange rates may increase. We are aware of the availability of off-balance sheet financial instruments to hedge exposure to foreign currency exchange rates, including cross-currency swaps, forward contracts and foreign currency options. However, we have not used such instruments in the past, and none were utilized in 2019, 2018 or 2017.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Shareholders
FARO Technologies, Inc.

Opinion on the financial statements

We have audited the accompanying consolidated balance sheets of FARO Technologies, Inc. (a Florida corporation) and subsidiaries (the “Company”) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive (loss) income, shareholders’ equity, and cash flows for each of the three years in the period ended December 31, 2019, and the related notes (collectively referred to as the “financial statements”). In our opinion, the financial statements 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.

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

Change in accounting principle

As discussed in Note 1 to the financial statements, the Company has changed its method of accounting for leases in 2019 due to the adoption of Accounting Standards Codification Topic 842, Leases.

Basis for opinion

These financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB. We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical audit matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the 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.

Reserve for excess and obsolete inventory

As described further in Note 1 to the financial statements, the reserve for excess and obsolete inventory is established utilizing the Company’s past sales history and future sales forecasts. Inventory is considered to be potentially obsolete if the product has been withdrawn from the market or the product had no sales for the past 12 months and the product has no sales forecasted for the next 12 months. Inventory is considered potentially excess if the quantity on hand exceeds 12 months of expected future sales. The resulting obsolete and excess items are then reviewed to determine if a substitute usage exists, and items without an identified current or future usage are reserved in an amount equal to 100% of the first-in first-out cost of the inventory. We identified the reserve for excess and obsolete inventory as a critical audit matter.

The principal consideration for our determination that the reserve for excess and obsolete inventory was a critical audit matter was the high risk of estimation uncertainty due to significant judgments in management’s analysis, which included management’s assessment of current and future usage of identified potentially excess and obsolete inventory. Management’s assessment was based on qualitative and quantitative factors, such as the impact from competitors, impact of competing products, product market acceptance, introduction of newer product offerings, product failures, dependence on suppliers for materials, and other considerations evaluated by management in making its assessment of excess and obsolete inventories.

Our audit procedures related to the reserve for excess and obsolete inventory included the following, among others:

- We tested the design and operating effectiveness of the key controls relating to the excess and obsolete reserve.
- We tested the calculation of current inventories within the excess and obsolete reserve by recalculating the analysis of the previous 12 months' usage, and evaluating the reasonableness of forecasted sales.
- We tested the significant assumptions made by management for not reserving potentially excess and obsolete inventory. As part of our procedures, we obtained and inspected corroborating information to support the expectation of future usage, which included evidence such as forecasts of future sales, evaluation of product repair rates, outstanding products in the field, as well as need for replacement parts. We also inquired if any outstanding purchase orders from customers, or any other relevant evidence was available to corroborate management's assertions, as applicable.

Income taxes

As described further in Note 12 to the financial statements, the Company is a multinational corporation that is subject to income taxes in the United States and numerous foreign jurisdictions. The Company's effective tax rate is directly impacted by the application of complex tax laws and regulations, which are highly dependent upon the geographic mix of worldwide earnings or losses, the tax regulations in each country or geographic region in which they operate, and the availability of tax credit and loss-carryforwards. In addition, the recoverability of deferred tax assets in both domestic and foreign jurisdictions is based on the weight of positive and negative evidence of recoverability, which includes future reversals of deferred tax liabilities, projections of future taxable income, and tax planning strategies. We identified income tax expense (benefit) and the deferred tax assets and liabilities as a critical audit matter.

The principal consideration for our determination that the income tax expense (benefit) and valuation and recoverability of deferred tax assets and liabilities was a critical audit matter were due to the multinational presence of the Company in numerous foreign jurisdictions, with varying complex tax laws and regulations. These rules may be subject to interpretation depending on the jurisdiction, and may involve significant management judgment. In addition, there is a high risk of estimation uncertainty due to significant management judgment related to establishing or reversing a valuation allowance against a deferred tax asset in a jurisdiction, which may be based on various forms of positive and negative evidence regarding the recoverability of a deferred tax asset.

Our audit procedures related to the income tax expense (benefit) and deferred tax asset and liability amounts included the following, among others:

- We tested the design and operating effectiveness of the key controls relating to the income tax provision and deferred tax asset and liability amounts. We also tested management's controls around the review of the completeness and accuracy of the qualitative and quantitative valuation allowance analysis.
- We involved foreign tax professionals from member firms to assess significant income tax positions and calculations for completeness and accuracy. In addition, we reconciled the tax provision calculations to the underlying accounting records, tax returns, and other evidential documentation.
- We involved international tax professionals from the firm to test the Company's assumptions regarding its geographic mix of worldwide earnings or losses. As part of those procedures, we noted the Company's geographic mix of earnings or losses was calculated pursuant to third party transfer pricing studies performed by qualified parties.
- We tested the Company's analysis of recoverability of its deferred tax assets in each of its jurisdictions based on evidence received from management to support the balances.

/s/ GRANT THORNTON LLP

We have served as the Company's auditor since 2004.

Orlando, Florida
February 19, 2020

FARO TECHNOLOGIES, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

(in thousands, except share and per share data)

	December 31, 2019	December 31, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 133,634	\$ 108,783
Short-term investments	24,870	24,793
Accounts receivable, net	76,162	88,927
Inventories, net	58,554	65,444
Prepaid expenses and other current assets	28,996	28,795
Total current assets	322,216	316,742
Non-current assets:		
Plant and equipment, net	26,954	30,417
Operating lease right-of-use asset	18,418	—
Goodwill	49,704	67,274
Intangible assets, net	14,471	33,054
Service and sales demonstration inventory, net	33,349	39,563
Deferred income tax assets, net	18,766	14,719
Other long-term assets	2,964	4,475
Total assets	\$ 486,842	\$ 506,244
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 13,718	\$ 20,093
Accrued liabilities	38,072	36,327
Income taxes payable	5,182	5,081
Current portion of unearned service revenues	39,211	32,878
Customer deposits	3,108	3,144
Lease liability	6,674	—
Total current liabilities	105,965	97,523
Unearned service revenues - less current portion	20,578	15,505
Lease liability - less current portion	13,698	—
Deferred income tax liabilities	357	736
Income taxes payable - less current portion	13,177	12,247
Other long-term liabilities	1,075	3,624
Total liabilities	154,850	129,635
Commitments and contingencies - See Note 13		
Shareholders' equity:		
Preferred stock - par value \$0.01, 10,000,000 shares authorized; none issued	—	—
Common stock - par value \$0.001, 50,000,000 shares authorized; 18,988,379, 18,676,059 issued; 17,576,618 and 17,253,011 outstanding, respectively	19	19
Additional paid-in capital	267,868	251,329
Retained earnings	112,879	175,353
Accumulated other comprehensive loss	(17,399)	(18,483)
Common stock in treasury, at cost - 1,411,761 shares and 1,423,048, respectively	(31,375)	(31,609)
Total shareholders' equity	331,992	376,609
Total liabilities and shareholders' equity	\$ 486,842	\$ 506,244

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

FARO TECHNOLOGIES, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS

(in thousands, except share and per share data)	Years ended December 31,		
	2019	2018	2017
SALES			
Product	\$ 289,679	\$ 320,584	\$ 287,248
Service	92,086	83,043	73,669
Total sales	381,765	403,627	360,917
COST OF SALES			
Product	133,246	130,876	115,761
Service	50,387	51,198	46,474
Total cost of sales	183,633	182,074	162,235
GROSS PROFIT	198,132	221,553	198,682
OPERATING EXPENSES			
Selling, general and administrative	177,378	169,717	152,299
Research and development	44,175	46,082	41,061
Impairment loss	35,213	—	—
Total operating expenses	256,766	215,799	193,360
(LOSS) INCOME FROM OPERATIONS	(58,634)	5,754	5,322
OTHER EXPENSE (INCOME)			
Interest income	(714)	(429)	(319)
Other expense (income), net	2,313	1,139	(190)
Interest expense	781	486	4
(LOSS) INCOME BEFORE INCOME TAX EXPENSE (BENEFIT)	(61,014)	4,558	5,827
INCOME TAX EXPENSE (BENEFIT)	1,133	(372)	20,343
NET (LOSS) INCOME	\$ (62,147)	\$ 4,930	\$ (14,516)
NET (LOSS) INCOME PER SHARE - BASIC	\$ (3.58)	\$ 0.29	\$ (0.87)
NET (LOSS) INCOME PER SHARE - DILUTED	\$ (3.58)	\$ 0.29	\$ (0.87)
Weighted average shares - Basic	17,383,415	17,043,167	16,711,534
Weighted average shares - Diluted	17,383,415	17,348,456	16,711,534

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

FARO TECHNOLOGIES, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE (LOSS) INCOME

(in thousands)	Years ended December 31,		
	2019	2018	2017
Net (loss) income	\$ (62,147)	\$ 4,930	\$ (14,516)
Currency translation adjustments, net of income tax	1,084	(10,661)	16,739
Comprehensive (loss) income	\$ (61,063)	\$ (5,731)	\$ 2,223

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

FARO TECHNOLOGIES, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
FOR THE YEARS ENDED DECEMBER 31, 2019, 2018, AND 2017

(in thousands, except share data)	Common Stock		Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Common Stock in Treasury	Total
	Shares	Amounts					
BALANCE JANUARY 1, 2017	16,680,791	\$ 18	\$ 212,602	\$ 183,436	\$ (24,561)	\$ (31,838)	\$ 339,657
Net loss				(14,516)			(14,516)
Currency translation adjustment, net of income tax					16,739		16,739
Restricted stock issued and stock based compensation under incentive plans	19,881		6,450				6,450
Stock options exercised, net of shares withheld for employee taxes	86,994		3,284				3,284
Reissuance of treasury shares	9,218		281			29	310
Cumulative effect of the adoption of ASU 2016-09			438	(296)			142
BALANCE DECEMBER 31, 2017	16,796,884	\$ 18	\$ 223,055	\$ 168,624	\$ (7,822)	\$ (31,809)	\$ 352,066
Net income				4,930			4,930
Currency translation adjustment, net of income tax					(10,661)		(10,661)
Restricted stock issued and stock based compensation under incentive plans	15,960		7,620				7,620
Stock options exercised, net of shares withheld for employee taxes	382,957	1	17,027				17,028
Reissuance of treasury shares	57,210		3,627			200	3,827
Cumulative effect of the adoption of ASU 2014-09				1,799			1,799
BALANCE DECEMBER 31, 2018	17,253,011	\$ 19	\$ 251,329	\$ 175,353	\$ (18,483)	\$ (31,609)	\$ 376,609
Net loss				(62,147)			(62,147)
Currency translation adjustment, net of income tax					1,084		1,084
Restricted stock issued and stock based compensation under incentive plans	88,606		11,071				11,071
Stock options exercised, net of shares withheld for employee taxes	224,214		5,468				5,468
Reissuance of treasury shares	10,787					234	234
Cumulative effect of the adoption of ASU 2016-02				(327)			(327)
BALANCE DECEMBER 31, 2019	17,576,618	\$ 19	\$ 267,868	\$ 112,879	\$ (17,399)	\$ (31,375)	\$ 331,992

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

FARO TECHNOLOGIES, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)	Years Ended December 31,		
	2019	2018	2017
CASH FLOWS FROM:			
OPERATING ACTIVITIES:			
Net (loss) income	\$ (62,147)	\$ 4,930	\$ (14,516)
Adjustments to reconcile net (loss) income to net cash provided by operating activities:			
Depreciation and amortization	18,516	18,313	16,588
Compensation for stock options and restricted stock units	11,071	7,620	6,450
Provision for bad debts	2,090	907	370
Loss on disposal of assets	2,639	192	451
Provision for excess and obsolete inventory	16,886	5,757	1,734
Impairment of goodwill	21,233	—	—
Impairment of acquired intangibles	10,548	—	—
Impairment of loan to affiliate	549	—	—
Deferred income tax (benefit) expense	(6,304)	689	(1,740)
Change in operating assets and liabilities:			
(Increase) decrease in:			
Accounts receivable, net	10,406	(15,995)	(6,766)
Inventories	(4,136)	(20,532)	(10,926)
Prepaid expenses and other assets	1,188	(11,310)	(253)
Increase (decrease) in:			
Accounts payable and accrued liabilities	(2,518)	11,195	1,103
Income taxes payable	1,041	(3,286)	20,011
Customer deposits	(30)	513	(461)
Unearned service revenues	11,436	7,330	(1,690)
Net cash provided by operating activities	<u>32,468</u>	<u>6,323</u>	<u>10,355</u>
INVESTING ACTIVITIES:			
Purchases of investments	(50,000)	(47,000)	(33,000)
Proceeds from sale of investments	50,000	33,000	65,000
Purchases of property and equipment	(6,675)	(11,021)	(8,970)
Payments for internally capitalized patents	(2,118)	(1,900)	(2,377)
Acquisition of business, net of cash received	—	(27,067)	(5,596)
Other	(549)	(1,786)	—
Net cash (used in) provided by investing activities	<u>(9,342)</u>	<u>(55,774)</u>	<u>15,057</u>
FINANCING ACTIVITIES:			
Payments on capital leases	(358)	(157)	(108)
Payments of contingent consideration for acquisitions	(3,101)	(888)	(521)
Payments for taxes related to net share settlement of equity awards	(2,199)	—	—
Proceeds from issuance of stock related to stock option exercises	7,901	20,855	3,594
Net cash provided by financing activities	<u>2,243</u>	<u>19,810</u>	<u>2,965</u>
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS	(518)	(2,536)	6,414
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	24,851	(32,177)	34,791
CASH AND CASH EQUIVALENTS, BEGINNING OF YEAR	108,783	140,960	106,169
CASH AND CASH EQUIVALENTS, END OF YEAR	<u>\$ 133,634</u>	<u>\$ 108,783</u>	<u>\$ 140,960</u>

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

FARO TECHNOLOGIES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
YEARS ENDED DECEMBER 31, 2019, 2018 and 2017
(in thousands, except share and per share data or as otherwise noted)

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Description of Business—FARO Technologies, Inc. and its subsidiaries (collectively “FARO,” the “Company,” “us,” “we” or “our”) design, develop, manufacture, market and support software driven, three-dimensional (“3D”) measurement and imaging solutions. This technology permits high-precision 3D measurement, imaging and comparison of parts and complex structures within production and quality assurance processes. Our devices are used for inspection of components and assemblies, rapid prototyping, reverse engineering, documenting large volume or structures in 3D, surveying and construction, as well as for investigation and reconstruction of accident sites or crime scenes. We sell the majority of our products through a direct sales force across a broad number of customers in a range of manufacturing, industrial, architecture, surveying, building information modeling, construction, public safety forensics, cultural heritage, and other applications. Our FaroArm[®], FARO ScanArm[®], FARO Laser Tracker[™], FARO Laser Projector, and their companion CAM2[®], BuildIT, and BuildIT Projector software solutions, provide for Computer-Aided Design (“CAD”) based inspection, factory-level statistical process control, high-density surveying, and laser-guided assembly and production. Together, these products integrate the measurement, quality inspection, and reverse engineering functions with CAD and 3D software to improve productivity, enhance product quality, and decrease rework and scrap in the manufacturing process, mainly supporting applications in the automotive, aerospace, metal and machine fabrication and other industrial manufacturing markets. Our FARO Focus and FARO ScanPlan, and their companion FARO SCENE, BuildIT, FARO As-Built[™], and FARO Zone public safety forensics software offerings, are utilized for a wide variety of 3D modeling, documentation and high-density surveying applications primarily in the architecture, engineering and construction and public safety markets. Our FARO ScanArm[®] and its companion SCENE software also enable a fully digital workflow used to capture real world geometry for the purpose of empowering design, enabling innovation, and speeding up the design cycle.

Since the fourth quarter of 2016, we had operated in five verticals—3D Manufacturing, Construction Building Information Modeling (“Construction BIM”), Public Safety Forensics, 3D Design and Photonics—and had three reporting segments—3D Manufacturing, Construction BIM and Emerging Verticals. As discussed in our Quarterly Report on Form 10-Q for the third quarter of 2019, our new management team, led by our new Chief Executive Officer (“CEO”), formulated and began to implement a new comprehensive strategic plan for our business. As part of our strategic planning process, we identified areas of our business that needed enhanced focus or change in order to improve our efficiency and cost structure. In the fourth quarter of 2019, we reassessed and redefined our go-to-market strategy, refocused our marketing engagement with our customers and re-evaluated our hardware product portfolio.

As part of our new strategic plan, and based on the recommendation of our CEO, who is also our Chief Operating Decision Maker (“CODM”), in the fourth quarter of 2019, we eliminated our vertical structure and began reorganizing the Company into a functional structure. Our executive leadership team is now comprised of functional leaders in areas such as sales, marketing, operations, research and development and general and administrative, and resources are allocated to each function at a consolidated unit level. We no longer have separate business units, or segment managers or vertical leaders who report to the CODM with respect to operations, operating results or planning for levels or components below the total Company level. Instead, our CODM now allocates resources and evaluates performance on a Company-wide basis. Based on these changes, commencing with the fourth quarter of 2019, we are now reporting as one reporting segment that develops, manufactures, markets, supports and sells CAD-based quality assurance products integrated with CAD-based inspection and statistical process control software and 3D documentation systems. Our reporting segment sells into a variety of end markets, including automotive, aerospace, metal and machine fabrication, architecture, engineering, construction and public safety.

Principles of Consolidation—Our consolidated financial statements include the accounts of FARO Technologies, Inc. and its subsidiaries, all of which are wholly owned. All intercompany transactions and balances have been eliminated. The financial statements of our foreign subsidiaries are translated into U.S. dollars using exchange rates in effect at period-end for assets and liabilities and average exchange rates during each reporting period for results of operations. Adjustments resulting from financial statement translations are reflected as a separate component of accumulated other comprehensive loss. Foreign currency transaction gains and losses are included in net income (loss).

Revenue Recognition, Product Warranty and Extended Warranty Contracts—Revenue is recognized as performance obligations within a contract are satisfied in an amount that reflects the consideration we expect to receive in exchange for satisfaction of those performance obligations, or standalone selling price. Our contracts with customers may include multiple performance obligations. For such arrangements, we allocate revenues to each performance obligation based on its relative standalone selling price. We make this allocation estimate utilizing data from the sale of our applicable products and services to customers separately in similar circumstances, with the exception of software licenses. With respect to software licenses, we use the residual method for allocating the contract price to performance obligations relating to software licenses. Revenue related to our measurement and imaging equipment and related software is generally recognized upon shipment from our facilities or when delivered to the customer's location, as determined by the agreed upon shipping terms, at which time we are entitled to payment and title and control has passed to the customer. Fees billed to customers associated with the distribution of products are classified as revenue. We warrant our products against defects in design, materials and workmanship for one year. A provision for estimated future costs relating to warranty expense is recorded when products are shipped. We separately sell extended warranties. Extended warranty revenues are recognized on a straight-line basis over the term of the warranty. Costs relating to extended warranties are recognized as incurred. Revenue from sales of software only is recognized when no further significant production, modification or customization of the software is required and when the risks and rewards of ownership have passed to the customer. These software arrangements generally include short-term maintenance that is considered post-contract support (“PCS”), which is considered to be a separate performance obligation. We generally establish a standalone sales price for this PCS component based on our maintenance renewal rate. Maintenance renewals, when sold, are recognized on a straight-line basis over the term of the maintenance agreement. Revenues resulting from sales of comprehensive support, training and technology consulting services are recognized as such services are performed and are deferred when billed in advance of the performance of services. Payment for products and services is collected within a short period of time following transfer of control or commencement of delivery of services, as applicable. Revenues are presented net of sales-related taxes.

Cash and Cash Equivalents—We consider cash on hand and amounts on deposit with financial institutions with maturities of three months or less when purchased to be cash and cash equivalents. We had deposits with foreign banks totaling \$89.3 million and \$77.5 million as of December 31, 2019 and 2018, respectively.

Accounts Receivable and Related Allowance for Doubtful Accounts—Credit is extended to customers based on an evaluation of a customer’s financial condition and, generally, collateral is not required. Accounts receivable are generally due within 30 to 90 days and are stated at amounts due from customers, net of an allowance for doubtful accounts. Accounts outstanding longer than the contractual payment terms are considered past due. We make judgments as to the collectability of accounts receivable based on historical trends and future expectations. Management estimates an allowance for doubtful accounts, which adjusts gross trade accounts receivable to their net realizable value. The allowance for doubtful accounts is based on an analysis of all receivables for possible impairment issues and historical write-off percentages. We write off accounts receivable when they become uncollectible, and payments subsequently received on such receivables are credited to the allowance for doubtful accounts. We do not generally charge interest on past due receivables.

Inventories—Inventories are stated at the lower of cost or net realizable value using the first-in first-out (“FIFO”) method. Shipping and handling costs are classified as a component of cost of sales in the consolidated statements of operations. Sales demonstration inventory is comprised of measuring and imaging devices utilized by sales representatives to present our products to customers. Management expects sales demonstration inventory to be held by our sales representatives for up to three years, at which time it is refurbished and transferred to finished goods as used equipment, stated at the lower of cost or net realizable value. Management expects these refurbished units to remain in finished goods inventory and be sold within 12 months at prices that produce reduced gross margins. Sales demonstration inventory remains classified as inventory, as it is available for sale and any required refurbishment prior to sale is minimal.

Service inventory is typically used to provide a temporary replacement product to a customer covered by a premium warranty when the customer’s unit requires service or repair and as training equipment. Service inventory is available for sale; however, management does not expect service inventory to be sold within 12 months and, as such, classifies this inventory as a long-term asset. Service inventory that we utilize for training or repairs which we deem as no longer available for sale is transferred to fixed assets at the lower of cost or net realizable value and depreciated over its remaining useful life, typically three years. See Note 6, “Inventories” for further information regarding inventories.

Reserve for Excess and Obsolete Inventory—Because the value of inventory that will ultimately be realized cannot be known with exact certainty, we rely upon both past sales history and future sales forecasts to provide a basis for the determination of the reserve. Inventory is considered potentially obsolete if we have withdrawn those products from the market or had no sales of the product for the past 12 months and have no sales forecasted for the next 12 months. Inventory is considered potentially excess if the quantity on hand exceeds 12 months of expected remaining usage. The resulting potentially obsolete and excess parts are then reviewed to determine if a substitute usage or a future need exists. Items without an identified current or future usage are reserved in an amount equal to 100% of the FIFO cost of such inventory. Our products are subject to changes in technologies that may make certain of our products or their components obsolete or less competitive, which may increase our historical provisions to the reserve.

Property and Equipment—Property and equipment purchases exceeding one thousand dollars are capitalized and recorded at cost. Depreciation is computed beginning on the date that the asset is placed into service using the straight-line method over the estimated useful lives of the various classes of assets as follows:

Machinery, equipment and software	2 to 5 years
Furniture and fixtures	3 to 10 years

Leasehold improvements are amortized on a straight-line basis over the lesser of the life of the asset or the remaining term of the lease.

Depreciation expense was \$13.0 million, \$12.9 million and \$12.3 million in 2019, 2018 and 2017, respectively. Accelerated methods of depreciation are used for income tax purposes in contrast to book purposes, and as a result, appropriate provisions are made for the related deferred income taxes. Balances of major classes of depreciable assets and total accumulated depreciation as of December 31, 2019 and 2018 are as follows:

	December 31, 2019	December 31, 2018
Property and equipment:		
Machinery and equipment	83,900	76,048
Furniture and fixtures	6,377	6,749
Leasehold improvements	21,397	20,304
Property and equipment at cost	111,674	103,101
Less: accumulated depreciation and amortization	(84,720)	(72,684)
Property and equipment, net	26,954	30,417

Business Combinations—We allocate the fair value of purchase consideration to the assets acquired and liabilities assumed based on their fair values at the acquisition date. The excess of the fair value of purchase consideration over the fair value of these assets acquired and liabilities assumed is recorded as goodwill. When determining the fair values of assets acquired and liabilities assumed, management makes significant estimates and assumptions, especially with respect to intangible assets. Critical estimates in valuing intangible assets include, but are not limited to, expected future cash flows, which include consideration of future growth rates and margins, customer attrition rates, future changes in technology and brand awareness, loyalty and position, and discount rates. Critical estimates are also made in valuing earn-outs, which represent arrangements to pay former owners based on the satisfaction of performance criteria. Fair value estimates are based on the assumptions management believes a market participant would use in pricing the asset or liability. Amounts recorded in a business combination may change during the measurement period, which is a period not to exceed one year from the date of acquisition, as additional information about conditions existing at the acquisition date becomes available.

Goodwill and Intangible Assets—Goodwill represents the excess cost of a business acquisition over the fair value of the net assets acquired. We do not amortize goodwill; however, we perform an annual review each year, or more frequently if indicators of potential impairment exist (i.e., that it is more likely than not that the fair value of the reporting unit is less than the carrying value), to determine if the carrying value of the recorded goodwill or indefinite lived intangible assets is impaired.

We changed the timing of our annual test of goodwill during 2019 to align with our updated strategic plan and annual budgetary process. Accordingly, we performed our annual quantitative test for impairment of our recorded goodwill as of December 10, 2019. As a result of this test, the estimated fair value of each of the Photonics reporting unit, which included goodwill recognized with the Instrument Associates, LLC d/b/a Nutfield Technology (“Nutfield”), Laser Control Systems Limited (“Laser Control Systems”) and Lanmark Controls, Inc. (“Lanmark”) acquisitions, and the 3D Design reporting unit, which included goodwill recognized with the acquisition of Opto-Tech SRL and its subsidiary Open Technologies SRL (collectively, “Open Technologies”), were determined to be significantly less than the carrying value of such reporting unit, indicating a full impairment. This \$21.2 million impairment loss was driven primarily by historical and projected financial performance lower than our expectations and changes in our go-forward strategy in connection with our new strategic plan. Management has concluded there was no goodwill impairment for the years ended December 31, 2018 and 2017. See Note 7, “Goodwill” for further information regarding goodwill.

Other intangible assets principally include patents, existing product technology and customer relationships that arose in connection with our acquisitions. Other intangible assets are recorded at fair value at the date of acquisition and are amortized over their estimated useful lives of 3 to 20 years. As of December 31, 2019 and 2018, there were no indefinite-lived intangible assets.

Product technology and patents are recorded at cost. Amortization expense is computed using the straight-line method over the lives of the product technology and patents of 7 to 20 years.

The remaining weighted-average amortization period for all our intangible assets is 4 years.

As a result of historical and projected financial performance lower than our expectations and changes in our go-forward strategy in connection with our new strategic plan, the estimated fair value of acquired intangibles recognized with the Nutfield, Laser Control Systems, Lanmark and Open Technologies acquisitions were determined to be less than the carrying value of the net carrying value for such assets. We recognized an impairment charge related to such acquired intangibles of \$10.5 million in 2019. See Note 8, “Intangible Assets” for further information regarding intangible assets.

Research and Development—Research and development costs incurred in the discovery of new knowledge and the resulting translation of this new knowledge into plans and designs for new products prior to the attainment of the related products’ technological feasibility are recorded as expenses in the period incurred. To date, the time incurred between the attainment of the related products’ technological feasibility and general release to customers has been short.

Reserve for Warranties—We establish at the time of sale a liability for the one-year warranty included with the initial purchase price of our products, based upon an estimate of the repair expenses likely to be incurred for the warranty period. The warranty period is measured in installation-months for each major product group. The warranty reserve is included in accrued liabilities in the accompanying consolidated balance sheets. The warranty expense is estimated by applying the actual total repair expenses for each product group in the prior period and determining a rate of repair expense per installation-month. This repair rate is multiplied by the number of installation-months of warranty for each product group to determine the provision for warranty expenses for the period. We evaluate our exposure to warranty costs at the end of each period using the estimated expense per installation-month for each major product group, the number of units remaining under warranty, and the remaining number of months each unit will be under warranty. We have a history of new product introductions and enhancements to existing products, which may result in unforeseen issues that increase our warranty costs. While such expenses have historically been within expectations, we cannot guarantee this will continue in the future.

Income Taxes—We review our deferred tax assets on a regular basis to evaluate their recoverability based upon expected future reversals of deferred tax assets and liabilities, projections of future taxable income, and tax planning strategies that we might employ to utilize such assets, including net operating loss carryforwards. Based on the positive and negative evidence for recoverability, we establish a valuation allowance against the net deferred tax assets of a taxing jurisdiction in which we operate unless it is “more likely than not” that we will recover such assets through the above means. Our evaluation of the need for the valuation allowance is significantly influenced by our ability to maintain profitability and our ability to predict and achieve future projections of taxable income.

We recognize tax benefits related to uncertain tax positions only if it is more likely than not that the tax position will be sustained upon examination by taxing authorities. For those positions where it is not more likely than not that a tax benefit will be sustained, no tax benefit has been recognized in the financial statements. In the ordinary course of business, we are examined by various federal, state, and foreign tax authorities. We regularly assess the potential outcomes of these examinations and any future examinations for the current or prior years in determining the adequacy of our provision for income taxes. See Note 12, “Income Taxes” for further information regarding income taxes.

(Loss) Earnings Per Share (“EPS”)—Basic (loss) earnings per share is computed by dividing net (income) income by the weighted average number of shares outstanding. Diluted earnings per share is computed by also considering the impact of potential common stock on both net income and the weighted average number of shares outstanding. Our potential common stock consists of employee stock options, restricted stock, restricted stock units and performance-based awards. Our potential common stock is excluded from the basic earnings per share calculation and is included in the diluted earnings per share calculation when doing so would not be anti-dilutive. Performance-based awards are included in the computation of diluted earnings per share only to the extent that the underlying performance conditions (and any applicable market condition) (i) are satisfied as of the end of the reporting period or (ii) would be considered satisfied if the end of the reporting period were the end of the related contingency period and the result would be dilutive under the treasury stock method. When we report a loss for the period presented, the diluted loss per share calculation does not include our potential common stock, as the inclusion of these shares in the calculation would have an anti-dilutive effect. A reconciliation of the number of common shares used in the calculation of basic and diluted EPS is presented in Note 15, “(Loss) Earnings Per Share.”

Accounting for Stock-Based Compensation—We have two stock-based employee and director compensation plans, which are described more fully in Note 14, “Stock Compensation Plans.”

We measure and record compensation expense using the applicable accounting guidance for share-based payments related to stock options, restricted stock, restricted stock units and performance-based awards granted to our directors and employees. The fair value of stock options, including performance awards, without a market condition is estimated, at the date of grant, using the Black-Scholes option-valuation model. The fair value of restricted stock unit awards and stock options with a market condition is estimated, at the date of grant, using the Monte Carlo Simulation valuation model. The Black-Scholes and Monte Carlo Simulation valuation models incorporate assumptions as to stock price volatility, the expected life of options or awards, a risk-free interest rate and dividend yield. In valuing our stock options, significant judgment is required in determining the expected volatility of our common stock and the expected life that individuals will hold their stock options prior to exercising. Expected volatility for stock options is based on the historical and implied volatility of our own common stock while the volatility for our restricted stock units with a market condition is based on the historical volatility of our own stock and the stock of companies within our defined peer group. The expected life of stock options is derived from the historical actual term of option grants and an estimate of future exercises during the remaining contractual period of the option. While volatility and estimated life are assumptions that do not bear the risk of change subsequent to the grant date of stock options, these assumptions may be difficult to measure as they represent future expectations based on historical experience. Further, our expected volatility and expected life may change in the future, which could substantially change the grant-date fair value of future awards of stock options and, ultimately, the expense we record. The fair value of restricted stock and restricted stock units, including performance awards, without a market condition is estimated using the current market price of our common stock on the date of grant.

We expense stock-based compensation for stock options, restricted stock awards, restricted stock units and performance awards over the requisite service period. For awards with only a service condition, we expense stock-based compensation using the straight-line method over the requisite service period for the entire award. For awards with both performance and service conditions, we expense the stock-based compensation on a straight-line basis over the requisite service period for each separately vesting portion of the award, taking into account the probability that we will satisfy the performance conditions. Furthermore, we expense awards with a market condition over the three-year vesting period regardless of the value that the award recipients ultimately receive. All income tax-related cash flows resulting from share-based payments are reported as operating activities in the statement of cash flows in the deferred income tax benefit line item. We elect to account for forfeitures related to the service condition-based awards as they occur.

Concentration of Credit Risk—Financial instruments that expose us to concentrations of credit risk consist principally of short-term investments and operating demand deposit accounts. Our policy is to place our operating demand deposit accounts with high credit quality financial institutions, the balances of which at times may exceed federally insured limits. We continually monitor our banking relationships and believe we are not exposed to any significant credit risk on our operating demand deposit accounts.

Estimates—The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Impact of Recently Adopted Accounting Standards—In February 2016, the FASB issued Accounting Standards Update (“ASU”) No. 2016-02, Leases (Topic 842) (“ASU 2016-02”), which is intended to increase transparency and comparability among organizations by recognizing lease assets and lease liabilities on the balance sheet and disclosing key information about leasing arrangements to enable users of financial statements to assess the amount, timing and uncertainty of cash flows arising from leases. ASU No. 2018-11, Leases (Topic 842): Targeted Improvements, was issued by the FASB in July 2018 and allows for a cumulative-effect adjustment transition method of adoption. We adopted ASU 2016-02 effective as of January 1, 2019 utilizing the cumulative-effect adjustment transition method of adoption, which resulted in the recognition on our consolidated balance sheet as of December 31, 2019 of \$18.4 million of right-of-use assets for operating leases, \$19.6 million of lease liability for operating leases, \$0.8 million of property and equipment, net for finance leases and \$0.8 million of lease liability for finance leases under which we function as a lessee. We elected certain practical expedients available under the transition provisions to (i) allow aggregation of non-lease components with the related lease components when evaluating accounting treatment, (ii) apply the modified retrospective adoption method, utilizing the simplified transition option, which allows us to continue to apply the legacy guidance in FASB ASC Topic 840, including its disclosure requirements, in the comparative periods presented in the year of adoption, and (iii) use hindsight in determining the lease term (that is, when considering our options to extend or terminate the lease and to purchase the underlying asset) and in assessing impairment of our right-of-use assets. The adoption of ASU 2016-02 also required us to include any initial direct costs, which are incremental costs that would not have been incurred had the lease not been obtained, in the right-of-use assets. The recognition of these costs in connection with our adoption of this guidance did not have a material impact on our consolidated financial statements.

In January 2017, the FASB issued ASU No. 2017-04, Intangible - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment (“ASU 2017-04”), which is intended to simplify the subsequent measurement of goodwill by eliminating Step 2 from the goodwill impairment test. Under the new guidance, we perform our goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount. An impairment charge is recognized for the amount by which the carrying amount exceeds the reporting unit’s fair value up to the amount of the goodwill allocated to the reporting unit. The new guidance also eliminates the requirements for any reporting unit with a zero or negative carrying amount to perform Step 2 of the goodwill impairment test if it fails the qualitative assessment. We adopted this guidance in connection with our annual impairment test for the fiscal year ended December 31, 2019. The adoption of this guidance did not have a material impact on our consolidated financial statements.

Impact of Recently Issued Accounting Standards—In June 2016, the FASB issued ASU No. 2016-13, Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments (“ASU 2016-13”), which requires the measurement and recognition of expected credit losses for financial assets held at amortized cost. ASU 2016-13, and subsequent related amendments to ASU 2016-13, replace the existing incurred loss impairment model with an expected loss model that requires the use of forward-looking information to calculate credit loss estimates. It also eliminates the concept of other-than-temporary impairment and requires credit losses related to available-for-sale debt securities to be recorded through an allowance for credit losses rather than as a reduction in the amortized cost basis of the securities. These changes will result in earlier recognition of credit losses. We adopted ASU 2016-13 effective as of January 1, 2020, and the adoption of the new guidance did not have a material impact on our consolidated financial statements.

Reclassifications—Certain prior year amounts have been reclassified in the accompanying consolidated financial statements to conform to the current period presentation:

- Depreciation and amortization expenses are being reported in the accompanying statements of operations to reflect departmental costs. Previously, those expenses were reported as a separate line item under operating expenses. Amounts related to depreciation and amortization expenses for the years ended December 31, 2018 and 2017 have been restated throughout this Annual Report on Form 10-K to reflect this reclassification of depreciation and amortization expenses and to conform to the current period presentation, as set forth in the following tables;
- Selling and marketing expenses and general and administrative expenses are now being reported in the accompanying statements of operations together in one line as Selling, general and administrative. Previously, those expenses were reported as two separate line items under operating expenses. Amounts related to selling, general and administrative expenses for the years ended December 31, 2018 and 2017 have been restated throughout this Annual Report on Form 10-K to reflect this reclassification of selling, general and administrative expenses and to conform to the current period presentation, as set forth in the following tables;
- Software maintenance revenue is now being reported in the accompanying statements of operations as a component of product sales. Previously, these revenues were reported in service sales. Amounts related to software maintenance sales for the years ended December 31, 2018 and 2017 have been restated throughout this Annual Report on Form 10-K to reflect this reclassification of software maintenance sales and to conform to the current period presentation, as set forth in the following tables; and

- Software maintenance cost of sales is now being reported in the accompanying statements of operations as a component of product cost of sales. Previously, these cost of sales was reported in service cost of sales. Amounts related to software maintenance cost of sales for the years ended December 31, 2018 and 2017 have been restated throughout this Annual Report on Form 10-K to reflect this reclassification of software maintenance cost of sales and to conform to the current period presentation, as set forth in the following tables.

For the twelve months ended December 31, 2018:

	As Reported	Depreciation and Amortization Adjustment	Selling, General and Administrative Adjustment	Software Maintenance Adjustment	As Adjusted
Sales					
Product	\$ 311,102	\$ —	\$ —	\$ 9,482	\$ 320,584
Service	92,525	—	—	(9,482)	83,043
Total sales	\$ 403,627	\$ —	\$ —	\$ —	\$ 403,627
Cost of Sales					
Product	\$ 124,802	\$ 3,406	\$ —	\$ 2,668	\$ 130,876
Service	50,480	3,386	—	(2,668)	51,198
Total cost of sales	\$ 175,282	\$ 6,792	\$ —	\$ —	\$ 182,074
Operating Expenses					
Selling, general and administrative	\$ —	\$ 5,145	\$ 164,572	\$ —	\$ 169,717
Selling and marketing	116,920	—	(116,920)	—	—
General and administrative	47,652	—	(47,652)	—	—
Depreciation and amortization	18,313	(18,313)	—	—	—
Research and development	39,706	6,376	—	—	46,082
Total operating expenses	\$ 222,591	\$ (6,792)	\$ —	\$ —	\$ 215,799

For the twelve months ended December 31, 2017:

	As Reported	Depreciation and Amortization Adjustment	Selling, General and Administrative Adjustment	Software Maintenance Adjustment	As Adjusted
Sales					
Product	\$ 277,922	\$ —	\$ —	\$ 9,326	\$ 287,248
Service	82,995	—	—	(9,326)	73,669
Total sales	\$ 360,917	\$ —	\$ —	\$ —	\$ 360,917
Cost of Sales					
Product	\$ 110,143	\$ 3,254	\$ —	\$ 2,364	\$ 115,761
Service	46,137	2,701	—	(2,364)	46,474
Total cost of sales	\$ 156,280	\$ 5,955	\$ —	\$ —	\$ 162,235
Operating Expenses					
Selling, general and administrative	\$ —	\$ 4,948	\$ 147,351	\$ —	\$ 152,299
Selling and marketing	103,544	—	(103,544)	—	—
General and administrative	43,807	—	(43,807)	—	—
Depreciation and amortization	16,588	(16,588)	—	—	—
Research and development	35,376	5,685	—	—	41,061
Total operating expenses	\$ 199,315	\$ (5,955)	\$ —	\$ —	\$ 193,360

2. SUPPLEMENTAL CASH FLOW INFORMATION

Selected cash payments and non-cash activities were as follows:

	Years ended December 31,		
	2019	2018	2017
Supplemental cash flow information:			
Cash paid for interest	\$ 6	\$ 4	\$ 9
Cash paid for income taxes	\$ 5,498	\$ 5,813	\$ 2,488
Supplemental noncash investing and financing activities:			
Transfer of service and sales demonstration inventory to fixed assets	\$ 3,044	\$ 964	\$ 2,844

3. REVENUES

The following tables present our revenues by sales type as presented in our consolidated statements of operations disaggregated by the timing of transfer of goods or services (in thousands):

	Years ended December 31,		
	2019	2018	2017
Product Sales			
Products transferred to a customer at a point in time	\$ 277,841	\$ 311,102	\$ 277,922
Products transferred to a customer over time	11,838	9,482	9,326
	<u>\$ 289,679</u>	<u>\$ 320,584</u>	<u>\$ 287,248</u>
	Years ended December 31,		
	2019	2018	2017
Service Sales			
Service transferred to a customer at a point in time	\$ 48,593	\$ 42,932	\$ 36,164
Service transferred to a customer over time	43,493	40,111	37,505
	<u>\$ 92,086</u>	<u>\$ 83,043</u>	<u>\$ 73,669</u>

The following table presents our revenues disaggregated by geography, based on the billing addresses of our customers (in thousands):

	Years ended December 31,		
	2019	2018	2017
Total Sales to External Customers			
United States	\$ 151,646	\$ 156,242	\$ 141,595
EMEA ⁽¹⁾	122,279	127,261	115,061
Other APAC ⁽¹⁾	60,796	68,908	60,325
China	32,934	36,130	30,405
Other Americas ⁽¹⁾	14,110	15,086	13,531
	<u>\$ 381,765</u>	<u>\$ 403,627</u>	<u>\$ 360,917</u>

⁽¹⁾ Regions represent Europe, the Middle East, and Africa (EMEA); Asia-Pacific, excluding China (Other APAC); and Canada, Mexico, and Brazil (Other Americas).

For revenue related to our measurement and imaging equipment and related software, we allocate the contract price to performance obligations based on our best estimate of the standalone selling price. We make this allocation estimate utilizing data from the sale of our applicable products and services to customers separately in similar circumstances, with the exception of software licenses. With respect to software licenses, we use the residual method for allocating the contract price to performance obligations relating to software licenses. Revenue related to our measurement and imaging equipment and related software is generally recognized upon shipment from our facilities or when delivered to the customer location, as determined by the agreed upon shipping terms, at which time we are entitled to payment and title and control has passed to the customer. Software arrangements generally include short-term maintenance that is considered PCS, which is considered to be a separate performance obligation. We generally establish a standalone sales price for this PCS component based on our maintenance renewal rate. Maintenance renewals, when sold, are recognized on a straight-line basis over the term of the maintenance agreement. Payment for products and services is collected within a short period of time following transfer of control or commencement of delivery of services, as applicable.

Further, customers frequently purchase extended warranties with the purchase of measurement equipment and related software. Warranties are considered a performance obligation when services are transferred to a customer over time and as such, we recognize revenue on a straight-line basis over the warranty term. Extended warranty sales include contract periods that extend between one month and three years.

We capitalize commission expenses related to deliverables transferred to a customer over time and amortize such costs ratably over the term of the contract. As of December 31, 2019, the deferred cost asset related to deferred commissions was approximately \$3.1 million. For classification purposes, \$2.1 million and \$1.0 million are comprised within the Prepaid expenses and other current assets and Other long-term assets, respectively, on our consolidated balance sheet as of December 31, 2019. As of December 31, 2018, the deferred cost asset related to deferred commissions was approximately \$2.7 million. For classification purposes, \$1.8 million and \$0.9 million are comprised within the Prepaid expenses and other current assets and Other long-term assets, respectively, on our consolidated balance sheet as of December 31, 2018.

The unearned service revenue liabilities reported on our consolidated balance sheets reflect the contract liabilities to satisfy the remaining performance obligations for extended warranties and software maintenance. The current portion of unearned service revenues on our consolidated balance sheets is what we expect to recognize to revenue within twelve months after the applicable balance sheet date relating to extended warranty and software maintenance contract liabilities. The Unearned service revenues - less current portion on our consolidated balance sheets is what we expect to recognize to revenue extending beyond twelve months after the applicable balance sheet date relating to extended warranty and software maintenance contract liabilities. Customer deposits on our consolidated balance sheets represent customer prepayments on contracts for performance obligations that we must satisfy in the future to recognize the related contract revenue. These amounts are generally related to performance obligations which are delivered in less than 12 months. During the year ended December 31, 2019, we recognized \$30.2 million of service revenue that was deferred on our consolidated balance sheet as of December 31, 2018. During the year ended December 31, 2018, we recognized \$25.0 million of service revenue that was deferred on our consolidated balance sheet as of December 31, 2017.

The nature of certain of our contracts gives rise to variable consideration, primarily related to an allowance for sales returns. We are required to estimate the contract asset related to sales returns and record a corresponding adjustment to Cost of Sales. Our allowance for sales returns was approximately \$0.1 million as of both December 31, 2019 and December 31, 2018.

Shipping and handling fees billed to customers in a sales transaction are recorded in Product Sales and shipping and handling costs incurred are recorded in Cost of Sales. We exclude from Sales any value-added, sales and other taxes that we collect concurrently with revenue-producing activities.

4. ALLOWANCE FOR DOUBTFUL ACCOUNTS

Activity in the allowance for doubtful accounts was as follows:

	Years ended December 31,		
	2019	2018	2017
Balance, beginning of year	\$ 1,748	\$ 1,957	\$ 1,829
Provision (net of recovery)	2,090	907	370
Amounts written off, net of recoveries	(389)	(1,116)	(242)
Balance, end of year	\$ 3,449	\$ 1,748	\$ 1,957

5. SHORT-TERM INVESTMENTS

Short-term investments at December 31, 2019 were comprised of U.S. Treasury Bills totaling \$24.8 million, consisting of \$8.9 million maturing on March 12, 2020 and \$15.9 million maturing on June 11, 2020. The interest rates on the U.S. Treasury Bills held on December 31, 2019 and maturing on March 12, 2020 and June 11, 2020 are 1.8%, and 1.4%, respectively. Short-term investments at December 31, 2018 were comprised of U.S. Treasury Bills totaling \$24.8 million, consisting of \$9.0 million that matured on March 14, 2019, \$10.9 million that matured on June 6, 2019 and \$4.9 million that matured on June 20, 2019. The interest rates on the U.S. Treasury Bills held on December 31, 2018 that matured on March 14, 2019, June 6, 2019, and June 20, 2019 were 2.2%, 2.4% and 2.3%, respectively. The investments are classified as held-to-maturity and recorded at cost plus accrued interest, which approximates fair value. We do not intend to sell these investments, and it is not more likely than not that we will be required to sell the investments before we recover their amortized cost bases.

6. INVENTORIES

Inventories are stated at the lower of cost or net realizable value using the first-in first-out method. We have three principal categories of inventory: 1) manufactured product to be sold; 2) sales demonstration inventory - completed product used to support our sales force, for demonstrations and held for sale; and 3) service inventory - completed product and parts used to support our service department and held for sale. Shipping and handling costs are classified as a component of cost of sales in our consolidated statements of operations. Sales demonstration inventory is held by our sales representatives for up to three years, at which time it is refurbished and transferred to finished goods as used equipment, stated at the lower of cost or net realizable value. We expect these refurbished units to remain in finished goods inventory and to be sold within 12 months at prices that produce reduced gross margins. Service inventory is used to provide a temporary replacement product to a customer covered by a premium warranty when the customer's unit requires service or repair and as training equipment. Service inventory is available for sale; however, management does not expect service inventory to be sold within 12 months and, as such, classifies this inventory as a long-term asset. Service inventory that we utilize for training or repairs and which we deem as no longer available for sale is transferred to fixed assets at the lower of cost or net realizable value and depreciated over the remaining life, typically three years.

Inventories consist of the following:

	December 31, 2019	December 31, 2018
Raw materials	\$ 36,956	\$ 39,859
Finished goods	21,598	25,585
Inventories, net	\$ 58,554	\$ 65,444
Service and sales demonstration inventory, net	\$ 33,349	\$ 39,563

7. GOODWILL

We had approximately \$49.7 million and \$67.3 million of goodwill as of December 31, 2019 and 2018, respectively. Changes in these balances are shown below:

(in thousands)	December 31, 2019	December 31, 2018
Goodwill, beginning	\$ 67,274	\$ 52,750
Recognized goodwill	4,443	16,423
Impairment of goodwill	(21,233)	—
Foreign currency translation	(780)	(1,899)
Goodwill, ending	<u>\$ 49,704</u>	<u>\$ 67,274</u>

We test goodwill for impairment annually or more frequently if an event occurs or circumstances would indicate that it is more likely than not the fair value of the reporting unit is less than the carrying value. We changed the timing of our annual test of goodwill during 2019 to align with our updated strategic plan and annual budgetary process. Accordingly, in connection with the preparation of our financial statements for the quarter and year ended December 31, 2019, we performed our annual quantitative test for impairment of our recorded goodwill as of December 10, 2019. As a result of this test, the estimated fair value of each of the Photonics reporting unit, which included goodwill recognized with the Nutfield, Laser Control Systems and Lanmark acquisitions, and the 3D Design reporting unit, which included goodwill recognized with the Open Technologies acquisition, were determined to be less than the carrying value of such reporting unit, indicating a full impairment. This impairment was driven primarily by historical and projected financial performance lower than our expectations and changes in our go-forward strategy in connection with our new strategic plan.

As part of our new strategic plan, and based on the recommendation of our CEO, who is also our CODM, in the fourth quarter of 2019, we eliminated our vertical structure and began reorganizing the Company into a functional structure. Our executive leadership team is now comprised of functional leaders in areas such as sales, marketing, operations, research and development and general and administrative, and resources are allocated to each function at a consolidated unit level. We no longer have separate business units, or segment managers or vertical leaders who report to the CODM with respect to operations, operating results or planning for levels or components below the total Company level. Instead, our CODM now allocates resources and evaluates performance on a Company-wide basis. Based on these changes, commencing with the fourth quarter of 2019, we are now reporting as one reporting segment that develops, manufactures, markets, supports and sells CAD-based quality assurance products integrated with CAD-based inspection and statistical process control software and 3D documentation systems. Our reporting segment sells into a variety of end markets, including automotive, aerospace, metal and machine fabrication, architecture, engineering, construction and public safety. Accordingly, there are no reporting segment goodwill balances at December 31, 2019 and 2018, respectively.

8. INTANGIBLE ASSETS

Intangible assets consist of the following:

	As of December 31, 2019		
	Carrying Value	Accumulated Amortization	Net Intangible
Amortizable intangible assets:			
Product technology	\$ 24,135	\$ 19,798	\$ 4,337
Patents and trademarks	13,726	6,894	6,832
Customer relationships	5,150	2,509	2,641
Other	8,875	8,214	661
Total	<u>\$ 51,886</u>	<u>\$ 37,415</u>	<u>\$ 14,471</u>

	As of December 31, 2018		
	Carrying Value	Accumulated Amortization	Net Intangible
Amortizable intangible assets:			
Product technology	\$ 26,588	\$ 12,332	\$ 14,256
Patents and trademarks	14,647	6,601	8,046
Customer relationships	12,027	2,588	9,439
Other	8,693	7,380	1,313
Total	\$ 61,955	\$ 28,901	\$ 33,054

As a result of historical and projected financial performance lower than our expectations and changes in our go-forward strategy in connection with our new strategic plan, the estimated fair value of acquired intangibles recognized with the Nutfield, Laser Control Systems, Lanmark and Open Technologies acquisitions were determined to be less than the carrying value of the net carrying value for such assets. We recognized an impairment charge related to such acquired intangibles of \$10.5 million in the fourth quarter of 2019. This impairment charge was primarily related to customer relationship and technology intangible assets.

Amortization expense was \$5.6 million, \$5.4 million and \$4.5 million in 2019, 2018 and 2017, respectively. The estimated amortization expense for each of the years 2020 through 2024 and thereafter is as follows:

Years ending December 31,	Amount
2020	\$ 3,287
2021	3,128
2022	2,642
2023	2,214
2024	1,649
Thereafter	1,551
	\$ 14,471

9. ACCRUED LIABILITIES

Accrued liabilities consist of the following:

	As of December 31,	
	2019	2018
Accrued compensation and benefits	\$ 15,366	\$ 17,745
Accrued warranties	2,090	2,571
Professional and legal fees	1,793	2,154
Taxes other than income	4,077	3,550
General services administration contract contingent liability (see Note 13)	11,886	5,267
Other accrued liabilities	2,860	5,040
	\$ 38,072	\$ 36,327

Activity related to accrued warranties was as follows:

	Years ended December 31,		
	2019	2018	2017
Balance, beginning of year	\$ 2,571	\$ 2,628	\$ 2,594
Provision for warranty expense	3,600	4,096	4,045
Fulfillment of warranty obligations	(4,081)	(4,153)	(4,011)
Balance, end of year	\$ 2,090	\$ 2,571	\$ 2,628

10. FAIR VALUE MEASUREMENTS

The guidance on fair value measurements and disclosures defines fair value, establishes a framework for measuring fair value, and requires enhanced disclosures about assets and liabilities measured at fair value. Fair value is defined as the price at which an asset could be exchanged in a current transaction between knowledgeable, willing parties. A liability's fair value is defined as the amount that would be paid to transfer the liability to a new obligor, not the amount that would be paid to settle the liability with the creditor. Where available, fair value is based on observable market prices or parameters or derived from such prices or parameters. Where observable prices or inputs are not available, valuation models are used to determine fair value. These models employ valuation techniques that involve some level of management estimation and judgment, the degree of which is dependent on the price transparency for the instruments or market and the instruments' complexity.

Assets and liabilities recorded at fair value on a recurring basis in our consolidated balance sheets are categorized based upon the level of judgment associated with the inputs used to measure their fair value. Hierarchical levels, defined by the guidance on fair value measurements, are directly related to the amount of subjectivity associated with the inputs to fair valuation of these assets and liabilities and are as follows:

Level 1 - Valuation is based upon quoted market prices for identical instruments traded in active markets.

Level 2 - Valuation is based on quoted market prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market.

Level 3 - Valuation is generated from model-based techniques that use significant assumptions not observable in the market. Valuation techniques include use of discounted cash flow models and similar techniques.

Fair Value on a Recurring Basis

Assets and liabilities measured at fair value on a recurring basis are categorized in the tables below based upon the lowest level of significant input to the valuations. Historically, we have presented short-term investments in the fair value table presented below. As our short-term investments in the accompanying consolidated balance sheets are comprised of U.S. Treasury Bills, these investments are classified as held-to-maturity investments and are not recorded at fair value on a recurring basis in our consolidated balance sheets. As such, we have removed short-term investments from the table below.

	December 31, 2019		
	Level 1	Level 2	Level 3
Liabilities:			
Contingent consideration ⁽¹⁾	\$ —	\$ —	\$ 733
Total	\$ —	\$ —	\$ 733
	December 31, 2018		
	Level 1	Level 2	Level 3
Liabilities:			
Contingent consideration ⁽¹⁾	\$ —	\$ —	\$ 5,531
Total	\$ —	\$ —	\$ 5,531

⁽¹⁾ Contingent consideration liability represents arrangements to pay the former owners of certain companies we acquired based on the former owners attaining future product release milestones. We use a probability-weighted discounted cash flow model to estimate the fair value of contingent consideration liabilities. These probability weightings are developed internally and assessed on a quarterly basis. For the year ended December 31, 2019, we paid \$3.1 million as part of these arrangements. For the year ended December 31, 2018, we paid \$0.9 million as part of these arrangements. The remaining change in the fair value of the contingent consideration from December 31, 2018 to December 31, 2019 was related to changes in our estimates regarding the probability that the former owners will attain certain product release milestones. The undiscounted maximum payment as of December 31, 2019 under the arrangements was \$0.8 million, based on certain milestones.

11. OTHER EXPENSE (INCOME), NET

Other expense (income), net consists of the following:

	Years ended December 31,		
	2019	2018	2017
Foreign exchange transaction losses (gains)	\$ 1,211	\$ 1,386	\$ (162)
Present4D impairment	2,152	—	—
Contingent consideration fair value adjustment	(1,562)	—	—
Other	512	(247)	(28)
Total other expense (income), net	\$ 2,313	\$ 1,139	\$ (190)

12. INCOME TAXES

(Loss) income before income tax expense (benefit) consists of the following:

	Years ended December 31,		
	2019	2018	2017
Domestic	\$ (40,963)	\$ (1,723)	\$ 2,468
Foreign	(20,051)	6,281	3,359
(Loss) Income before income taxes	\$ (61,014)	\$ 4,558	\$ 5,827

The components of the income tax expense (benefit) for income taxes are as follows:

	Years ended December 31,		
	2019	2018	2017
Current:			
Federal	\$ 3,215	\$ (1,694)	\$ 18,951
State	400	120	507
Foreign	3,809	1,394	2,072
Current income tax expense (benefit)	7,424	(180)	21,530
Deferred:			
Federal	(7,630)	(486)	1,038
State	(1,667)	(153)	(580)
Foreign	3,006	447	(1,645)
Deferred income tax benefit	(6,291)	(192)	(1,187)
Income tax expense (benefit)	\$ 1,133	\$ (372)	\$ 20,343

Reconciliations of the income tax expense at the U.S. federal statutory income tax rate compared to our actual income tax expense (benefit) are summarized below:

	Years ended December 31,		
	2019	2018	2017
Tax expense at statutory rate	\$ (12,812)	\$ 956	\$ 1,981
State income taxes, net of federal benefit	(1,564)	(13)	81
Foreign tax rate difference	(1,954)	(1,003)	(2,057)
Research and development credit	(753)	(919)	(1,037)
Change in valuation allowance	8,485	464	678
Equity based compensation	(25)	(390)	33
Manufacturing credit	—	—	(191)
Permanent impact of non-deductible cost	1,550	727	766
Provision to return adjustments & deferred adjustments	356	(654)	777
Impact of the U.S. Tax Cuts and Jobs Act of 2017	—	—	17,340
Change in enacted tax rates	359	58	2,015
Global intangible low-taxed income (“GILTI”)	1,795	402	—
Intangible & goodwill impairment	4,999	—	—
Other	697	—	(43)
Income tax expense (benefit)	\$ 1,133	\$ (372)	\$ 20,343

The components of our net deferred income tax assets and liabilities are as follows:

	As of December 31,	
	2019	2018
Net deferred income tax asset - Non-current		
Warranty cost	\$ 616	\$ 533
Inventory reserve	4,820	1,559
Unearned service revenue	11,616	6,684
Employee stock options	4,157	4,222
Tax credits	1,207	485
Loss carryforwards	7,481	7,038
Depreciation	345	—
Other, net	1,760	641
Total deferred tax assets	32,002	21,162
Valuation allowance	(10,419)	(1,924)
Total deferred tax assets net of valuation allowance	21,583	19,238
Net deferred income tax liability - Non-current		
Depreciation	—	(2,996)
Intangibles & goodwill	(3,174)	(2,261)
Total deferred tax liabilities	(3,174)	(5,257)
Net deferred tax assets	\$ 18,409	\$ 13,981

Our domestic entities had deferred income tax assets in the amount of \$15.3 million and \$7.2 million as of December 31, 2019 and December 31, 2018, respectively. At December 31, 2019 and 2018, our foreign subsidiaries had deferred tax assets primarily relating to net operating losses of \$7.2 million and \$6.5 million, respectively, the majority of which can be carried forward indefinitely. The valuation allowance for deferred tax assets as of December 31, 2019 and 2018 was \$10.4 million and \$1.9 million, respectively. The net change in the total valuation allowance for each of the years ended December 31, 2019, 2018 and 2017 was an \$8.5 million, a \$0.3 million and a \$0.7 million increase, respectively.

The valuation allowance as of December 31, 2019 and 2018 was primarily related to foreign net operating loss carryforwards that, in the judgment of management, were not more likely than not to be realized. In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets depends on the generation of future taxable income during the periods in which those temporary differences are deductible. Management considers the scheduled reversal of deferred tax liabilities (including the impact of available carryback and carryforward periods), projected taxable income, and tax-planning strategies in making this assessment.

Significant judgment is required in determining our worldwide provision for income taxes. In the ordinary course of a global business, there are many transactions for which the ultimate tax outcome is uncertain. We review our tax contingencies on a regular basis and make appropriate accruals as necessary.

As of December 31, 2019, 2018 and 2017, our unrecognized tax benefits totaled \$1.9 million, \$0.3 million and \$0.3 million, respectively, which are included in Income taxes payable - less current portion in our consolidated balance sheet.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	Years ended December 31,		
	2019	2018	2017
Balance at January 1	\$ 324	\$ 324	\$ 324
Additions based on tax positions related to the current year	314	—	—
Additions for tax positions of prior years	1,675	—	—
Lapse of statute of limitations	(389)	—	—
Balance at December 31	\$ 1,924	\$ 324	\$ 324

We file income tax returns in the U.S. federal jurisdiction and various state and foreign jurisdictions. The table below summarizes the open tax years and ongoing tax examinations in major jurisdictions as of December 31, 2019:

Jurisdiction	Open Years	Examination in Process
United States - Federal Income Tax	2016-2019	2016
United States - various states	2015-2019	N/A
Germany	2013-2019	2013-2014
Switzerland	2017-2019	N/A
Singapore	2015-2019	N/A

We recognize accrued interest and penalties related to unrecognized tax benefits in income tax expense. The total amount of unrecognized tax benefits that, if recognized, would affect the effective tax rate is \$1.9 million. We do not currently anticipate that the total amount of unrecognized tax benefits will result in material changes to our financial position. We are subject to income taxes at the federal, state and foreign country level. Our tax returns are subject to examination at the U.S. state level are subject to a three to four year statute of limitations, depending on the state.

13. COMMITMENTS AND CONTINGENCIES

Purchase Commitments — We enter into purchase commitments for products and services in the ordinary course of business. These purchases generally cover production requirements for 60 to 120 days as well as materials necessary to service customer units through the product lifecycle and for warranty commitments. As of December 31, 2019, we had approximately \$52.6 million in purchase commitments that are expected to be delivered within the next 12 months. To ensure adequate component availability in preparation for new product introductions, as of December 31, 2019, we also had \$1.5 million in long-term commitments for purchases to be delivered after 12 months.

Legal Proceedings — We are not involved in any legal proceedings other than routine litigation arising in the normal course of business, none of which we believe will have a material adverse effect on our business, financial condition or results of operations.

U.S. Government Contracting Matter — We have sold our products and related services to the U.S. Government (the “Government”) under General Services Administration (“GSA”) Federal Supply Schedule contracts (the “GSA Contracts”) since 2002 and are currently selling our products and related services to the Government under two such GSA Contracts. Each GSA Contract is subject to extensive legal and regulatory requirements and includes, among other provisions, a price reduction clause (the “Price Reduction Clause”), which generally requires us to reduce the prices billed to the Government under the GSA Contracts to correspond to the lowest prices billed to certain benchmark customers.

Late in the fourth quarter of 2018, during an internal review we preliminarily determined that certain of our pricing practices may have resulted in the Government being overcharged under the Price Reduction Clauses of the GSA Contracts (the “GSA Matter”). As a result, we performed remediation efforts, including but not limited to, the identification of additional controls and procedures to ensure future compliance with the pricing and other requirements of the GSA Contracts. We also retained outside legal counsel and forensic accountants to assist with these efforts and to conduct a comprehensive review of our pricing and other practices under the GSA Contracts (the “Review”). On February 14, 2019, we reported the GSA Matter to the GSA and its Office of Inspector General.

As a result of the GSA Matter, for the fourth quarter of 2018, we reduced our total sales by a \$4.8 million estimated cumulative sales adjustment, representative of the last six years of estimated overcharges to the Government under the GSA Contracts. In addition, for the fourth quarter of 2018, we recorded \$0.5 million of imputed interest related to the estimated cumulative sales adjustment, which increased Interest expense, net and resulted in an estimated total liability of \$5.3 million for the GSA Matter. This estimate was based on our preliminary review as of February 20, 2019, the date of our Annual Report on Form 10-K for the year ended December 31, 2018.

On July 15, 2019, we submitted a report to the GSA and its Office of Inspector General setting forth the findings of the Review conducted by our outside legal counsel and forensic accountants. Based on the results of the Review, we reduced our total sales for second quarter 2019 by an incremental \$5.8 million sales adjustment, reflecting an estimated aggregate overcharge of \$10.6 million under the GSA Contracts for the period from July 2011 to March 2019. In addition, we recorded an incremental \$0.8 million of imputed interest related to the estimated cumulative sales adjustment during 2019, which increased Interest expense, net and resulted in a \$6.6 million total incremental increase in the estimated total liability for the GSA Matter. As of the date of the filing of this Annual Report on Form 10-K, we have recorded an aggregate estimated total liability for the GSA Matter of \$11.9 million. This estimate is based on the information we have as of the date of this Annual Report on Form 10-K and is subject to change based on discussions with our outside legal counsel and the Government.

In January 2020, we received requests for additional information from the GSA and its Office of Inspector General, and we are working with the GSA in responding to such inquiries. We intend to cooperate fully with this and any other Government inquiries. The Government’s review of, or investigation into, this matter could result in civil and criminal penalties, administrative sanctions, and contract remedies being imposed on us, including but not limited to, termination of the GSA Contracts, repayments of amounts already received under the GSA Contracts, forfeiture of profits, damages, suspension of payments, fines, and suspension or debarment from doing business with the Government and possibly U.S. state and local governments. We may also be subject to litigation and recovery under the federal False Claims Act and possibly similar state laws, which could include claims for treble damages, penalties, fees and costs. As a result, we cannot reasonably predict the outcome of the Government’s review of, or investigation into, this matter at this time or the resulting future financial impact on us. Any of these outcomes could have a material adverse effect on our reputation, our sales, results of operations, cash flows and financial condition, and the trading price of our common stock. In addition, we have incurred, and will continue to incur, legal and related costs in connection with the Review and the Government’s response to this matter.

14. STOCK COMPENSATION PLANS

We have two compensation plans that provide for the granting of stock options and other share-based awards to key employees and non-employee members of the Board of Directors. The 2009 Equity Incentive Plan (“2009 Plan”), and the 2014 Equity Incentive Plan (“2014 Plan”) provide for granting options, restricted stock, restricted stock units or stock appreciation rights to employees and non-employee directors.

We were authorized to grant awards for up to 1,781,546 shares of common stock under the 2009 Plan, as well as any shares underlying awards outstanding under our 2004 Equity Incentive Plan (the “2004 Plan”) as of the effective date of the 2009 Plan that thereafter terminated or expired unexercised or were canceled, forfeited or lapsed for any reason. There were 74,386 options outstanding at December 31, 2019 under the 2009 Plan at exercise prices between \$43.33 and \$57.54. The options outstanding under the 2009 Plan have a 7-year term.

In May 2014, our shareholders approved the 2014 Plan authorizing us to grant awards for up to 1,974,543 shares of common stock, as well as any shares underlying awards outstanding under the 2004 Plan and 2009 Plan as of the effective date of the 2014 Plan that thereafter terminate or expire unexercised or are canceled, forfeited or lapse for any reason. In May 2018, our shareholders approved an amendment to the 2014 Plan, which increased the number of shares available for issuance under the 2014 Plan by 1,000,000 shares. A maximum of 2,974,543 shares are available for issuance under the 2014 Plan, as amended, plus the number of shares (not to exceed 891,960) underlying awards outstanding under the 2004 Plan and the 2009 Plan as of May 29, 2014 that thereafter terminate or expire unexercised or are canceled, forfeited or lapse for any reason. There were 412,343 options outstanding at December 31, 2019 under the 2014 Plan at exercise prices between \$33.05 and \$61.30. The options outstanding under the 2014 Plan have a 7-year term and generally vest over a 3-year period.

Upon election to the Board, each non-employee director receives an initial equity grant of shares of restricted common stock with a value equal to \$100,000, calculated using the closing share price on the date of the non-employee director's election to the Board. The initial restricted stock grant vests on the third anniversary of the grant date, subject to the non-employee director's continued membership on the Board. Annually, the non-employee directors are granted restricted shares equal to 50% of their compensation on the first business day following the annual meeting of shareholders, calculated using the closing price of our common stock on that day. In addition, the independent Chairman of the Board is annually granted restricted shares with a value equal to \$50,000, and the Lead Director, if one has been appointed, would be annually granted restricted shares with a value equal to \$40,000 on the first business day following the annual meeting of shareholders, calculated using the closing price of our common stock on that day. The shares of restricted stock granted annually to our non-employee directors, our independent Chairman of the Board and, if applicable, our Lead Director vest on the day prior to the following year's annual meeting date, subject to a non-employee director's continued membership on the Board. We record compensation cost associated with our restricted stock grants on a straight-line basis over the vesting term. Our non-employee directors also may elect to have their annual cash retainers and annual equity retainers paid in the form of deferred stock units pursuant to the 2014 Plan and the 2018 Non-Employee Director Deferred Compensation Plan. Each deferred stock unit represents the right to receive one share of our common stock upon the non-employee director's separation of service from the Company. We record compensation cost associated with our deferred stock units over the period of service.

Annually, upon approval by our Compensation Committee, we grant stock-based awards, which historically have been in the form of stock options and/or restricted stock units, to certain employees. We also grant stock-based awards, which historically have been in the form of stock options and/or restricted stock units, to certain new employees throughout the year. The fair value of these stock-based awards is determined by using (a) the current market price of our common stock on the grant date in the case of restricted stock units without a market condition, (b) the Monte Carlo Simulation valuation model in the case of performance-based restricted stock units with a market condition, or (c) the Black-Scholes option valuation model in the case of stock options.

Our annual grants in February 2019 and the stock-based awards granted to Michael D. Burger upon the commencement of his service as our President and Chief Executive Officer in June 2019 and to Allen Muhich upon the commencement of his service as our Chief Financial Officer in July 2019 consisted of performance-based restricted stock units and time-based restricted stock units. Our annual grants in March 2018 consisted of time-based stock options and time-based restricted stock units. The number of stock options and/or restricted stock units granted was based on the employee's individual objectives, performance against operational metrics assigned to the employee and overall contribution to the Company over the prior year.

For the stock-based awards granted in 2019, the time-based restricted stock units vest in three equal annual installments beginning one year after the grant date. The performance-based restricted stock unit awards vest at the end of the 3-year performance period if the applicable performance measure is achieved. The related stock-based compensation expense will be recognized over the requisite service period, taking into account the probability that we will satisfy the performance measure. The performance-based restricted stock units granted in 2019 will be earned and will vest based upon our total shareholder return ("TSR") relative to the TSR attained by companies within our defined benchmark group, the Russell 2000 Growth Index. Due to the TSR presence in these performance-based restricted stock units, the fair value of these awards was determined using the Monte Carlo Simulation valuation model. We expense these market condition awards over the three-year vesting period regardless of the value the award recipients ultimately receive.

For the stock-based awards granted in 2018, the time-based restricted stock unit awards vest in full on the three-year anniversary of the grant date. The stock options vest in three equal annual installments beginning one year after the grant date. The fair value of these stock-based awards is determined by using (a) the current market price of our common stock on the grant date in the case of restricted stock units or (b) the Black-Scholes option valuation model in the case of stock options.

The Monte Carlo Simulation valuation model incorporates assumptions as to stock price volatility, the expected life of options or awards, a risk-free interest rate and dividend yield. The weighted-average grant-date fair value of the performance-based restricted stock units that were granted during 2019 and valued using the Monte Carlo Simulation valuation model was \$66.16. No performance-based restricted stock units were granted during 2018 and 2017. For performance-based restricted stock units granted during 2019 valued using the Monte Carlo Simulation valuation model, we used the following assumptions:

	Year ended December 31 2019
Risk-free interest rate	1.8% - 2.48%
Expected dividend yield	— %
Expected volatility	45.0 %
Weighted-average expected volatility	45.0 %

The Black-Scholes option valuation model incorporates assumptions as to stock price volatility, the expected life of options or awards, a risk-free interest rate and dividend yield. The weighted-average grant date fair value of the stock options that were granted during the years ended December 31, 2018 and 2017 and valued using the Black-Scholes option valuation model was \$23.43 and \$14.51 per option, respectively. There were no stock options granted in 2019. For stock options granted during the years ended December 31, 2018 and 2017 valued using the Black-Scholes option valuation model, we used the following assumptions:

	Year ended December 31	
	2018	2017
Risk-free interest rate	2.65 %	1.88% - 2.02%
Expected dividend yield	— %	— %
Expected option life	4 years	5 years
Expected volatility	45.0 %	45.2 %
Weighted-average expected volatility	45.0 %	45.2 %

Historical information was the primary basis for the selection of the expected dividend yield, expected volatility and the expected lives of the options. The risk-free interest rate was based on the yields of U.S. zero coupon issues and U.S. Treasury issues, with a term equal to the expected life of the option being valued.

A summary of stock option activity and weighted average exercise prices follows:

	Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value as of December 31, 2019
Outstanding at January 1, 2019	792,943	\$ 47.59		
Granted	—	—		
Forfeited	(80,782)	54.82		
Exercised	(225,479)	35.45		
Outstanding at December 31, 2019	486,682	\$ 52.37	3.4	\$ 2,267
Options exercisable at December 31, 2019	428,411	\$ 52.86	2.1	\$ 1,836

The aggregate intrinsic value of stock options exercised during the years ended December 31, 2019, 2018, and 2017 was \$3.4 million, \$7.5 million and \$1.2 million, respectively. The total fair value of stock options vested during the years ended December 31, 2019, 2018, and 2017 was \$5.1 million, \$3.7 million and \$4.1 million, respectively.

The following table summarizes the restricted stock and restricted stock unit activity and weighted-average grant date fair values for the year ended December 31, 2019:

	Shares	Weighted-Average Grant Date Fair Value
Non-vested at January 1, 2019	311,000	\$ 42.66
Granted	284,445	50.83
Forfeited	(33,291)	48.43
Vested	(163,836)	39.32
Non-vested at December 31, 2019	398,318	\$ 49.53

We recorded total stock-based compensation expense associated with our stock incentive plans of \$11.1 million, \$7.6 million and \$6.5 million in 2019, 2018 and 2017, respectively.

As of December 31, 2019, there was \$11.7 million in total unrecognized stock-based compensation expense related to non-vested stock-based compensation arrangements. The expense is expected to be recognized over a weighted-average period of 2.0 years.

The following table summarizes total stock-based compensation expense for each of the line items on our consolidated statement of operations:

	Years ended December 31,		
	2019	2018	2017
Cost of Sales			
Product	\$ 628	\$ 477	\$ 342
Service	373	351	430
Total cost of sales	\$ 1,001	\$ 828	\$ 772
Operating Expenses			
Selling, general and administrative	\$ 8,786	\$ 5,210	\$ 4,412
Research and development	1,282	1,583	1,272
Total operating expenses	\$ 10,068	\$ 6,793	\$ 5,684

15. (LOSS) EARNINGS PER SHARE

Basic (loss) earnings per share is computed by dividing net (loss) income by the weighted average number of shares outstanding. Diluted earnings per share is computed by also considering the impact of potential common stock on both net income and the weighted average number of shares outstanding. Our potential common stock consists of employee stock options, restricted stock, restricted stock units and performance-based awards. Our potential common stock is excluded from the basic (loss) earnings per share calculation and is included in the diluted earnings per share calculation when doing so would not be anti-dilutive. Performance-based awards are included in the computation of diluted earnings per share only to the extent that the underlying performance conditions (and any applicable market condition) (i) are satisfied as of the end of the reporting period or (ii) would be considered satisfied if the end of the reporting period were the end of the related contingency period and the result would be dilutive under the treasury stock method. When we report a net loss for the period presented, the diluted loss per share calculation does not include our potential common stock, as the inclusion of these shares in the calculation would have an anti-dilutive effect. A reconciliation of the number of common shares used in the calculation of basic and diluted earnings (loss) per share is presented below:

	Years Ended December 31,					
	2019		2018		2017	
	Shares	Per-Share Amount	Shares	Per-Share Amount	Shares	Per-Share Amount
Basic (loss) earnings per share	17,383,415	\$ (3.58)	17,043,167	\$ 0.29	16,711,534	\$ (0.87)
Effect of dilutive securities	—	—	305,289	—	—	—
Diluted (loss) earnings per share	17,383,415	\$ (3.58)	17,348,456	\$ 0.29	16,711,534	\$ (0.87)
Securities excluded from the determination of weighted average shares for the calculation of diluted (loss) earnings per share, as they were potentially antidilutive	886,274		393,970		1,049,563	

16. EMPLOYEE RETIREMENT BENEFIT PLAN

We maintain a 401(k) defined contribution retirement plan for our eligible U.S. employees. Costs charged to operations in connection with the 401(k) plan during 2019, 2018 and 2017 aggregated to \$2.2 million, \$2.1 million, and \$1.7 million, respectively.

17. VARIABLE INTEREST ENTITY

A variable interest entity (“VIE”) is an entity that has one of three characteristics: (1) it is controlled by someone other than its shareowners or partners, (2) its shareowners or partners are not economically exposed to the entity’s earnings (for example, they are protected against losses), or (3) it lacks sufficient equity to permit the entity to finance its activities without additional subordinated financial support from other parties.

On April 27, 2018, we invested \$1.8 million in present4D GmbH (“present4D”), a software solutions provider for professional virtual reality presentations and training environments, in the form of an equity capital contribution. This contribution represented a minority investment in present4D. This investment’s business purpose is to coordinate the design and development of modules supporting compatibility with virtual reality for our existing software offerings.

As of our investment date, present4D was thinly capitalized and lacked the sufficient equity to finance its activities without additional subordinated financial support and is classified as a VIE. We do not have power over decisions that significantly affect present4D’s economic performance and do not represent its primary beneficiary. After April 27, 2020, present4D may request additional equity financing of up to \$1.8 million from us in exchange for additional share capital, which additional equity financing would be at our discretion. In July 2019, we originated a \$0.5 million note with present4D, which we may convert into additional equity in present4D at our discretion in the event of a default. Further, the note is collateralized by the perpetual and royalty-free, non-exclusive, transferable and sublicensable license granted to us to use present4D’s software.

We do not intend to provide future support to present4D or to obtain the aforementioned additional share capital in the future. We do not intend to use the perpetual and royalty-free, non-exclusive, transferable and sublicensable license granted to us to use present4D’s software. During the year ended December 31, 2019, we wrote off our investment in, and our note receivable with, present4D and recognized a total loss of \$2.2 million. Our portion of present4D’s net loss for the year ended

December 31, 2019 was approximately \$0.2 million. We had no remaining asset related to present4D at December 31, 2019. Our investment in this unconsolidated VIE was \$1.7 million as of December 31, 2018 and was included in Other long-term assets in our consolidated balance sheet as of such date. We have no remaining exposure to loss for our involvement with present4D.

18. GEOGRAPHIC INFORMATION

Since the fourth quarter of 2016, we had operated in five verticals—3D Manufacturing, Construction Building Information Modeling (“Construction BIM”), Public Safety Forensics, 3D Design and Photonics—and had three reporting segments—3D Manufacturing, Construction BIM and Emerging Verticals. As discussed in our Quarterly Report on Form 10-Q for the third quarter of 2019, our new management team, led by our new Chief Executive Officer (“CEO”), formulated and began to implement a new comprehensive strategic plan for our business. As part of our strategic planning process, we identified areas of our business that needed enhanced focus or change in order to improve our efficiency and cost structure. In the fourth quarter of 2019, we reassessed and redefined our go-to-market strategy, refocused our marketing engagement with our customers and re-evaluated our hardware product portfolio.

As part of our new strategic plan, and based on the recommendation of our CEO, who is also our Chief Operating Decision Maker (“CODM”), in the fourth quarter of 2019, we eliminated our vertical structure and began reorganizing the Company into a functional structure. Our executive leadership team is now comprised of functional leaders in areas such as sales, marketing, operations, research and development and general and administrative, and resources are allocated to each function at a consolidated unit level. We no longer have separate business units, or segment managers or vertical leaders who report to the CODM with respect to operations, operating results or planning for levels or components below the total Company level. Instead, our CODM now allocates resources and evaluates performance on a Company-wide basis. Based on these changes, commencing with the fourth quarter of 2019, we are now reporting as one reporting segment that develops, manufactures, markets, supports and sells CAD-based quality assurance products integrated with CAD-based inspection and statistical process control software and 3D documentation systems. Our reporting segment sells into a variety of end markets, including automotive, aerospace, metal and machine fabrication, architecture, engineering, construction and public safety. These activities represent more than 99% of consolidated sales.

Total sales to external customers is based upon the geographic location of the customer.

	For the Years Ended December 31,		
	2019	2018	2017
Total sales to external customers			
United States	\$ 151,646	\$ 156,242	\$ 141,595
Americas-Other	14,110	15,086	13,531
Germany	52,083	53,251	49,860
Europe-Other	70,196	74,010	65,201
Japan	33,361	37,607	35,270
China	32,934	36,130	30,405
Asia-Other	27,435	31,301	25,055
	<u>\$ 381,765</u>	<u>\$ 403,627</u>	<u>\$ 360,917</u>

Long-lived assets consist primarily of property, plant, and equipment, goodwill, and intangible assets, and are attributed to the geographic area in which they are located or originated, as applicable.

	As of December 31,		
	2019	2018	2017
Long-Lived Assets			
United States	\$ 45,225	\$ 61,557	\$ 54,703
Americas-Other	10,889	10,702	13,834
Germany	26,295	30,154	26,611
Europe-Other	4,984	24,935	9,124
Japan	1,423	1,039	558
Asia-Other	2,313	2,358	2,246
	<u>\$ 91,129</u>	<u>\$ 130,745</u>	<u>\$ 107,076</u>

19. LEASES

We have operating and finance leases for manufacturing facilities, corporate offices, research and development facilities, sales and training facilities, vehicles, and certain equipment under which we assume the role of lessee. We do not lease assets as a lessor. Our leases have remaining lease terms of less than one year to approximately seven years, some of which include options to extend the leases for up to eight years, and some of which include options to terminate the leases within three months. We currently do not sublease any of our leased assets.

We determine if an arrangement is a lease at inception. Operating leases are included in Operating lease right-of-use ("ROU") asset, Lease liability, and Lease liability - less current portion in our consolidated balance sheets. Finance leases are included in Property and equipment, net, Lease liability, and Lease liability - less current portion in our condensed consolidated balance sheets.

ROU assets represent our right to use an underlying asset for the lease term, and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease ROU assets and lease liabilities are recognized on the commencement date of the lease based on the present value of lease payments over the lease term. Variable lease payments that depend on an index or rate include the variable portion when calculating ROU assets and lease liabilities. Variable lease payments that do not depend on an index or rate are expensed as incurred. As most of our leases do not provide an implicit rate, we use our incremental borrowing rate based on the information available on the commencement date of the lease to determine the present value of lease payments. We use the implicit rate when readily determinable. The operating lease ROU assets also include any lease payments made and lease incentives. Our lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option at the time the lease is commenced. Lease expense for lease payments is recognized on a straight-line basis over the lease term.

While we have lease agreements with lease and non-lease components, we account for the lease and non-lease components as a single lease component.

The components of lease expense were as follows:

	Year Ended December 31, 2019
Operating lease cost	\$ 8,114
Finance lease cost:	
Amortization of ROU assets	\$ 363
Interest on lease liabilities	\$ 45
Total finance lease cost	\$ 408

We recognize lease payments made for short-term leases where terms are 12 months or less as the payments are incurred. Our short-term lease cost for the year ended December 31, 2019 was \$0.2 million.

Supplemental balance sheet information related to leases was as follows:

	As of December 31, 2019
Operating leases:	
Operating lease right-of-use asset	\$ 18,418
Current operating lease liability	\$ 6,349
Operating lease liability - less current portion	13,272
Total operating lease liability	\$ 19,621
Finance leases:	
Property and equipment, at cost	\$ 1,870
Accumulated depreciation	(1,150)
Property and equipment, net	\$ 720
Current finance lease liability	\$ 325
Finance lease liability - less current portion	426
Total finance lease liability	\$ 751
Weighted Average Remaining Lease Term (in years):	
Operating leases	4.48
Finance leases	2.48
Weighted Average Discount Rate:	
Operating leases	5.10 %
Finance leases	5.09 %

Supplemental cash flow information related to leases was as follows:

	Year Ended December 31, 2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows from operating leases	\$ 8,037
Operating cash flows from finance leases	\$ 45
Financing cash flows from finance leases	\$ 358
ROU assets obtained in exchange for lease obligations:	
Operating leases	\$ 8,970
Finance leases	\$ —

Maturities of lease liabilities are as follows:

Year Ending December 31,	Operating leases	Finance leases
2020	\$ 7,188	\$ 355
2021	3,955	315
2022	3,110	86
2023	2,841	37
2024	2,709	6
Thereafter	2,371	—
Total lease payments	\$ 22,174	\$ 799
Less imputed interest	(2,553)	(48)
Total	\$ 19,621	\$ 751

20. BUSINESS COMBINATIONS

In April 2017, we completed the acquisition of substantially all of the assets of Nutfield, a component technology business located in Hudson, New Hampshire, which specializes in the design and manufacture of advanced galvanometer-based optical scanners, scan heads and laser kits, for a total purchase price of approximately \$5.5 million. During the fourth quarter of 2019, we impaired the goodwill and intangible assets related to this acquisition. See Note 7, “Goodwill” and Note 8, “Intangible Assets” for further information. The results of the acquired business’ operations as of and after the date of acquisition have been included in our consolidated financial statements as of and for the years ended December 31, 2019, December 31, 2018 and December 31, 2017.

On March 9, 2018, we acquired all of the outstanding shares of Laser Control Systems, a laser component technology business located in Bedfordshire, United Kingdom, which specializes in the design and manufacture of advanced digital scan heads and laser software, for a purchase price of \$1.7 million. We paid an additional \$0.6 million in contingent consideration earned by the former owners for meeting certain milestones. During the fourth quarter of 2019, we impaired the goodwill and intangible assets related to this acquisition. See Note 7, “Goodwill” and Note 8, “Intangible Assets” for further information. The results of Laser Control Systems’ operations as of and after the date of acquisition have been included in our consolidated financial statements as of and for the years ended December 31, 2019 and December 31, 2018.

On March 16, 2018, we acquired all of the outstanding shares of Photocore AG, a vision-based 3D measurement application and software developer in Zurich, Switzerland, for a total purchase price of \$2.4 million. This acquisition supports our long-term strategy to improve our existing software offerings with innovative technology in photogrammetry. The results of Photocore AG’s operations as of and after the date of acquisition have been included in our consolidated financial statements as of and for the years ended December 31, 2019 and December 31, 2018.

On July 6, 2018, we acquired all of the outstanding shares of Lanmark, a high-speed laser marking control boards and laser marking software provider located in Acton, Massachusetts, for a purchase price of \$6.3 million. We paid an additional \$0.3 million in contingent consideration earned by the former owners for meeting certain milestones. During the fourth quarter of 2019, we impaired the goodwill and intangible assets related to this acquisition. See Note 7, “Goodwill” and Note 8, “Intangible Assets” for further information. The results of Lanmark’s operations as of and after the date of acquisition have been included in our consolidated financial statements as of and for the years ended December 31, 2019 and December 31, 2018.

On July 13, 2018, we acquired all of the issued and outstanding corporate capital of Open Technologies, a 3D structured light scanning solution company located in Brescia, Italy, for an aggregate purchase price of up to €18.5 million (\$21.6 million), subject to post-closing adjustments based on actual net working capital, net financial position and transaction expenses. We paid an additional \$2.2 million in contingent consideration earned by the former owners for meeting certain product development milestones. An additional €2.0 million (\$2.2 million) in contingent consideration may be earned by the former owners if certain product development milestones are met in the future. The U.S. Dollar amounts have been converted from Euros based on the foreign exchange rate in effect on the closing date of the acquisition. During the fourth quarter of 2019, we impaired the goodwill and intangible assets related to this acquisition. See Note 7, “Goodwill” and Note 8, “Intangible Assets” for further information. The results of Open Technologies’ operations as of and after the date of acquisition have been included in our consolidated financial statements as of and for the years ended December 31, 2019 and December 31, 2018.

The acquisitions of Nutfield, Laser Control Systems, Photocore AG, Lanmark and Open Technologies constitute business combinations as defined by FASB ASC Topic 805, *Business Combinations*. Accordingly, the assets acquired and liabilities assumed were recorded at their fair values on the date of acquisition. The purchase price allocations below represent our final determination of the fair value of the assets acquired and liabilities assumed for such acquisitions. In the year ended December 31, 2019, certain refinements were booked for the Open Technologies acquisition as part of the finalization process, which included a reduction of \$2.6 million to the valuation of the customer relationship intangible and the recognition of a deferred tax liability of \$1.9 million. Goodwill increased \$4.4 million as result of these changes in the finalization process.

Following is a summary of our allocations of the purchase price to the fair values of the assets acquired and liabilities assumed as of the date of each acquisition:

	Nutfield	Laser Controls Systems	Photocore AG	Lanmark	Open Technologies (3)
Accounts receivable	\$ 160	\$ —	\$ —	\$ 610	\$ 2,735
Inventory	539	—	—	299	1,852
Other assets	96	—	—	76	634
Deferred income tax assets	131	—	—	—	—
Intangible assets	2,329	1,400	1,435	1,366	7,821
Goodwill (1)	2,357	928	1,010	5,355	13,573
Accounts payable and accrued liabilities	(12)	—	—	(159)	(2,926)
Other liabilities (2)	(104)	(579)	—	(971)	(5,201)
Deferred income tax liabilities	—	—	—	(325)	(1,876)
Total purchase price, net of cash acquired	<u>\$ 5,496</u>	<u>\$ 1,749</u>	<u>\$ 2,445</u>	<u>\$ 6,251</u>	<u>\$ 16,612</u>

(1) The goodwill arising from the acquisitions consists largely of the expected synergies from combining operations as well as the value of the workforce. A portion of the goodwill is expected to be tax deductible for Nutfield.

(2) For Laser Control Systems, Lanmark and Open Technologies, this total consists primarily of the fair value of the projected contingent consideration.

(3) Amounts converted from Euros to U.S. Dollars based on the foreign exchange rate on the closing date of the acquisition.

Following are the details of the purchase price allocated to the intangible assets acquired for the acquisitions noted above:

	Nutfield		Laser Control Systems		Photocore AG		Lanmark		Open Technologies	
	Amount	Weighted Average Life (Years)	Amount	Weighted Average Life (Years)	Amount	Weighted Average Life (Years)	Amount	Weighted Average Life (Years)	Amount	Weighted Average Life (Years)
Trade name	\$ 29	1	\$ —	0	\$ —	0	\$ —	0	\$ —	0
Brand	—	0	26	1	22	1	26	1	103	1
Non-competition agreement	144	5	29	3	9	3	—	0	—	0
Technology	1,970	10	1,319	7	1,343	7	760	7	4,441	7
Customer relationships	95	10	26	10	61	10	580	10	3,277	10
Favorable in-place lease	91	12	—	0	—	0	—	0	—	0
Fair value of intangible assets acquired	<u>\$ 2,329</u>	10	<u>\$ 1,400</u>	7	<u>\$ 1,435</u>	7	<u>\$ 1,366</u>	8	<u>\$ 7,821</u>	8

We test goodwill for impairment annually or more frequently if an event occurs or circumstances would indicate that it is more likely than not the fair value of the reporting unit is less than the carrying value. We changed the timing of our annual test of goodwill during 2019 to align with our updated strategic plan and annual budgetary process. Accordingly, we performed our annual quantitative test for impairment of our recorded goodwill as of December 10, 2019. As a result of this test, the estimated fair value of each of the Photonics reporting unit, which included goodwill recognized with the Nutfield, Laser Control Systems and Lanmark acquisitions, and the 3D Design reporting unit, which included goodwill recognized with the Open Technologies acquisition, were determined to be less than the carrying value of the reporting unit, indicating a full impairment. This impairment was driven primarily by historical and projected financial performance lower than our expectations and changes in our go-forward strategy in connection with our new strategic plan.

Additionally, as a result of historical and projected financial performance lower than our expectations and changes in our go-forward strategy in connection with our new strategic plan, the estimated fair value of acquired intangibles recognized with the Nutfield, Laser Control Systems, Lanmark and Open Technologies acquisitions were determined to be less than the carrying value of the net carrying value for such assets. We recognized an impairment charge related to such acquired intangibles of \$10.5 million in the fourth quarter of 2019.

Acquisition and integration costs are not included as components of consideration transferred, but are recorded as expense in the period in which such costs are incurred. To date, we have incurred approximately \$0.8 million in acquisition and integration costs for the Nutfield, Laser Control Systems, Photocore AG, Lanmark and Open Technologies acquisitions. Pro forma financial results for Nutfield, Laser Control Systems, Photocore AG, Lanmark, and Open Technologies have not been presented because the effects of these transactions, individually and in the aggregate, were not material to our consolidated results of operations.

21. SUBSEQUENT EVENTS

On February 14, 2020, our Board of Directors approved a global restructuring plan (the “Restructuring Plan”), which is intended to support our strategic plan in an effort to improve operating performance and ensure that we are appropriately structured and resourced to deliver sustainable value to our shareholders and customers. Key activities under the Restructuring Plan include a continued focus on efficiency and cost-saving efforts, which includes decreasing total headcount by approximately 500 employees upon the completion of the Restructuring Plan.

These activities are expected to be substantially completed by the end of 2021. We estimate that the Restructuring Plan will reduce gross annual pre-tax expenses by approximately \$40 million, to be realized in the fourth quarter of 2020 on an annualized basis. We estimate that the implementation of the Restructuring Plan will result in pre-tax charges of approximately \$26 million to \$36 million, which are in addition to the pre-tax charges of approximately \$49 million recorded in the fourth quarter of 2019 in connection with the implementation of our new strategic plan. We expect \$18 million to \$22 million of these additional charges to be in the form of cash charges. Actual results, including the costs of the Restructuring Plan, may differ materially from our expectations, resulting in our inability to realize the expected benefits of the Restructuring Plan and our new strategic plan and negatively impacting our ability to execute our future plans and strategies, which could have a material adverse effect on our business, financial condition and results of operations.

22. QUARTERLY RESULT OF OPERATIONS (UNAUDITED)

Quarter ended	March 31, 2019	June 30, 2019	September 30, 2019	December 31, 2019
Sales ⁽¹⁾	\$ 93,617	\$ 93,491	\$ 90,516	\$ 104,141
Gross profit ⁽²⁾	53,018	50,741	50,772	43,601
Net income (loss) ⁽³⁾	152	(6,405)	(6,199)	(49,695)
Net income (loss) per share:				
Basic	\$ 0.01	\$ (0.37)	\$ (0.36)	\$ (2.85)
Diluted	\$ 0.01	\$ (0.37)	\$ (0.36)	\$ (2.85)

⁽¹⁾ For the second quarter of 2019, sales were reduced by an incremental \$5.8 million sales adjustment related to our GSA Contracts based on the results of the Review conducted by our outside legal counsel and forensic accountants.

⁽²⁾ For the fourth quarter of 2019, gross profit was reduced by a \$15.1 million inventory reserve charge primarily driven by the evaluation of our hardware product portfolio, which increased our reserve for excess and obsolete inventory.

⁽³⁾ For the fourth quarter of 2019, we incurred an impairment loss of \$35.2 million, which included \$21.2 million in goodwill, \$10.5 million in intangible assets associated with recent acquisitions, \$1.4 million in intangible assets related to capitalized patents, and \$2.1 million in other asset write-downs.

Quarter ended	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018
Sales ⁽¹⁾	\$ 92,834	\$ 98,244	\$ 99,705	\$ 112,844
Gross profit ⁽²⁾	52,106	55,994	50,612	62,841
Net income (loss) ⁽³⁾	455	1,205	(2,488)	5,758
Net income (loss) per share:				
Basic	\$ 0.03	\$ 0.07	\$ (0.15)	\$ 0.33
Diluted	\$ 0.03	\$ 0.07	\$ (0.15)	\$ 0.33

⁽¹⁾ For the fourth quarter of 2018, sales were reduced by a \$4.8 million estimated cumulative sales adjustment, representative of the last six years of estimated overcharges to the Government under the GSA Contracts.

⁽²⁾ For the third quarter of 2018, gross profit was reduced by a \$4.7 million inventory reserve charge resulting from an analysis of our inventory reserves in connection with our new product introductions and acquisitions, which increased our reserve for excess and obsolete inventory.

⁽³⁾ For the fourth quarter of 2018, as additional guidance was released during the Securities and Exchange Commission's Staff Accounting Bulletin 118 remeasurement period related to the U.S. Tax Cuts and Jobs Act of 2017, we completed our transition tax analysis, which resulted in an income tax benefit of \$1.0 million.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We conducted an evaluation, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures as of December 31, 2019. Disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”)) are designed to provide reasonable assurance that information required to be disclosed in our reports filed under the Exchange Act, such as this Annual Report on Form 10-K, is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures also include, without limitation, controls and procedures that are designed to provide reasonable assurance that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

The evaluation of our disclosure controls and procedures included a review of the control objectives and design, our implementation of the controls and the effect of the controls on the information generated for use in this Annual Report on Form 10-K. In conducting this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures, as defined by Rule 13a-15(e) under the Exchange Act, were effective as of December 31, 2019 to provide reasonable assurance that information required to be disclosed in this Annual Report on Form 10-K was recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms and was accumulated and communicated to our management, including our Chief Executive Officer and Chief 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 quarter ended December 31, 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Management’s Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) of the Exchange Act). Internal control over financial reporting is the process designed under the Chief Executive Officer’s and the Chief Financial Officer’s supervision, and effected by our Board of Directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles in the United States.

There are inherent limitations in the effectiveness of internal control over financial reporting, including the possibility that misstatements may not be prevented or detected. Accordingly, an effective control system, no matter how well designed and operated, can provide only reasonable assurance of achieving the designed control objectives, and management is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within the Company have been detected. The design of any system of controls is also based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2019, as required by Exchange Act Rule 13a-15(c). In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in the 2013 *Internal Control - Integrated Framework*. Based on our assessment under the framework in the 2013 *Internal Control - Integrated Framework*, management concluded that our internal control over financial reporting was effective as of December 31, 2019.

Grant Thornton LLP, the independent registered public accounting firm that audited our consolidated financial statements and internal control over financial reporting, has issued an attestation report on our internal control over financial reporting as of December 31, 2019, which appears below.

FARO Technologies, Inc.
Lake Mary, Florida

February 19, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Shareholders
FARO Technologies, Inc.

Opinion on internal control over financial reporting

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

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the consolidated financial statements of the Company as of and for the year ended December 31, 2019, and our report dated February 19, 2020 expressed an unqualified opinion on those consolidated financial statements.

Basis for opinion

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and limitations of internal control over financial reporting

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

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

/s/ GRANT THORNTON LLP

Orlando, Florida
February 19, 2020

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item with respect to directors and executive officers is incorporated herein by reference to the information under the headings “Election of Directors” and “Executive Officers” contained in our definitive proxy statement for our 2020 Annual Meeting of Shareholders, which we refer to as the Proxy Statement.

The information required by this Item regarding compliance with Section 16(a) of the Exchange Act appears under the heading “Delinquent Section 16(a) Reports” in the Proxy Statement and is incorporated herein by reference.

The information required by this Item with respect to corporate governance and our Code of Ethics is incorporated herein by reference to the information contained in the Proxy Statement under the heading “Corporate Governance and Board Matters.”

ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item regarding executive compensation is incorporated herein by reference to the information contained in the Proxy Statement under the headings “Executive Compensation” and “2019 Director Compensation.”

The information required by this Item regarding Compensation Committee interlocks and insider participation is incorporated herein by reference to the information contained in the Proxy Statement under the heading “Corporate Governance and Board Matters.”

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

The information required by this Item regarding security ownership of certain beneficial owners and management and related stockholder matters is incorporated herein by reference to the information contained in the Proxy Statement under the headings “Security Ownership of Certain Beneficial Owners and Management” and “Equity Compensation Plan Information.”

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this Item about certain relationships and related transactions appears under the heading “Certain Relationships and Related Transactions” in the Proxy Statement and is incorporated herein by reference.

The information required by this Item regarding director independence is incorporated herein by reference to the information contained in the Proxy Statement under the heading “Corporate Governance and Board Matters.”

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item about principal accountant fees and services as well as related pre-approval policies appears under the heading “Independent Public Accountants” in the Proxy Statement and is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) (1) Financial Statements.

The following consolidated financial statements required by this item are included in Part II, Item 8 of this Annual Report on Form 10-K under the caption “Financial Statements and Supplementary Data”:

Report of Independent Registered Public Accounting Firm

Consolidated Balance Sheets

Consolidated Statements of Operations

Consolidated Statements of Comprehensive (Loss) Income

Consolidated Statements of Shareholders’ Equity

Consolidated Statements of Cash Flows

Notes to Consolidated Financial Statements

(2) Financial Statement Schedules.

All financial statement schedules have been omitted as they are either not required or not applicable, or the required information is otherwise included in our consolidated financial statements or the notes thereto.

(b) Exhibits. The exhibits listed in the accompanying Exhibit Index are filed or incorporated by reference as part of this Annual Report on Form 10-K.

EXHIBIT INDEX

Exhibit No.	Description
2.1	Stock Purchase Agreement, dated as of August 26, 2016, by and among FARO Technologies, Inc., Laser Projection Technologies, Inc., each of the shareholders of Laser Projection Technologies, Inc. and Steven P. Kaufman in the capacity of the Seller Representative (Filed as Exhibit 2.1 to Registrant's Current Report on Form 8-K filed August 30, 2016, and incorporated herein by reference)**
2.2	Quota Purchase Agreement, dated as of July 13, 2018, by and among FARO Technologies, Inc., Opto-Tech SRL, each of the shareholders of Opto-Tech SRL, and Mr. Gianfranco Chiapparini, in the capacity as the Seller Representative (Filed as Exhibit 2.1 to Registrant's Current Report on Form 8-K, filed July 19, 2018, and incorporated herein by reference)**
3.1	Amended and Restated Articles of Incorporation, as amended (Filed as Exhibit 3.1 to Registrant's Registration Statement on Form S-1/A filed September 10, 1997, No. 333-32983, and incorporated herein by reference)
3.2	Amended and Restated Bylaws (Filed as Exhibit 3.1 to Registrant's Current Report on Form 8-K, filed February 3, 2010, and incorporated herein by reference)
4.1	Specimen Stock Certificate (Filed as Exhibit 4.1 to Registrant's Registration Statement on Form S-1/A, filed September 10, 1997, No. 333-32983, and incorporated herein by reference)
4.2	Description of the Registrant's Securities Registered under Section 12 of the Securities Exchange Act of 1934
10.1	2009 Equity Incentive Plan (Filed as Appendix A to Registrant's Definitive Proxy Statement on Schedule 14A filed April 15, 2009, and incorporated herein by reference)*
10.2	First Amendment to the 2009 Equity Incentive Plan (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed April 15, 2011, and incorporated herein by reference)*
10.3	2014 Incentive Plan (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed June 3, 2014, and incorporated herein by reference)*
10.4	2014 Incentive Plan, as amended May 11, 2018 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K filed May 15, 2018, and incorporated herein by reference)*
10.5	Summary of Director Compensation Program (Filed as Exhibit 10.7 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2015, and incorporated herein by reference)*
10.6	Form of Intellectual Property and Confidentiality Agreement between FARO Technologies, Inc. and new employees (Filed as Exhibit 10.8 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2015, and incorporated herein by reference)
10.7	Form of Stock Option Award Agreement under the 2009 Equity Incentive Plan (Filed as Exhibit 10.10 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2015, and incorporated herein by reference)*
10.8	Form of performance-based Stock Option Award Agreement under the 2014 Incentive Plan (Filed as Exhibit 10.12 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2015, and incorporated herein by reference)*
10.9	Form of performance-based Restricted Stock Unit Award Agreement under the 2014 Incentive Plan (Filed as Exhibit 10.13 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2015, and incorporated herein by reference)*
10.10	Form of Restricted Stock Unit Award Agreement under the 2014 Incentive Plan (Filed as Exhibit 10.4 to Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016, and incorporated herein by reference)*
10.11	Form of time-based Stock Option Award Agreement under the 2014 Incentive Plan (Filed as Exhibit 10.15 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, and incorporated herein by reference)*

10.12	Form of Restricted Stock Award Agreement under the 2014 Incentive Plan (Filed as Exhibit 10.14 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2017, and incorporated herein by reference)*
10.13	Form of 2019 Restricted Stock Unit Award Agreement under the 2014 Incentive Plan (Filed as Exhibit 10.5 to Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019, and incorporated herein by reference)*
10.14	Form of 2019 Restricted Stock Unit Award Agreement (Performance-Based) under the 2014 Incentive Plan (Filed as Exhibit 10.6 to Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019, and incorporated herein by reference)*
10.15	Form of Amendment to 2019 Performance-Based Restricted Stock Unit Award Agreement*
10.16	Employment Agreement between FARO Technologies, Inc. and Joseph Arezone, dated as of April 27, 2016 (Filed as Exhibit 10.2 to Registrant's Current Report on Form 8-K, filed April 29, 2016, and incorporated herein by reference)*
10.17	Letter Agreement between FARO Technologies, Inc. and Joseph Arezone dated March 5, 2018 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K filed March 5, 2018, and incorporated herein by reference)*
10.18	Transition and Separation Agreement between FARO Technologies, Inc. and Joseph Arezone effective June 5, 2018 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K filed June 8, 2018, and incorporated herein by reference)*
10.19	Amended and Restated Employment Agreement between FARO Technologies, Inc. and Kathleen J. Hall, dated as of April 27, 2016 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K filed April 29, 2016, and incorporated herein by reference)*
10.20	Addendum to Amended and Restated Employment Agreement between FARO Technologies, Inc. and Kathleen J. Hall dated June 17, 2019 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed June 18, 2019, and incorporated herein by reference)*
10.21	Confidential Separation Agreement and General Release by and between FARO Technologies, Inc. and Kathleen J. Hall, dated August 26, 2019 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed August 27, 2019, and incorporated herein by reference)*
10.22	Amended and Restated Employment Agreement between FARO Technologies, Inc. and Jody S. Gale, dated as of April 27, 2016 (Filed as Exhibit 10.3 to Registrant's Current Report on Form 8-K filed April 29, 2016, and incorporated herein by reference)*
10.23	Employment Agreement between FARO Technologies, Inc. and Robert E. Seidel, dated December 21, 2016 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K filed December 21, 2016, and incorporated herein by reference)*
10.24	Transition and Separation Agreement by and between FARO Technologies, Inc. and Robert E. Seidel, dated July 31, 2019 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed August 2, 2019, and incorporated herein by reference)*
10.25	Letter Agreement between FARO Technologies, Inc. and Simon Raab dated January 9, 2019 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K filed January 11, 2019, and incorporated herein by reference)*
10.26	Employment Agreement between FARO Technologies, Inc. and Michael Burger dated April 5, 2019 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed April 9, 2019, and incorporated herein by reference)*
10.27	Offer Letter between FARO Technologies, Inc. and Allen Muhich, dated July 15, 2019 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed July 16, 2019, and incorporated herein by reference)*
10.28	FARO Technologies, Inc. Amended and Restated Change in Control Severance Policy, dated as of April 9, 2015 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed April 10, 2015, and incorporated herein by reference)*
10.29	2018 Non-Employee Director Deferred Compensation Plan (Filed as Exhibit 10.24 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2018, and incorporated herein by reference)*

Table of Contents

10.30	<u>Form of Deferred Stock Unit Award Agreement under the 2014 Incentive Plan and the 2018 Non-Employee Director Deferred Compensation Plan (Filed as Exhibit 10.25 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2018, and incorporated herein by reference)*</u>
10.31	<u>Form of Restricted Stock Unit Award Agreement under the 2014 Incentive Plan and the 2018 Non-Employee Director Deferred Compensation Plan (Filed as Exhibit 10.26 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2018, and incorporated herein by reference)*</u>
10.32	<u>FARO Technologies, Inc. Executive Severance Plan and Summary Plan Description, dated as of February 14, 2019 (Filed as Exhibit 10.27 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2018, and incorporated herein by reference)*</u>
10.33	<u>Office Flex Lease, dated September 26, 2007, by and between FARO Technologies, Inc. and Sun Life Assurance Company of Canada (Filed as Exhibit 10.15 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2007, and incorporated herein by reference)</u>
10.34	<u>First Amendment to Lease Agreement, dated October 1, 2009, by and between FARO Technologies, Inc. and Sun Life Assurance Company of Canada (Filed as Exhibit 10.27 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2009, and incorporated herein by reference)</u>
10.35	<u>Second Amendment to Office Flex Lease between RCS - Tech Park, LLC and FARO Technologies, Inc., dated as of February 27, 2019 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed March 5, 2019, and incorporated herein by reference)*</u>
10.36	<u>Amended and Restated Lease Agreement, dated October 1, 2009, by and between FARO Technologies, Inc. and Emma Investments, LLC (Filed as Exhibit 10.26 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2009, and incorporated herein by reference)</u>
10.37	<u>First Amendment to Amended and Restated Lease Agreement between Emma Investments, LLC and FARO Technologies, Inc., dated as of May 14, 2014 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K filed May 16, 2014, and incorporated herein by reference)</u>
10.38	<u>Second Amendment to Amended and Restated Lease Agreement, dated as of January 29, 2019, by and between FARO Technologies, Inc. and Emma Investments, LLC (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K filed January 31, 2019, and incorporated herein by reference)</u>
10.39	<u>Agreement of Lease (Amendment and Restatement) between 290 National Road Limited Partnership and FARO Technologies, Inc., dated as of September 9, 2014 (Filed as Exhibit 10.1 to Registrant's Current Report on Form 8-K filed September 12, 2014, and incorporated herein by reference)</u>
10.40	<u>Assignment and Assumption of Lease, dated April 21, 2017, by and between FARO Technologies, Inc., Instrument Associates, LLC and Century Park, L.L.C. (Filed as Exhibit 10.27 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2017, and incorporated herein by reference)</u>
10.41	<u>Non-residential Tenancy Agreement, dated July 1, 2017, by and between Eredi Martinelli Marmi E Graniti S.p.A. and Opto-tech S.R.L. (Filed as Exhibit 10.35 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2018, and incorporated herein by reference)</u>
21.1	<u>List of Subsidiaries</u>
23.1	<u>Consent of Grant Thornton LLP</u>
24.1	<u>Power of Attorney relating to subsequent amendments (included on the signature page(s) of this report).</u>
31-A	<u>Certification of the Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>
31-B	<u>Certification of the Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>
32-A	<u>Certification of the Chief Executive Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>

32-B	Certification of the Chief Financial Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
99.1	Properties
101	The following information from our Annual Report on Form 10-K for the year ended December 31, 2019, formatted in Inline XBRL: (i) Consolidated Balance Sheets; (ii) Consolidated Statements of Operations; (iii) Consolidated Statements of Comprehensive (Loss) Income; (iv) Consolidated Statements of Shareholders' Equity; (v) Consolidated Statements of Cash Flows; and (vi) Notes to Condensed Consolidated Financial Statements
104	Cover Page Interactive Data File (Formatted in Inline XBRL and contained in Exhibit 101)

* Indicates management contracts or compensatory plans or arrangements

** Schedules and exhibits are omitted pursuant to Item 601(b)(2) of Regulation S-K. Registrant agrees to furnish supplementally a copy of any omitted schedules or exhibits to the Securities and Exchange Commission upon request.

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

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

FARO TECHNOLOGIES, INC.

Date: February 19, 2020

By: /s/ Allen Muhich
Allen Muhich, Chief Financial Officer
(Duly Authorized Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated. Each person whose signature appears below constitutes and appoints each of MICHAEL BURGER AND ALLEN MUHICH his or her true and lawful attorney-in-fact and agent, with full power of substitution and revocation, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this report and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, may lawfully do or cause to be done by virtue hereof.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Michael Burger</u> Michael Burger	Director, President and Chief Executive Officer (Principal Executive Officer)	February 19, 2020
<u>/s/ Allen Muhich</u> Allen Muhich	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	February 19, 2020
<u>/s/ John Donofrio</u> John Donofrio	Chairman of the Board and Director	February 19, 2020
<u>/s/ John Caldwell</u> John Caldwell	Director	February 19, 2020
<u>/s/ Lynn Brubaker</u> Lynn Brubaker	Director	February 19, 2020
<u>/s/ Stephen R. Cole</u> Stephen R. Cole	Director	February 19, 2020
<u>/s/ Jeffrey A. Graves</u> Jeffrey A. Graves	Director	February 19, 2020
<u>/s/ Yuval Wasserman</u> Yuval Wasserman	Director	February 19, 2020

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

As of December 31, 2019, FARO Technologies, Inc. ("FARO," the "Company," "we," "us" and "our") had one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"): our common stock, par value \$0.001 per share (the "Common Stock").

Description of Common Stock

The following description of our Common Stock is a summary and does not purport to be complete. It is subject to and is qualified in its entirety by reference to our Amended and Restated Articles of Incorporation (the "Articles of Incorporation"), our Amended and Restated Bylaws (the "Bylaws"), and the applicable provisions of the Florida Business Corporation Act, as amended (the "FBCA"). Our Articles of Incorporation and Bylaws are incorporated by reference as exhibits to the Annual Report on Form 10-K for the year ended December 31, 2019. We encourage you to read our Articles of Incorporation, Bylaws and the applicable provisions of the FBCA for additional information.

General

Under our Articles of Incorporation, we are authorized to issue a total of 50,000,000 shares of Common Stock and 10,000,000 shares of preferred stock, par value \$0.001 per share. All outstanding shares of our Common Stock are fully paid and nonassessable. Our Common Stock is listed on the Nasdaq Global Select Market under the symbol "FARO."

Dividends

Subject to preferences that might be applicable to any then outstanding preferred stock, holders of our Common Stock are entitled to participate equally in dividends when our Board of Directors declares dividends on our Common Stock out of legally available funds. We have never declared or paid any cash dividends on our Common Stock and do not anticipate paying any such cash dividends in the reasonably foreseeable future. Future dividends, if any, will be determined by our Board of Directors and will be based on our earnings, capital requirements and operating and financial condition, among other factors, at the time any such dividends are considered by our Board of Directors.

Voting Rights

The holders of our Common Stock are entitled to one vote for each share of Common Stock held; our Articles of Incorporation do not provide for cumulative voting. Directors are elected by a plurality of votes cast by shares entitled to vote in the election of directors. On all other matters, unless a greater number of affirmative votes is required, an action is approved by a majority of the votes cast at the meeting.

Liquidation and Dissolution

In the event of our liquidation, dissolution or winding up, voluntarily or involuntarily, holders of our Common Stock will have the right to a ratable portion of the assets remaining after satisfaction in full of the prior rights of our creditors and of all liabilities, subject to prior distribution rights of any preferred stock then outstanding.

Other

Holders of our Common Stock are not entitled to any preemptive or preferential right to purchase or subscribe for shares of capital stock of any class and have no conversion, redemption or sinking fund rights.

Certain Statutory and Other Provisions

Certain provisions in our Articles of Incorporation, our Bylaws and the FBCA summarized below may be deemed to have an anti-takeover effect and may delay, deter or prevent a tender offer or takeover attempt, may discourage potential acquisition proposals and may delay or prevent a change in control that a shareholder might consider to be in its best interests, including attempts that might result in a premium being paid over the market price for the shares held by the shareholders. Such provisions also may have the effect of preventing changes in our management.

We are subject to several anti-takeover provisions under Florida law that apply to certain corporations organized under Florida law unless the corporation has elected to opt out of those provisions in its articles of incorporation or (depending on the provision in question) its bylaws. We have not elected to opt out of these provisions.

Control Share Acquisitions. The FBCA prohibits the voting of shares in an “issuing public corporation” that are acquired in a “control share acquisition” unless the board of directors of the corporation approves the control share acquisition before the acquisition or the holders of a majority of the corporation’s voting shares (excluding shares held by officers of the corporation, inside directors of the corporation or the acquiring party) approve the granting of voting rights as to the shares acquired in the control share acquisition. A “control share acquisition” is defined as an acquisition that immediately thereafter entitles the acquiring party to, directly or indirectly, alone or as part of a group, exercise voting power in the election of directors within any of the following ranges: (i) one-fifth or more but less than one-third of all voting power, (ii) one-third or more but less than a majority of all voting power and (iii) a majority or more of all voting power. An “issuing public corporation” is defined as a corporation which has (A) 100 or more shareholders, (B) its principal place of business, its principal office or substantial assets within the state of Florida, and (C) (1) more than 10% of its shareholders resident in Florida, (2) more than 10% of its shares owned by Florida residents, or (3) more than 1,000 shareholders resident in Florida. This statutory voting restriction is not applicable in certain circumstances set forth in the FBCA.

Affiliated Transactions. The FBCA also contains an “affiliated transactions” provision that prohibits a publicly held Florida corporation from engaging in a broad range of business combinations or other extraordinary corporate transactions (each such transaction, an “affiliated transaction”) with an “interested shareholder” for a period of three years following the time that such shareholder became an interested shareholder unless:

- (i) prior to such shareholder becoming an interested shareholder, the board of directors of the corporation approved either the affiliated transaction or the transaction which resulted in the shareholder becoming an interested shareholder;
- (ii) upon consummation of the transaction that resulted in the shareholder becoming an interested shareholder, the interested shareholder owned at least 85 percent of the outstanding voting shares of the corporation (other than shares held by directors who are also officers and certain employee benefit plans); or
- (iii) the affiliated transaction is approved by the board of directors and authorized at an annual or special meeting of shareholders, and not by written consent, by the affirmative vote of at least two thirds of the outstanding voting shares which are not owned by the interested shareholder.

The above voting requirements do not apply to an affiliated transaction if:

- (A) the transaction is approved by a majority of disinterested directors;
- (B) the corporation has not had more than 300 shareholders of record at any time during the past three years;
- (C) the interested shareholder has beneficially owned at least 80% of the corporation’s outstanding voting shares for at least three years;
- (D) the interested shareholder is the beneficial owner of at least 90% of the outstanding voting shares

(excluding shares acquired directly from the corporation in a transaction not approved by a majority of the disinterested directors); or

(E) consideration is paid to the holders of the corporation's shares equal to the highest price per share paid by the interested shareholder for any acquisition of the corporation's shares in the last two years or the fair market value per share and certain other conditions are met.

An interested shareholder is defined as a person who, together with affiliates and associates, beneficially owns (as defined in Section 607.0901(1)(e) of the FBCA) more than 15% of the corporation's outstanding voting shares.

Board Authority – Issuance of Shares. Our Board of Directors has the power to issue any or all of the shares of our capital stock, including the authority to establish one or more series of preferred stock and to fix the designations, powers, preferences, rights and limitations of such class or series, without seeking shareholder approval, which could delay, defer or prevent any attempt to acquire or control us.

Classified Board of Directors. Our Articles of Incorporation and Bylaws provide that our Board of Directors will be divided into three classes, with staggered terms of three years for each class. The term of one class expires each year. Our Articles of Incorporation and Bylaws provide that any vacancies on the Board of Directors will be filled only by the affirmative vote of a majority of the directors then in office, even if less than a quorum. Our Articles of Incorporation and Bylaws also provide that any director may be removed from office, but only for cause and only upon the affirmative vote of the holders of at least two-thirds of the then-outstanding voting shares of the capital stock of the Company entitled to vote generally in the election of directors (the "outstanding voting shares") at a special meeting called for such purpose.

Special Voting Requirements. Our Articles of Incorporation provide that all actions taken by the shareholders must be taken at an annual or special meeting of the shareholders or by written consent of the holders of not less than two-thirds of our outstanding voting shares. Our Articles of Incorporation and Bylaws provide that special meetings of the shareholders may be called only by the President, the Chairman of the Board, a majority of the members of the Board of Directors, even if less than a quorum, or the holders of not less than 50% of our outstanding voting shares. Under our Bylaws, shareholders will be required to comply with advance notice provisions with respect to any proposal submitted for shareholder approval, including nominations for elections to the Board of Directors. Our Articles of Incorporation and Bylaws contain provisions requiring the affirmative vote of the holders of at least two-thirds of our outstanding voting shares to amend our Bylaws and certain provisions of our Articles of Incorporation.

Transfer Agent

American Stock Transfer and Trust Company serves as the transfer agent and registrar for all of our Common Stock.

Amendment to 2019 Performance-Based Restricted Stock Unit Award Agreement

This Amendment, effective February 13, 2020, to the Performance-Based Restricted Stock Unit Award Agreement (the "Agreement") dated as of February 25, 2019 is made between FARO Technologies, Inc. (the "Company") and _____ (the "Grantee"). This Amendment is included in and made a part of the Agreement.

1. Amendment. Section 5 of Exhibit A to the Agreement is hereby amended and restated in its entirety to read as follows:

"5. *Change in Control*.

(a) In the event of a Change in Control: (i) the Performance Period shall be deemed to have ended as of the date of the consummation of the Change in Control (the "CIC Date," and such Performance Period, the "Abbreviated Performance Period"), (ii) the TSR for the Company and each of the Peer Companies shall be calculated by using the Closing Value of each company's common stock as of the CIC Date, and (iii) the number of earned Restricted Stock Units for such Abbreviated Performance Period (the "CIC Earned Units") shall be determined in accordance with section 3 above, provided that any reference to "Performance Period" in section 3 above shall be deemed to be a reference to the Abbreviated Performance Period for purposes of this calculation.

(b) If this Restricted Stock Unit Award is not continued or assumed by the Surviving Entity or otherwise equitably converted or substituted for in connection with a Change in Control, the number of Grantee's CIC Earned Units, as determined in accordance with section 5(a) above, shall vest immediately upon the CIC Date and settle in accordance with section 3 of the Agreement (unless a later date is required by Section 17.3 of the Plan).

(c) If this Restricted Stock Unit Award is continued or assumed by the Surviving Entity or otherwise equitably converted or substituted for in connection with a Change in Control, the Grantee's CIC Earned Units shall be determined in accordance with section 5(a) above. The Pro Rata Portion of the Grantee's CIC Earned Units shall vest immediately upon the CIC Date and settle in accordance with section 3 of the Agreement (unless a later date is required by Section 17.3 of the Plan), and the balance of the Grantee's CIC Earned Units (the "Continued Units") shall convert immediately upon the CIC Date into a time-based vesting award for the remaining duration of the original Performance Period and, assuming the Grantee's continued employment, shall vest on the last day of the original Performance Period; provided, however, if within one year after the CIC Date, the Grantee's employment is terminated without Cause or the Grantee resigns for Good Reason, then the Grantee's Continued Units shall vest immediately as of the date of his or her termination of Continuous Service and settle in accordance with section 3 of the Agreement (unless a later date is required by Section 17.3 of the Plan).

(d) The "Pro Rata Portion" means that number of Restricted Stock Units equal to the product obtained by multiplying (x) the total number of CIC Earned Units (as determined in accordance with section 5(a) of this Exhibit) by (y) a fraction, the numerator of which is the number of days elapsed from the first day of the original Performance Period through the CIC Date and the denominator of which is the number of days in the original Performance Period."

2. Effect on Agreement. This Amendment has no effect on the other terms of the Agreement, and the Agreement shall otherwise continue in full force and effect.

FARO TECHNOLOGIES, INC.

By:
Name: Katrona Tyrrell
Title: Chief People Officer

FARO TECHNOLOGIES, INC. LIST OF SUBSIDIARIES

Name	Jurisdiction of Organization
Antares-Desenvolvimento de Software, Lda.	Portugal
Cam2 SRL	Italy
Cam2 Sweden AB	Sweden
FARO Benelux BV	Netherlands
FARO Business Technologies India Pvt. Ltd	India
FARO Cayman LP	Cayman Islands
FARO Cayman Ltd	Cayman Islands
FARO Delaware LLC	Delaware
FARO Deutschland Holding GmbH	Germany
FARO Europe GmbH & Co. KG	Germany
FARO FHN Netherlands Holdings BV	Netherlands
FARO Japan Inc.	Japan
FARO Scanning GmbH	Germany
FARO Scanner Production GmbH	Germany
FARO 3D Software GmbH	Germany
FARO International (Shanghai) Co., Ltd	China
FARO Singapore Pte Ltd	Singapore
FARO Spain SL	Spain
FARO Swiss Holding GmbH	Switzerland
FARO Swiss Manufacturing GmbH	Switzerland
FARO Technology Polska sp.zo.o	Poland
FARO Turkey Olcu Sistemleri Ltd. Sti	Turkey
FARO Verwaltungs GmbH	Germany
FARO Technologies (Thailand) Ltd	Thailand
Faro Laser Trackers, LLC	Delaware
3D Measurement Technologies, S de RL de CV	Mexico
OOO FARO RUS	Russia
FARO Technologies UK Ltd.	United Kingdom
FARO Technologies do Brasil Ltda	Brazil
FARO Technologies Canada, Inc.	Canada
Open Technologies SRL	Italy
Laser Control Systems Limited.	United Kingdom
Photocore AG	Switzerland

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our reports dated February 19, 2020, with respect to the consolidated financial statements and internal control over financial reporting included in the Annual Report of FARO Technologies, Inc. and subsidiaries on Form 10-K for the year ended December 31, 2019. We consent to the incorporation by reference of said reports in the Registration Statements of FARO Technologies, Inc. and subsidiaries on Form S-8 (File No. 333-160660, File No. 333-197762 and File No. 333-226491).

/s/ GRANT THORNTON LLP

Orlando, Florida
February 19, 2020

FARO Technologies, Inc.
Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Michael Burger, certify that:

1. I have reviewed this Annual Report on Form 10-K of FARO 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 officers 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 officers 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 19, 2020

/s/ Michael Burger

Name: Michael Burger

Title: President and Chief Executive Officer (Principal Executive Officer)

FARO Technologies, Inc.
Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Allen Muhich, certify that:

1. I have reviewed this Annual Report on Form 10-K of FARO 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 officers 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 officers 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 19, 2020

/s/ Allen Muhich

Name: Allen Muhich

Title: Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)

FARO Technologies, Inc.
Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

Solely for the purposes of complying with 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, I, the undersigned President and Chief Executive Officer of FARO Technologies, Inc. (the Company), hereby certify that the Annual Report on Form 10-K for the year ended December 31, 2019 (the Report) fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934 and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 19, 2020

/s/ Michael Burger

Name: Michael Burger

Title: President and Chief Executive Officer (Principal Executive Officer)

FARO Technologies, Inc.
Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

Solely for the purposes of complying with 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, I, the undersigned Chief Financial Officer of FARO Technologies, Inc. (the Company), hereby certify that the Annual Report on Form 10-K for the year ended December 31, 2019 (the Report) fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934 and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 19, 2020

/s/ Allen Muhich

Name: Allen Muhich

Title: Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)

FARO TECHNOLOGIES INC. PROPERTIES

No.	Location	Sq. Ft.	Owned/ Leased	Purposes
1	125 Technology Park, Lake Mary, Florida	35,000	Leased	Manufacturing, research and development, service
2	250 Technology Park, Lake Mary, Florida	46,500	Leased	Headquarters, sales, marketing, administration
3	290 National Road Exton, Pennsylvania	90,400	Leased	Manufacturing, research and development, service
4	Lingwiesenstrasse 11/2 70825 Korntal-Muenchingen BW, Germany	105,300	Leased	European headquarters, manufacturing, sales, research and development, service
5	Wiesengasse 20 CH-8222 Beringen Switzerland	15,900	Leased	Manufacturing
6	Unit 1° Great Central Way Butlers Leap Rugby Warwickshire CV21 3Xh, Great Britain	12,700	Leased	Sales, service
7	716 Kumada Nagakute-shi, Aichi 480-1144, Japan	15,900	Leased	Sales, service
8	188 Pingfu Road, Shanghai, China	24,700	Leased	Sales, service
9	No. 3 Changi South St 2 #01-01 Xilin Districentre Building B, Singapore	22,000	Leased	Asia headquarters, manufacturing, sales, service
10	215 Avenida Centuria, Parque Industrial, Apodaca, Nuevo Leon 66600 - Mexico	36,000	Leased	Sales, service