LUNA INNOVATIONS INC
Form 10-K
March 20, 2017
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549
FORM 10-K
(MARK ONE)
x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
FOR THE FISCAL YEAR ENDED DECEMBER 31, 2016
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 000-52008
LUNA INNOVATIONS INCORPORATED
(Exact name of Registrant as Specified in its Charter)

Delaware	54-1560050
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification Number)

301 1st St SW, Suite 200
Roanoke, VA 24011
(Address of Principal Executive Offices)
(540) 769-8400
(Registrant's Telephone Number, Including Area Code)
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on which Registered
Common Stock, par value $0.001 per share	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 x
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 x
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 x No ¨
Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes x No ¨
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. x
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company. See the definitions of "large accelerated filer", "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ¨	Accelerated filer ¨

Non-accelerated filer ¨ (Do not check if a smaller reporting company) Smaller reporting company x

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

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant on June 30, 2016, based upon the closing price of Common Stock on such date as reported by the NASDAQ Capital Market, was approximately $29.8 million.

Indicate by check mark whether the registrant has filed all documents and reports required to be filed by Section 12, 13 or 15(d) of the Securities Exchange Act of 1934 subsequent to the distribution of securities under a plan confirmed by a court. Yes x No ¨

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date: As of March 15, 2017 there were 27,541,277 shares of the registrant's common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Specified portions of the registrant's Proxy Statement with respect to its 2017 Annual Meeting of stockholders, anticipated to be filed within 120 days after the end of its fiscal year ended December 31, 2016, are incorporated by reference into Part III of this annual report on Form 10-K.

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LUNA INNOVATIONS INCORPORATED
ANNUAL REPORT ON FORM 10-K
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CAUTIONARY NOTE REGARDING FORWARD LOOKING STATEMENTS

This Annual Report on Form 10-K, including the "Management's Discussion and Analysis of Financial Condition and Results of Operation" section in Item 7 of this report, and other materials accompanying this Annual Report on Form 10-K contain forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended, and Section 27A of the Securities Act of 1933, as amended. All statements other than statements of historical facts are "forward-looking statements" for purposes of these provisions, including those relating to future events or our future financial performance. In some cases, you can identify these forward- looking statements by words such as "intends," "will," "plans," "anticipates," "expects," "may," "might," "estimates," "believes," "should," "projects "potential" or "continue," or the negative of those words and other comparable words, and other words or terms of similar meaning in connection with any discussion of future operating or financial performance. Similarly, statements that describe our business strategy, goals, prospects, opportunities, outlook, objectives, plans or intentions are also forward-looking statements. These statements are only predictions and may relate to, but are not limited to, expectations of future operating results or financial performance, capital expenditures, introduction of new products, regulatory compliance, plans for growth and future operations, as well as assumptions relating to the foregoing.

These statements are based on current expectations and assumptions regarding future events and business performance and involve known and unknown risks, uncertainties and other factors that may cause actual events or results to be materially different from any future events or results expressed or implied by these statements. These factors include those set forth in the following discussion and within Item 1A "Risk Factors" of this Annual Report on Form 10-K and elsewhere within this report.

You should not place undue reliance on these forward-looking statements, which apply only as of the filing date of this Annual Report on Form 10-K. You should carefully review the risk factors described in other documents that we file from time to time with the U.S. Securities and Exchange Commission ("SEC"). Except as required by applicable law, including the rules and regulations of the SEC, we do not plan to publicly update or revise any forward-looking statements, whether as a result of any new information, future events or otherwise, other than through the filing of periodic reports in accordance with the Securities Exchange Act of 1934, as amended.

We have proprietary rights to a number of trademarks used in this Annual Report which are important to our business. Solely for convenience, the trademarks and trade names in this prospectus are referred to without the ® and TM symbols, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. All other trademarks, trade names and service marks appearing in this Annual Report are the property of their respective owners.

PART I

ITEM 1. BUSINESS

Company Overview and Business Model

Luna Innovations Incorporated ("we" or the "Company") is a leader in advanced optical technology, providing unique capabilities in high speed optoelectronics and high performance fiber optic test products for the telecommunications industry and distributed fiber optic sensing for the aerospace and automotive industries. Our high-speed optical receiver ("HSOR") transmission products are deployed in the internet infrastructure to enable the high-speed bandwidth necessary to support video and data. Our distributed fiber optic sensing products provide critical stress, strain and temperature information to designers and manufacturers working with advanced materials. Our custom optoelectronic products are sold to scientific or industrial instrumentation manufacturers and to defense contractors for various applications such as metrology, missile guidance, flame monitoring, and temperature sensing. In addition, we provide applied research services, typically under research programs funded by the U.S. government, in areas of advanced materials, sensing, and healthcare applications. Our business model is designed to accelerate the process of bringing new and innovative products to market. We use our in-house technical expertise across a range of technologies to perform applied research services for companies and for government funded projects. We continue to

invest in product development and commercialization, which we anticipate will lead to increased product sales growth.
We are organized into two main business segments, our Products and Licensing segment and our Technology Development segment. Our Products and Licensing segment develops, manufactures and markets fiber optic sensing products, as well as test & measurement products, and also conducts applied research in the fiber optic sensing area for both corporate

and government customers. We are continuing to develop and commercialize our fiber optic technology for strain and temperature sensing applications for the aerospace, automotive, and energy industries. Our Products and Licensing segment revenues represented approximately 72% and 69% of our total revenues for the years ended December 31, 2016 and 2015, respectively. For 2016, ZTE Kangxun Telecom, Inc. accounted for approximately 16% of our Products and Licensing segment revenues and 11% of our total revenues.

Our Technology Development segment performs applied research principally in the areas of sensing & instrumentation, advanced materials, and health sciences. Our Technology Development segment comprised approximately 28% and 31% of our total revenues for the years ended December 31, 2016 and 2015, respectively. Most of the government funding for our Technology Development segment is derived from the Small Business Innovation Research ("SBIR") program coordinated by the U.S. Small Business Administration ("SBA").

Our SBIR research is focused on technological areas with commercial potential and we strive to commercialize any resulting scientific advancements. For the year ended December 31, 2016, approximately 24% of our total revenues were generated under the SBIR program, compared to 26% for the year ended December 31, 2015.

For the years ended December 31, 2016 and 2015, 28% and 34%, respectively, of our total revenues were derived from the U.S. government.

Merger with Advanced Photonix, Inc.

On May 8, 2015, we completed a merger with Advanced Photonix, Inc. ("API"), pursuant to the Agreement and Plan of Merger and Reorganization (the "Merger Agreement"), dated as of January 30, 2015, by and among Luna, API and API Merger Sub, Inc., our wholly owned subsidiary ("API Merger Sub"). In accordance with the terms of the Merger Agreement, upon the completion of the merger, API Merger Sub merged with and into API, with API surviving as our wholly-owned subsidiary. In the merger, former API stockholders received 0.31782 shares of our common stock for each share of API common stock they owned at the effective time of the merger.

API was a leading test & measurement company that packaged optoelectronic semiconductors into high-speed optical receivers, custom optoelectronic sub systems and Terahertz instrumentation, serving the test & measurement, telecommunications, military/aerospace and medical markets. API had manufacturing facilities located in Camarillo, California and Ann Arbor, Michigan, both of which have remained in operation following the merger.

Our results of operations for the year ended December 31, 2015, include the results associated with the operations of API from the closing of our merger on May 8, 2015 through December 31, 2015.

Products and Licensing

In addition to the operations of API acquired in May 2015, our Products and Licensing segment includes the sale of fiber optic test & measurement instruments. We have been successful in developing and marketing fiber optic test & measurement products which provide solutions primarily for the telecommunications industry marketed under the Luna Technologies brand. In 2011, we also introduced our ODiSI platform of products for distributed sensing of strain and temperature utilizing optical fiber.

Our key initiatives for long term growth are to become a leading provider of fiber optic strain and temperature sensing systems and standard test methods based upon the ODiSI product platform and to be a leading supplier of HSOR products in the expanding telecommunications markets, principally in Asia. Our primary product lines in our Products and Licensing segment are described in more detail below.

Test & Measurement, Sensing, and Instrumentation Products

Test & Measurement Equipment for Fiber Optic Components and Sub-Assemblies

Our product lines in the test & measurement domain include our Optical Vector Analyzer, our Optical Backscatter Reflectometer, and the Phoenix family of tunable lasers.

Historically, our test & measurement products have primarily served the telecommunications industry, as well as valuable applications in other fields. Our test & measurement products test and monitor the integrity of fiber optic network components and sub-assemblies. These products are designed for manufacturers and suppliers of optical components and sub-assemblies and allow them to reduce development, test and production costs and improve the quality of their products. Most manufacturers and suppliers of optical components and modules currently use a combination of different types of optical test equipment to

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identify and measure failures in optical networks, such as bad splices, bends, crimps and other reflective and non-reflective events that can cause defects and negatively impact product performance. Our optical test equipment products replace the need to employ multiple test products by addressing all stages of the end user's product development lifecycle, including design verification, component qualification, assembly process verification and failure analysis.

ODiSI Sensing Solution; Optical Distributed Sensor Interrogator

Our ODiSI products provide fully distributed strain and temperature measurements and deliver an extraordinary amount of data by using an optical fiber as a continuous sensor for up to 50 meters in length. Compared to traditional sensing methods, such as electrical strain gages, this technology provides greater insight into the performance, tolerances and failure mechanisms of composite structures and vehicles. We believe the technology can provide exceptional value to the aerospace and automotive industries as they transition from steel and aluminum to composite structures.

We have significant expertise in distributed sensing systems, such as ODiSI, which are products composed of multiple sensors whose inputs are integrated through a fiber optic network and software. These products use fiber optic sensing technology with an innovative monitoring system that allows several thousand sensors to be networked along a single optical fiber.

Tunable Lasers

We have acquired the rights to manufacture a line of swept tunable lasers to allow us to compete more effectively in our existing fiber optic test & measurement as well as sensing markets. This technology is being integrated into current and new products to help us provide our customers with faster, more flexible and cost-effective test & measurement products. The laser has desirable properties in the quality of the laser light produced, the speed at which it can operate, the small size of the package, and the environmental conditions in which it can operate. We believe that these traits make it possible for us to move our fiber optic sensing capabilities out of the laboratory, and into more demanding environments such as aircraft structural health monitoring, automotive manufacturing, green energy, and industrial applications.

High Speed Optical Receivers

Our HSOR transmission products include, among other things, 100G optical receivers and 10G avalanche photodiodes. These products are deployed in the internet communications equipment infrastructure to enable the high-speed bandwidth necessary to support video and data for television, computers, tablets or smart phones anytime and anywhere. Our communication test & measurement products are used to develop, manufacture and test optical communication components and equipment used in the telecom/datacom infrastructure.

Optoelectronic Solutions

Our optoelectronics products are sold to a number of scientific instrumentation manufacturers and defense contractors for various applications such as metrology, missile guidance, flame monitoring, temperature sensing, particle detection, color sensing, infrared detection, and many other applications that can only be done through optical sensing.

Terahertz Sensing

Our THz systems are used to measure and verify physical properties on-line and in real-time to reduce raw materials and rework costs in manufacturing processes as well as to conduct quality control monitoring. THz is a region of the electromagnetic spectrum that lies between microwave and infrared waves and is in the early stages of adoption. While microwaves and infrared waves have been explored and commercialized for decades, THz waves are in the early stages of being explored and commercialized due to the fact that they have historically been very difficult to generate and detect. Advances in femtosecond lasers and ultra-fast semiconductor and electro-optic devices combined with fiber-optic packaging technologies have enabled the development of practical THz instrumentation for the research market with increasing adoption in the industrial, military and aerospace markets. THz can be used to "look" through and beneath materials with high two-dimensional and three-dimensional spatial resolution. It can also uniquely identify the chemical composition of many hidden or subsurface objects using non-ionizing radiation, which is not harmful to humans at the power levels commonly used today. We market our THz based products as our T-Ray product platform through value added resellers.

Sales and Marketing

We primarily market our fiber optic test & measurement products to telecommunications companies, defense agencies, government system integrators, researchers, original equipment manufacturers, distributors, testing labs and strategic partners

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worldwide. We have a regional sales force that markets and sells our products through manufacturer representative organizations to customers in North America and through partner and distribution channels for other sales around the world. We have a dedicated sales force for direct marketing of our distributed sensing products, with an initial focus on customers in the automotive, aerospace, and energy industries.

We market our HSOR, optoelectronic, and THz products primarily as components or sub-assemblies to original equipment manufacturers through a mix of technical sales engineers, value added resellers, and independent sales representatives. We market these products and capabilities through industry specific channels, including the internet, industry trade shows, and in print through trade journals.

We believe that we provide a high level of support in developing and maintaining our long-term relationships with our customers. Customer service and support are provided through our offices and those of our partners that are located throughout the world.

Technology Development

We provide applied research for customers in our primary areas of focus, including sensing and materials such as nanomaterials, coatings, adhesives, composites and bio-engineered materials. We generally compete to win contracts in these areas on a fee-for-service basis. Our Technology Development segment has a successful track record of evaluating innovative technologies to address the needs of our customers.

We seek to maximize the benefits we derive from our contract research business, including revenue generation and identification of promising technologies for further development. We focus primarily on opportunities in which we develop intellectual property rights in areas that we believe have commercialization potential. We take a disciplined approach to contract research to try to ensure that the costs of any contract we undertake will be fully reimbursed. We believe that this model is cost-efficient and significantly reduces our development risk in that it enables us to defray the costs of higher risk technology development with third-party funding.

Although we conduct our applied research on a fee-for-service basis for third parties, we seek to retain full or partial rights to the technologies and patents developed under those contracts and to continuously enlarge and strengthen our intellectual property portfolio. New technology that we develop may complement existing technologies and enable us to develop applications and products that were not previously possible. In addition, the technologies we develop may also be applicable to commercial markets beyond the scope of the applications originally contemplated in the contract research stage, and we endeavor to capture the value of those opportunities. Funded research and development within this business segment was $16.8 million and $13.6 million for the years ended December 31, 2016 and 2015, respectively.

Each year, U.S. government federal agencies and departments are required to set aside a portion of their grant awards for SBIR-qualified organizations. SBIR contracts include Phase I feasibility contracts of up to $150,000 and Phase II proof-of-concept contracts, which can be as high as $1,000,000. We have won three National Tibbetts Awards from the SBA for outstanding SBIR performance. We have also won research contracts outside the SBIR program from corporations and government entities. These contracts typically have a longer duration and higher value than SBIR grants. In the future, we will seek to derive a larger portion of our contract research revenues from contracts outside of the SBIR program.

Materials

We are actively developing a wide variety of materials. For example, we have developed a range of coatings, including both hydrophobic and superoleophobic coatings. These coatings are being evaluated for use in a number of applications. Other coatings under development include anti-corrosion and damage-indicating coatings.

We are also working on a variety of bioengineered materials for homeostatic agents and wound healing. These materials must be approved by the FDA or similar foreign regulatory agencies before they can be marketed, which we do not expect to occur for at least several years, if at all.

Sensing

Our Technology Development segment also performs a significant amount of applied research towards developing new sensors. This includes sensors for the purpose of corrosion, temperature, strain, pressure, structural health, and chemical detection. Much of the work is directed to harsh environments and uses optics. Examples include measuring temperature and neutron flux in nuclear reactors, pressure and temperature in gas turbines, and temperatures of cryogenic lines. The effort utilizes both discrete and distributed sensors. Our technology development work in this area is closely aligned with our Products and Licensing segment and is directed at advancing the technology and the development of new applications.

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Intellectual Property

We seek patent protection on inventions that we consider important to the operations of our business. We rely on a combination of patent, trademark, copyright and trade secret laws in the United States and other jurisdictions, as well as confidentiality procedures and contractual provisions to protect our proprietary technology and our brand. We control access to our proprietary technology and enter into confidentiality and invention assignment agreements with our employees and consultants and confidentiality agreements with other third parties.

Our success depends in part on our ability to develop patentable products and obtain, maintain and enforce patent and trade secret protection for our products, as well as to successfully defend these patents against third-party challenges both in the United States and in other countries. We will only be able to protect our technologies from unauthorized use by third parties to the extent that we own or have licensed valid and enforceable patents or trade secrets that cover them. Furthermore, the degree of future protection of our proprietary rights is uncertain because we may not be able to obtain patent protection on some or all of our technology and because legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep our competitive advantage.

Currently, we own or license approximately 226 U.S. and international patents and approximately 282 U.S. and international patent applications, and we intend to file, or request that our licensors file, additional patent applications for patents covering our products. Our issued patents generally have terms that are scheduled to expire between 2017 and 2030. The patents scheduled to expire in 2017 are not expected to have a significant impact on our revenues or results of operations. However, patents may not be issued for any pending or future pending patent applications owned by or licensed to us. Claims allowed under any issued patent or future issued patent owned or licensed by us may not be valid or sufficiently broad to protect our technologies. Any issued patents owned by or licensed to us now or in the future may be challenged, invalidated or circumvented, and, in addition, the rights under such patents may not provide us with competitive advantages. In addition, competitors may design around our technology or develop competing technologies. Intellectual property rights may also be unavailable or limited in some foreign countries, which could make it easier for competitors to capture or increase their market share with respect to related technologies.

A discussion of our material patents and patent applications is set forth below.

NASA Patents

We have licensed, on a non-exclusive basis, four U.S. patents and related patents in Japan, Canada, Germany, France, Great Britain and Belgium from the National Aeronautics and Space Administration, an agency of the U.S. government (“NASA”), which patents concern the measurement of strain in optical fiber using Bragg gratings and Rayleigh scatter and the measurement of the properties of fiber-optic communications devices. These patents expire between February 2017 and September 2020.

VTIP Patents

We have licensed, on an exclusive basis, two U.S. patents from Virginia Tech Intellectual Properties, Inc. (“VTIP”) to commercialize fullerenes and tri-metal nitride endohedral fullerene (“Trimetasphere”) nanomaterials for all fields of human endeavor. These patents expire in December 2019 and December 2022.

Coherent Patents

We have licensed, on a non-exclusive basis, several U.S. patents and other intellectual property rights owned or controlled by Coherent, Inc., related to the manufacturing, using, importing, selling and offering for sale of Coherent’s “Iolon” brand of swept tunable lasers, which we market under our “Phoenix” brand. These patents expire between 2020 and 2025.

Shape Sensing Patents

As a part of our sale of assets associated with our fiber optic shape sensing technology in the medical field to Intuitive Surgical, Inc. ("Intuitive"), we transferred our related patents to Intuitive. Also as a part of this transaction, we entered into a revocable license agreement with Intuitive pursuant to which we have the right to use all of our transferred technology outside the field of medicine and in respect of our existing non-shape sensing products in certain non-robotic medical fields. Two U.S. patents that we now license back from Intuitive cover the use of optical frequency domain reflectometry and multiple, closely

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spaced Bragg gratings for shape sensing, and the use of the inherent scatter as a strain sensor for shape sensing. These two patents expire in July 2025. We also have a license back from Intuitive for a patent application that covers certain refinements to the measurements covered in the first two patents, which are necessary in order to achieve the necessary accuracies for medical and other applications. This patent application was filed in the United States, the European Patent Office, China, India, Russia, Brazil, Japan and Indonesia. These patents and patent applications can support other nonmedical applications of our fiber optic shape sensing technology.

Corporate History

We were incorporated in the Commonwealth of Virginia in 1990 and reincorporated in the State of Delaware in April 2003. We completed our initial public offering in June 2006. In May 2015, we merged with API. Our executive offices are located at 301 1st St SW, Suite 200, Roanoke, Virginia 24011 and our main telephone number is (540) 769-8400.

Material Agreements

Sale of Assets to Intuitive Surgical

On January 17, 2014, we entered into an Asset Purchase Agreement with Intuitive (the “Asset Purchase Agreement”). Under the Asset Purchase Agreement, effective as of 12:01 a.m. on January 21, 2014, we closed on the sale to Intuitive of substantially all of our assets related to our medical shape sensing business, including all of the patents and patent applications used or useful for our fiber optical shape sensing and localization technology, for $12 million, plus up to $8 million upon the accomplishment by Intuitive of certain technical specifications (the “Technical Specifications Payment”) and up to $10 million in potential future royalties (altogether, the “Transaction”). We had been engaged since 2007 in a development project for Intuitive developing a fiber optic-based shape sensing and position tracking system to be integrated into Intuitive’s products. Also as a part of the Transaction, Intuitive has hired certain of our employees, many of whom were historically engaged in this development project. In December 2015, we and Intuitive agreed to settle all remaining obligations related to the Technical Specifications Payment and royalties for a lump sum payment of $9 million, which we received in December 2015.

The Asset Purchase Agreement contains representations and warranties, covenants and indemnification provisions common to transactions of this nature, except that our indemnification obligations are only limited in time until no further payments are due from Intuitive. Any disputes between the parties will be handled by mediation and arbitration in Chicago, Illinois. All of the transfers of technology contemplated in the Transaction have been made subject to our existing licenses and related obligations to Hansen Medical Inc. ("Hansen") and Philips Medical Systems.

Also, in connection with the Transaction, we and Intuitive entered into a License Agreement of the same date under which we received a license back to all of our transferred technology outside the field of medicine and in respect of our existing non-shape sensing products in certain non-robotic medical fields. The license back to us outside the medical field is exclusive to us except that Intuitive retained certain non-sublicensable rights for itself. This license back to us is revocable if we were, after notice and certain time periods, (i) to challenge the validity or enforceability of the transferred patents and patent applications, (ii) to commercialize our fiber optical shape sensing and localization technology in the field of medicine (except to perform on a development and supply project for Hansen), (iii) to violate our obligations related to our ability to sublicense in the field of medicine or (iv) to violate our confidentiality obligations in a manner that advantages a competitor in the field of medicine and not cure such violation. As a part of the Transaction, we retained assets and rights necessary to perform on our development and supply project for Hansen if that project is re-started.

Also, as a part of the Transaction, for a period of 15 years after closing, we agreed to exit and not develop or commercialize our fiber optical shape sensing and localization technology in the field of medicine (except for Hansen as described above). For a period of 10 years after closing, Intuitive has agreed not to use any of the assets being acquired in the Transaction, including the key employees being hired, to compete with us outside the field of medicine for shape, strain and/or temperature sensing in the aerospace, automotive, and energy markets and for strain sensing in the civil structural monitoring and composite material markets.

Virginia Tech

Our nanomaterials activity is focused on Trimetasphere materials. The Trimetasphere nanomaterial is a carbon sphere with three metal atoms and a nitrogen atom enclosed. We have obtained an exclusive license from VTIP to commercialize Trimetasphere nanomaterials under two U.S. patents for all fields of human endeavor. The term of this license ends upon the

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last expiration date of the underlying patents, which is December 2022. The license provides for certain royalties to be paid as a percentage of our net sales, certain percentages of amounts received from any of our sublicensees and certain milestone payments based on product development phases. We reimburse VTIP for patent costs incurred under the license. VTIP may terminate the license for cause. We may terminate the license at any time for any reason on 60 days' notice.

We primarily utilize the VTIP license in our ongoing research into the potential use of Trimetaspheres to improve the safety of contrast agents commonly utilized in magnetic resonance imaging ("MRI") procedures. We believe that contrast agents utilizing our Trimetasphere nanomaterials may be able to provide a higher image contrast than existing contrast agents but with a lower risk of toxicity. Medical contrast agents for human use, such as our Trimetasphere nanomaterials, must be approved by the FDA or similar foreign regulatory agencies before they can be marketed, which we do not expect to occur for at least several years, if at all. As described below under "Government Regulation," this approval process can involve significant time and expense and may delay or prevent our products from reaching the market.

Coherent

In December 2006, we entered into an asset transfer and license agreement with Coherent. Under the agreement, we acquired the rights to manufacture Coherent's "Iolon" brand of swept tunable lasers as well as certain manufacturing equipment and inventory previously used by Coherent to manufacture the lasers. We continue to enhance, produce, and market these lasers under our "Phoenix" brand. Under this agreement, Coherent granted non-exclusive licenses to us for certain U.S. patents and other intellectual property rights owned or controlled by Coherent for making, having made, using, importing, selling and offering for sale the lasers. This agreement expired in 2016. However, the patent licenses became fully paid and perpetual, as we fulfilled our royalty obligations during the 10-year period and the license to the other intellectual property rights is perpetual. These U.S. patents expire between 2020 and 2025. As consideration, we agreed to pay Coherent a total of $1.3 million over a period of two years and royalty payments on net sales of products sold by us that incorporate the lasers or that are manufactured using the intellectual property covered by the licenses. We paid Coherent royalty fees of approximately $70,000 for both 2016 and 2015. We also agreed to sell Coherent a limited number of lasers each year.

The Phoenix laser is a miniaturized, external-cavity laser offering high performance in a compact footprint and is applicable to a range of fiber optic test and measurement, instrumentation, and sensing applications. These products employ frequency-tuned lasers to measure various aspects of the transmission properties of telecommunications fiber optic components and systems. Lasers are also used in fiber optic sensing applications such as distributed strain and temperature mapping, and distributed measurement of shape. We currently use these lasers within our ODiSI platform of products, our fiber optic shape sensing products and certain of our backscatter reflectometer products, and we also sell variations of the Phoenix laser as standalone products. Under our agreements related to our sale of assets to Intuitive, we have certain obligations to supply Intuitive with these lasers and Intuitive has certain rights to require us to transfer and assign this Coherent license to Intuitive, in which case Intuitive would be similarly required to supply us with lasers.

NASA

We have licensed, on a non-exclusive basis, certain patents from NASA under two license agreements. These patents concern the measurement of strain in optical fiber using Bragg gratings and Rayleigh scatter, and also the measurement of the properties of fiber-optic communications devices. Under the license agreements, we pay NASA certain royalties based on a percentage of net sales of products covered by the patents. We incur a royalty obligation to NASA based upon a specified percentage of the revenue earned on each product sold utilizing these patents subject to combined minimum royalties of $220,000 per year under the license agreements. The term of the license agreements continues until the expiration of the last licensed patent, which is September 2020. These license agreements may be terminated by us on 90 days' notice. Either party may terminate the license agreements for cause upon certain conditions.

Competition

We compete for government, university and corporate research contracts relating to a broad range of technologies. Competition for contract research is intense and the industry has few barriers to entry. We compete against a number of in-house research and development departments of major corporations, as well as a number of small, limited-service contract research providers and companies backed by large venture capital firms. The contract research industry continues to experience consolidation, which has resulted in greater competition for clients. Increased competition might lead to price and other forms of competition that could harm our operating results. We compete for contract research on the basis of a number of factors, including reliability, past performance, expertise and experience in specific areas, scope of service offerings, technological capabilities and price.

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We also compete, or will compete, with a variety of companies in several different product markets. The products that we have developed or are currently developing will compete with other technologically innovative products, as well as products incorporating conventional materials and technologies. We expect that we will compete with companies in a wide range of industries, including semiconductors, electronics, biotechnology, textiles, alternative energy, military, defense, healthcare, telecommunications, industrial measurement, security applications and consumer electronics. Although there can be no assurance that we will continue to do so, we believe that we compete favorably in these areas because our products leverage advanced technologies to offer superior performance. If we are unable to effectively compete in these areas in the future, we could lose business to our competitors, which could harm our operating results.

Government Regulation

Qualification for Small Business Innovation Research Grants

SBIR is a highly competitive program that encourages small businesses to explore their technological potential and provides them with incentives to commercialize their technologies by funding research that might otherwise be prohibitively expensive or risky for companies like us. As noted above, we presently derive a significant portion of our revenue from this program, but we must continue to qualify for the SBIR program in order to be eligible to receive future SBIR awards. The eligibility requirements are:

- Ownership. The company must be more than 50 percent owned and controlled by U.S. citizens or permanent resident aliens, or owned by an entity that is itself more than 50 percent owned and controlled by U.S. citizens or permanent resident aliens; and
- Size. The company, including its affiliates, cannot have more than 500 employees.

These requirements are set forth in the SBA's regulations and are interpreted by the SBA's Office of Hearings and Appeals. In determining whether we satisfy the more than 50% ownership requirement, agreements to merge, stock options, convertible debt and other similar instruments are given "present effect" by the SBA as though the underlying security were actually issued unless the exercisability or conversion of such securities is speculative, remote or beyond the control of the security holder. We therefore believe our outstanding options and warrants held by eligible individuals may be counted as outstanding equity for purposes of meeting the more than 50% equity ownership requirement. We believe that we are in compliance with the SBA ownership requirements.

In addition, to be eligible for SBIR contracts, the number of our employees, including those of any entities that are considered to be affiliated with us, cannot exceed 500. As of December 31, 2016, we, including all of our divisions, had 245 full- and part-time employees. In determining whether we have 500 or fewer employees, the SBA may count the number of employees of entities that are large stockholders who are "affiliated" or have the power to control us. In determining whether firms are affiliated, the SBA evaluates factors such as stock ownership and common management, but it ultimately may make its determination based on the totality of the circumstances. Eligibility protests can be raised to the SBA by a competitor or by the awarding contracting agency. If we grow larger, and if our ownership becomes more diversified, we may no longer qualify for the SBIR program, and we may be required to seek alternative sources and partnerships to fund some of our research and development costs. Additional information regarding these risks may be found below in "Risk Factors."

Environmental, Health and Safety Regulation

Our facilities and current and proposed activities involve the use of a broad range of materials that are considered hazardous under applicable laws and regulations. Accordingly, we are subject to a number of domestic and foreign laws and regulations and other requirements relating to employee health and safety, protection of the environment, product labeling and product take back. Regulated activities include the storage, use, transportation and disposal of, and exposure to, hazardous or potentially hazardous materials and wastes. Our current and proposed activities also include potential exposure to physical hazards associated with work environment and equipment. We could incur costs, fines, civil and criminal penalties, personal injury and third-party property damage claims, or we could be required to incur substantial investigation or remediation costs, if we were to violate or become liable under environmental, health and safety laws and regulations or requirements. Liability under environmental, health and safety laws can be joint and several and without regard to fault. There can be no assurance that violations of environmental, health and safety laws will not occur in the future as a result of the inability to obtain permits in a timely manner, human error, equipment failure or other causes. Environmental, health and safety laws could also become more stringent over time, imposing greater compliance costs and increasing risks and penalties associated with violations, which could harm our business. Further, violations of present and future environmental, health and safety laws could restrict our ability to expand facilities and pursue certain technologies, as well as require us to acquire costly equipment or to incur potentially significant costs to comply with environmental, health and safety regulations and other requirements. We have made, and will continue to make, expenditures to comply with current and future environmental, health and safety laws. We anticipate that we could incur additional capital and operating costs in the future to comply with existing environmental, health and safety laws and new requirements arising from new or amended statutes and regulations. In addition, because the applicable regulatory agencies have not yet promulgated final standards for some existing environmental, health and safety programs, we cannot at this time reasonably estimate the cost for compliance with these additional requirements. The amount of any such compliance costs could be material. We cannot predict the impact that future regulations will impose upon our business.

Employees

As of December 31, 2016, we had approximately 245 total employees, including approximately 121 in research, development and engineering positions, approximately 78 in operations, approximately 14 in sales and marketing, and approximately 32 in administrative positions. None of our employees are covered by a collective bargaining agreement, and we consider our relationship with our employees to be good.

Backlog

We have historically had a backlog of contracts, primarily within our Technology Development segment, for which work has been scheduled, but for which a specified portion of work has not yet been completed. The approximate value of our backlog was $17.6 million and $16.7 million at December 31, 2016 and 2015, respectively.

We define backlog as the dollar amount of obligations payable to us under negotiated contracts upon completion of a specified portion of work that has not yet been completed, exclusive of revenues previously recognized for work already performed under these contracts, if any. Total backlog includes funded backlog, which is the amount for which money has been directly authorized by the U.S. government or for which a purchase order has been received from a commercial customer, and unfunded backlog, which represents firm orders for which funding has not yet been appropriated. Unfunded backlog was $2.1 million and $3.3 million as of December 31, 2016 and 2015, respectively. Indefinite delivery and quantity contracts and unexercised options are not reported in total backlog. Our backlog is subject to delays or program cancellations that may be beyond our control.

Our backlog of purchase orders received for which the related goods have not been shipped or recognized as revenue within our Products and Licensing segment was $10.4 million and $10.7 million at December 31, 2016 and 2015, respectively.

Research, Development and Engineering

We incur research, development and engineering expenses that are not related to our contract performance. These expenses were $5.5 million and $4.3 million for the years ended December 31, 2016 and 2015, respectively. In addition, during these years, we spent $12.7 million and $10.4 million, respectively, on customer-sponsored research activities, which amounts are reimbursed as part of our performance of customer contracts.

Operating Segments and Geographic Areas

For information with respect to our operating segments and geographic markets, see Note 15 to our Consolidated Financial Statements in Part II, Item 8 of this Annual Report on Form 10-K.

Website Access to Reports

Our website address is www.lunainc.com. We make available, free of charge under “SEC Filings” on the Investor Relations portion of our website, access to our annual report on Form 10-K, our quarterly reports on Form 10-Q and our current reports on Form 8-K, as well as amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after such material is electronically filed with or furnished to the SEC. Information appearing on our website is not incorporated by reference in and is not a part of this annual report. A copy of this annual report, as well as our other periodic and current reports, may be obtained from the SEC’s public reference room at 100 F Street, N.E., Washington, D.C. 20549. Information on the operation of the Public Reference Room can be obtained by calling the SEC at 1-800-SEC-0330. The SEC maintains an internet site that contains reports, proxy and information statements, and other information regarding our filings at www.sec.gov.

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ITEM 1A.

You should carefully consider the risks described below before deciding whether to invest in our common stock. The risks described below are not the only ones we face. Additional risks not presently known to us or that we currently believe are immaterial may also impair our business operations and financial results. If any of the following risks actually occurs, our business, financial condition or results of operations could be adversely affected. In such case, the trading price of our common stock could decline and you could lose all or part of your investment. Our filings with the Securities and Exchange Commission also contain forward-looking statements that involve risks or uncertainties. Our actual results could differ materially from those anticipated or contemplated by these forward-looking statements as a result of a number of factors, including the risks we face described below, as well as other variables that could affect our operating results. Past financial performance should not be considered to be a reliable indicator of future performance, and investors should not use historical trends to anticipate results or trends in future periods.

RISKS RELATING TO OUR BUSINESS GENERALLY

Our technology is subject to a license from Intuitive, which is revocable in certain circumstances. Without this license, we cannot continue to market, manufacture or sell certain of our fiber-optic products.

As a part of the sale of certain assets to Intuitive, we entered into a license agreement with Intuitive pursuant to which we received rights to use all of our transferred technology outside the field of medicine and in respect of our existing non-shape sensing products in certain non-robotic medical fields. This license back to us is revocable if after notice and certain time periods, we were to (i) challenge the validity or enforceability of the transferred patents and patent applications, (ii) commercialize our fiber optical shape sensing and localization technology in the field of medicine (except to perform on a development and supply project for Hansen Medical, Inc.), (iii) violate our obligations related to our ability to sublicense in the field of medicine or (iv) violate our confidentiality obligations in a manner that advantages a competitor in the field of medicine and not cure such violation. Maintaining this license is necessary for us to conduct our fiber-optic products business, both for our telecom products and our ODiSI sensing products. If this license were to be revoked by Intuitive, we would no longer be able to market, manufacture or sell these products which could have a material adverse effect on our operations.

We depend on third-party vendors for specialized components in our manufacturing operations, making us vulnerable to supply shortages and price fluctuations that could harm our business.

We primarily rely on third-party vendors for the manufacture of the specialized components used in our products. The highly specialized nature of our supply requirements poses risks that we may not be able to locate additional sources of the specialized components required in our business. For example, there are few manufacturers who produce the special lasers used in our optical test equipment. Our reliance on these vendors subjects us to a number of risks that could negatively affect our ability to manufacture our products and harm our business, including interruption of supply. Although we are now manufacturing tunable lasers in low-rate initial production, we expect our overall reliance on third-party vendors to continue. Any significant delay or interruption in the supply of components, or our inability to obtain substitute components or materials from alternate sources at acceptable prices and in a timely manner could impair our ability to meet the demand of our customers and could harm our business.

We depend upon outside contract manufacturers for a portion of the manufacturing process for some of our products. Our operations and revenue related to these products could be adversely affected if we encounter problems with these contract manufacturers.

Many of our products are manufactured internally. However we also rely upon contract manufacturers to produce the finished portion of some of our optoelectronic components and certain lasers. Our reliance on contract manufacturers for these products makes us vulnerable to possible capacity constraints and reduced control over delivery schedules, manufacturing yields, manufacturing quality control and costs. If the contract manufacturer for our products were unable or unwilling to manufacture our products in required volumes and at high quality levels or to continue our existing supply arrangement, we would have to identify, qualify and select an acceptable alternative contract manufacturer or move these manufacturing operations to internal manufacturing facilities. An alternative contract manufacturer may not be available to us when needed or may not be in a position to satisfy our quality or production requirements on commercially reasonable terms, including price. Any significant interruption in manufacturing our products would require us to reduce the supply of products to our customers, which in turn would reduce our revenue, harm our relationships with the customers of these products and cause us to forego potential revenue opportunities.

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As a provider of contract research to the U.S. government, we are subject to federal rules, regulations, audits and investigations, the violation or failure of which could adversely affect our business.

We must comply with and are affected by laws and regulations relating to the award, administration and performance of U.S. government contracts. Government contract laws and regulations affect how we do business with our government customers and, in some instances, impose added costs on our business. A violation of a specific law or regulation could result in the imposition of fines and penalties, termination of our contracts or debarment from bidding on contracts. In some instances, these laws and regulations impose terms or rights that are more favorable to the government than those typically available to commercial parties in negotiated transactions. For example, the U.S. government may terminate any of our government contracts and, in general, subcontracts, at their convenience, as well as for default based on performance.

In addition, U.S. government agencies, including the Defense Contract Audit Agency and the Department of Labor, routinely audit and investigate government contractors. These agencies review a contractor's performance under its contracts, cost structure and compliance with applicable laws, regulations and standards. The U.S. government also may review the adequacy of, and a contractor's compliance with, its internal control systems and policies, including the contractor's purchasing, property, estimating, compensation and management information systems. Any costs found to be improperly allocated to a specific contract will not be reimbursed, while such costs already reimbursed must be refunded. If an audit uncovers the inclusion of certain claimed costs deemed to be expressly unallowable, or improper or illegal activities, we may be subject to civil and criminal penalties and administrative sanctions, including termination of contracts, forfeiture of profits, suspension of payments, fines and suspension or prohibition from doing business with the U.S. government. In addition, our reputation could suffer serious harm if allegations of impropriety were made against us. In June 2015, we received a determination from the Defense Contract Management Agency ("DCMA") of expressly unallowable costs included in our claimed costs for the 2007 contract year. As a result of that determination, DCMA assessed us penalties, interest and over billings of $1.1 million. We have appealed that assessment, and our appeal is currently pending. Depending on the outcome of this appeal, we could be required to make payments that have a material adverse effect on our financial position.

In addition to the risk of government audits and investigations, U.S. government contracts and grants impose requirements on contractors and grantees relating to ethics and business practices, which carry civil and criminal penalties including monetary fines, assessments, loss of the ability to do business with the U.S. government and certain other criminal penalties.

We may also be prohibited from commercially selling certain products that we develop under our Technology Development segment or related products based on the same core technologies if the U.S. government determines that the commercial availability of those products could pose a risk to national security. For example, certain of our wireless technologies have been classified as secret by the U.S. government and as a result we cannot sell them commercially. Any of these determinations would limit our ability to generate product sales and license revenues.

We rely and will continue to rely on contracts and grants awarded under the SBIR program for a significant portion of our revenues. A finding by the SBA that we no longer qualify to receive SBIR awards could adversely affect our business.

We compete as a small business for some of our government contracts. Our revenues derived from the SBIR program account for a significant portion of our consolidated total revenues, and contract research, including SBIR contracts, will remain a significant portion of our consolidated total revenues for the foreseeable future. For the year ended December 31, 2016, 24% of our total revenues were generated under the SBIR program, compared to 26% in for the year ended December 31, 2015.

We may not continue to qualify to participate in the SBIR program or to receive new SBIR awards from federal agencies. In order to qualify for SBIR contracts and grants, we must meet certain size and ownership eligibility criteria. These eligibility criteria are applied as of the time of the award of a contract or grant. A company can be declared ineligible for a contract award as a result of a size challenge filed with the SBA by a competitor or a federal agency.

In order to be eligible for SBIR contracts and grants, under current SBA rules we must be more than 50% owned and controlled by individuals who are U.S. citizens or permanent resident aliens, and/or other small business concerns (each of which is more than 50% owned and controlled by individuals who are U.S. citizens or permanent resident aliens) or certain qualified investment companies. In the event our institutional ownership significantly increases, either because of increased buying by institutions or selling by individuals, we could lose eligibility for new SBIR contracts and grants.

Also, in order to be eligible for SBIR contracts and grants, the number of our employees, including those of any entities that are considered to be affiliated with us, cannot exceed 500. As of December 31, 2016, we had approximately 245 full and part-time employees. In determining whether we are affiliated with any other entity, the SBA may analyze whether another entity controls or has the power to control us. Carilion Clinic is our largest institutional stockholder. Since early 2011, a formal size determination by the SBA that focused on whether or not Carilion is or was our affiliate has been outstanding. Although we

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do not believe that Carilion has or had the power to control our company, we cannot assure you that the SBA will interpret its regulations in our favor on this question. If the SBA were to make a determination that we are or were affiliated with Carilion, we would exceed the size limitations, as Carilion has over 500 employees. In that case, we would lose eligibility for new SBIR contracts and grants and other awards that are set aside for small businesses based on the criterion of number of employees, and the relevant government agency would have the discretion to suspend performance on existing SBIR grants. The loss of our eligibility to receive SBIR awards would have a material adverse impact on our revenues, cash flows and our ability to fund our growth.

Moreover, as our business grows, it is foreseeable that we will eventually exceed the SBIR size limitations, in which case we may be required to seek alternative sources of revenues or capital.

A decline in government research contract awards or government funding for existing or future government research contracts, including SBIR contracts, could adversely affect our revenues, cash flows and ability to fund our growth.

Technology Development segment revenues, which consist primarily of government-funded research, accounted for 28% and 31% of our total revenues for the years ended December 31, 2016 and 2015, respectively. As a result, we are vulnerable to adverse changes in our revenues and cash flows if a significant number of our research contracts and subcontracts were to be simultaneously delayed or canceled for budgetary, performance or other reasons. For example, the U.S. government may cancel these contracts at any time without cause and without penalty or may change its requirements, programs or contract budget, any of which could reduce our revenues and cash flows from U.S. government research contracts. Our revenues and cash flows from U.S. government research contracts and subcontracts could also be reduced by declines or other changes in U.S. defense, homeland security and other federal agency budgets. In addition, we compete as a small business for some of these contracts, and in order to maintain our eligibility to compete as a small business, we, together with any affiliates, must continue to meet size and revenue limitations established by the U.S. government.

Our contract research customer base includes government agencies, corporations and academic institutions. Our customers are not obligated to extend their agreements with us and may elect not to do so. Also, our customers' priorities regarding funding for certain projects may change and funding resources may no longer be available at previous levels.

In addition, the Budget Control Act commits the U.S. government to reduce the federal deficit by $1.2 trillion over ten years through a combination of automatic, across-the-board spending cuts and caps on discretionary spending. This "sequestration" under the Budget Control Act, which is split equally between defense and non-defense programs, went into effect on March 1, 2013. Any spending cuts required by "sequestration" could have a material adverse effect on our Technology Development segment revenues and, consequently, our results of operations. While the exact manner in which this "sequestration" may impact our business remains unclear, funding for programs in which we participate could be reduced, delayed or canceled. Our ability to obtain new contract awards also could be negatively affected.

In addition to contract cancellations and changes in agency budgets, our future financial results may be adversely affected by curtailment of or restrictions on the U.S. government's use of contract research providers, including curtailment due to government budget reductions and related fiscal matters or any legislation or resolution limiting the number or amount of awards we may receive. These or other factors could cause U.S. defense and other federal agencies to conduct research internally rather than through commercial research organizations or direct awards to other organizations, to reduce their overall contract research requirements or to exercise their rights to terminate contracts. Alternatively, the U.S. government may discontinue the SBIR program or its funding altogether. Also, SBIR regulations permit increased competition for SBIR awards from companies that may not have previously been eligible, such as those backed by venture capital operating companies, hedge funds and private equity firms. Any of these developments could limit our ability to obtain new contract awards and adversely affect our revenues, cash flows and ability to fund our growth.

Our failure to attract, train and retain skilled employees or members of our senior management and to obtain necessary security clearances for such persons or maintain a facility security clearance would adversely affect our business and operating results.

The availability of highly trained and skilled technical and professional personnel is critical to our future growth and profitability. Competition for scientists, engineers, technicians and professional personnel is intense and our competitors aggressively recruit key employees. In the past, we have experienced difficulties in recruiting and hiring these personnel as a result of the tight labor market in certain fields. Any difficulty in hiring or retaining qualified employees, combined with our growth strategy and future needs for additional experienced personnel, particularly in highly specialized areas such as nanomaterial manufacturing and fiber optic sensing technologies, may make it more difficult to meet all of our needs for these employees in a timely manner. Although we intend to continue to devote significant resources to recruit, train and retain qualified employees, we may not be able to attract and retain these employees, especially in technical fields in which the supply of experienced qualified candidates is limited, or at the senior management level. Any failure to do so would have an adverse

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effect on our business. Any loss of key personnel could have a material adverse effect on our ability to meet key operational objectives, such as timely and effective project milestones and product introductions, which in turn could adversely affect our business, results of operations and financial condition.

We provide certain services to the U.S. government that require us to maintain a facility security clearance and for certain of our employees and our board chairman to hold security clearances. In general, the failure for necessary persons to obtain or retain sufficient security clearances, any loss by us of a facility security clearance or any public reprimand related to security matters could result in a U.S. government customer terminating an existing contract or choosing not to renew a contract or prevent us from bidding on or winning certain new government contracts.

In addition, our future success depends in a large part upon the continued service of key members of our senior management team. We do not maintain any key-person life insurance policies on our officers. The loss of any members of our management team or other key personnel could seriously harm our business.

Our business is subject to the cyclical nature of the markets in which we compete and any future downturn may reduce demand for our products and revenue.

Many factors beyond our control affect our business, including consumer confidence in the economy, interest rates, fuel prices and the general availability of credit. The overall economic climate and changes in Gross National Product growth have a direct impact on some of our customers and the demand for our products. We cannot be sure that our business will not be adversely affected as a result of an industry or general economic downturn.

Our customers may reduce capital expenditures and have difficulty satisfying liquidity needs because of continued turbulence in the U.S. and global economies, resulting in reduced sales of our products and harm to our financial condition and results of operations.

In particular, our historical results of operations have been subject to substantial fluctuations, and we may experience substantial period-to-period fluctuations in future results of operations. Any future downturn in the markets in which we compete could significantly reduce the demand for our products and therefore may result in a significant reduction in revenue or increase the volatility of the price of our common stock. Our revenue and results of operations may be adversely affected in the future due to changes in demand from customers or cyclical changes in the markets utilizing our products.

In addition, the telecommunications industry has, from time to time, experienced, and may again experience, a pronounced downturn. To respond to a downturn, many service providers may slow their capital expenditures, cancel or delay new developments, reduce their workforces and inventories and take a cautious approach to acquiring new equipment and technologies from original equipment manufacturers, which would have a negative impact on our business. Weakness in the global economy or a future downturn in the telecommunications industry may cause our results of operations to fluctuate from quarter-to-quarter and year-to-year, harm our business, and may increase the volatility of the price of our common stock.

Customer acceptance of our products is dependent on our ability to meet changing requirements, and any decrease in acceptance could adversely affect our revenue.

Customer acceptance of our products is significantly dependent on our ability to offer products that meet the changing requirements of our customers, including telecommunication, military, medical and industrial corporations, as well as government agencies. Any decrease in the level of customer acceptance of our products could harm our business.

Our products must meet exacting specifications, and defects and failures may occur, which may cause customers to return or stop buying our products.

Our customers generally establish demanding specifications for quality, performance and reliability that our products must meet. However, our products are highly complex and may contain defects and failures when they are first introduced or as new versions are released. Our products are also subject to rough environments as they are integrated into our customer products for use by the end customers. If defects and failures occur in our products, we could experience lost revenue, increased costs, including warranty expense and costs associated with customer support, delays in or cancellations or rescheduling of orders or shipments, product returns or discounts, diversion of management resources or damage to our reputation and brand equity, and in some cases consequential damages, any of which would harm our operating results. In addition, delays in our ability to fill product orders as a result of quality control issues may negatively impact our relationship with our customers. We cannot assure you that we will have sufficient resources, including any available insurance, to satisfy any asserted claims.

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Rapidly changing standards and regulations could make our products obsolete, which would cause our revenue and results of operations to suffer.

We design products to conform to our customers' requirements and our customers' systems may be subject to regulations established by governments or industry standards bodies worldwide. Because some of our products are designed to conform to current specific industry standards, if competing or new standards emerge that are preferred by our customers, we would have to make significant expenditures to develop new products. If our customers adopt new or competing industry standards with which our products are not compatible, or the industry groups adopt standards or governments issue regulations with which our products are not compatible, our existing products would become less desirable to our customers and our revenue and results of operations would suffer.

The markets for many of our products are characterized by changing technology which could cause obsolescence of our products, and we may incur substantial costs in delivering new products.

The markets for many of our products are characterized by changing technology, new product introductions and product enhancements, and evolving industry standards. The introduction or enhancement of products embodying new technology or the emergence of new industry standards could render existing products obsolete, and result in a write down to the value of our inventory, or result in shortened product life cycles. Accordingly, our ability to compete is in part dependent on our ability to continually offer enhanced and improved products.

The success of our new product offerings will depend upon several factors, including our ability to:

- accurately anticipate customer needs;
- innovate and develop new technologies and applications;
- successfully commercialize new technologies in a timely manner;
- price products competitively and manufacture and deliver products in sufficient volumes and on time; and
- differentiate our product offerings from those of our competitors.

Some of our products are used by our customers to develop, test and manufacture their products. We therefore must anticipate industry trends and develop products in advance of the commercialization of our customers' products. In developing any new product, we may be required to make a substantial investment before we can determine the commercial viability of the new product. If we fail to accurately foresee our customers' needs and future activities, we may invest heavily in research and development of products that do not lead to significant revenues.

Our inability to find new customers or retain existing customers could harm our business.

Our business is reliant on our ability to find new customers and retain existing customers. In particular, customers normally purchase the legacy API products and incorporate them into products that they, in turn, sell in their own markets on an ongoing basis. As a result, the historical sales or these products have been dependent upon the success of our customers' products and the future performance of the legacy API business is dependent upon our success in finding new customers and receiving new orders from existing customers.

In several markets, the quality and reliability of our products are a major concern for our customers, not only upon the initial manufacture of the product, but for the life of the product. Many of our products are used in remote locations for higher value assembly, making servicing of our products unfeasible. Any failure of the quality or reliability of our products could harm our business.

If our customers do not qualify our products or if their customers do not qualify their products, our results of operations may suffer.

Most of our customers do not purchase our HSOR and optoelectronics products prior to qualification of the products and satisfactory completion of factory audits and vendor evaluation. Our existing products, as well as each new product, must pass through varying levels of qualification with our customers. In addition, because of the rapid technological changes in some markets, a customer may cancel or modify a design project before we begin large-scale manufacturing and receiving revenues from the customer. It is unlikely that we would be able to recover the expenses for cancelled or unutilized custom design projects. It is difficult to predict with any certainty whether our customers will delay or terminate product qualification or the frequency with which customers will cancel or modify their projects. Any such delay, cancellation or modification could have a negative effect on our results of operations.

In addition, once a customer qualifies a particular supplier’s product or component, these potential customers design the product into their system, which is known as a design-in win. Suppliers whose products or components are not designed in are

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unlikely to make sales to that customer until at least the adoption of a future redesigned system. Even then, many customers may be reluctant to incorporate entirely new products into their new systems, as doing so could involve significant additional redesign efforts and increased costs. If we fail to achieve design-in wins in potential customers' qualification processes, we will likely lose the opportunity for significant sales to those customers for a lengthy period of time.

If the end user customers that purchase systems from our customers fail to qualify or delay qualifications of any products sold by our customers that contain our products, our business could be harmed. The qualification and field testing of our customers' systems by end user customers is long and unpredictable. This process is not under our control or that of our customers and, as a result, the timing of our sales may be unpredictable. Any unanticipated delay in qualification of one of our customers' products could result in the delay or cancellation of orders from our customers for products included in their equipment, which could harm our results of operations.

Customer demand for our products is difficult to accurately forecast and, as a result, we may be unable to optimally match production with customer demand, which could adversely affect our business and financial results.

We make planning and spending decisions, including determining the levels of business that we will seek and accept, production schedules, inventory levels, component procurement commitments, personnel needs and other resource requirements, based on our estimates of customer requirements. The short-term nature of commitments by many of our customers and the possibility of unexpected changes in demand for their products reduce our ability to accurately estimate future customer requirements. On occasion, customers may require rapid increases in production, which can strain our resources, cause our manufacturing to be negatively impacted by materials shortages, necessitate higher or more restrictive procurement commitments, increase our manufacturing yield loss and scrapping of excess materials, and reduce our gross margin. We may not have sufficient capacity at any given time to meet the volume demands of our customers, or one or more of our suppliers may not have sufficient capacity at any given time to meet our volume demands. Conversely, a downturn in the markets in which our customers compete can cause, and in the past have caused, our customers to significantly reduce or delay the amount of products ordered or to cancel existing orders, leading to lower utilization of our facilities. Because many of our costs and operating expenses are relatively fixed, reduction in customer demand due to market downturns or other reasons would have a negative effect on our gross margin, operating income and cash flow.

Customer orders and forecasts are subject to cancellation or modification at any time which could result in higher manufacturing costs.

Our sales are made primarily pursuant to standard purchase orders for delivery of products. However, by industry practice, some orders may be canceled or modified at any time. When a customer cancels an order, they are responsible for all finished goods, all costs, direct and indirect, incurred by us, as well as a reasonable allowance for anticipated profits. No assurance can be given that we will receive these amounts after cancellation. Furthermore, uncertainty in customer forecasts of their demands and other factors may lead to delays and disruptions in manufacturing, which could result in delays in product shipments to customers and could adversely affect our business.

Fluctuations and changes in customer demand are common in our business. Such fluctuations, as well as quality control problems experienced in manufacturing operations, may cause delays and disruptions in our manufacturing process and overall operations and reduce output capacity. As a result, product shipments could be delayed beyond the shipment schedules requested by our customers or could be canceled, which would negatively affect our sales, operating income, strategic position at customers, market share and reputation. In addition, disruptions, delays or cancellations could cause inefficient production which in turn could result in higher manufacturing costs, lower yields and potential excess and obsolete inventory or manufacturing equipment. In the past, we have experienced such delays, disruptions and cancellations.

The results of our operations could be adversely affected by economic and political conditions and the effects of these conditions on our customers' businesses and levels of business activity.

Global economic and political conditions affect our customers' businesses and the markets they serve. A severe or prolonged economic downturn or a negative or uncertain political climate could adversely affect our customers' financial conditions and the timing or levels of business activity of our customers and the industries we serve. This may reduce the demand for our products or depress pricing for our products and have a material adverse effect on our results of operations. Changes in global economic conditions could also shift demand to products or services for which we do not have competitive advantages, and this could negatively affect the amount of business we are able to obtain. In addition, if we are unable to successfully anticipate changing economic and political conditions, we may be unable to effectively plan for and respond to those changes, and our business could be negatively affected as a result.

We have a history of losses, and because our strategy for expansion may be costly to implement, we may experience continuing losses and may never achieve or maintain profitability or positive cash flow.

We realized a net loss from continuing operations of $2.4 million and $6.0 million for the years ended December 31, 2016 and 2015, respectively. We expect to continue to incur significant expenses as we pursue our strategic initiatives, including increased expenses for research and development, sales and marketing and manufacturing. We may also grow our business in part through acquisitions of additional companies and complementary technologies which could cause us to incur greater than anticipated transaction expenses, amortization or write-offs of intangible assets and other acquisition-related expenses. As a result, we may incur net losses for the foreseeable future, and these losses could be substantial. At a certain level, continued net losses could impair our ability to comply with NASDAQ continued listing standards, as described further below.

Our ability to generate additional revenues and to become profitable will depend on our ability to execute our key growth initiative regarding the development, marketing and sale of HSOR and sensing products, develop and commercialize innovative technologies, expand our contract research capabilities and sell the products that result from those development initiatives. We are unable to predict when or if we will be able to achieve profitability. If our revenues do not increase, or if our expenses increase at a greater rate than our revenues, we will continue to experience losses. Even if we do achieve profitability, we may not be able to sustain or increase our profitability on a quarterly or annual basis.

We have obtained capital by borrowing money under a term loan and we might require additional capital to support and expand our business; our term loan has various loan covenants with which we must comply.

We intend to continue to make investments to support our business growth, including developing new products, enhancing our existing products, obtaining important regulatory approvals, enhancing our operating infrastructure, completing our development activities and building our commercial scale manufacturing facilities. To the extent that we are unable to become or remain profitable and to finance our activities from our continuing operations, we may require additional funds to support these initiatives and to grow our business.

If we are successful in raising additional funds through issuances of equity or convertible debt securities, our existing stockholders could suffer significant dilution, including as the result of the issuance of warrants in connection with the financing, and any new equity securities we issue could have rights, preferences and privileges superior to those of our existing common stock. Furthermore, such financings may jeopardize our ability to apply for SBIR grants or qualify for SBIR contracts or grants, and our dependence on SBIR grants may restrict our ability to raise additional outside capital. If we raise additional funds through debt financings, these financings may involve significant cash payment obligations and covenants that restrict our ability to operate our business and make distributions to our stockholders.

We have a term loan with Silicon Valley Bank ("SVB"), which requires us to observe certain financial and operational covenants, including maintenance of a minimum cash balance of $5.0 million, protection and registration of intellectual property rights, and certain customary negative covenants, as well as other customary events of default. If any event of default occurs SVB may declare due immediately all borrowings under our term loan and foreclose on the collateral. Furthermore, an event of default would result in an increase in the interest rate on any amounts outstanding.

If we are unable to obtain adequate financing or financing terms satisfactory to us when we require it, our ability to continue to support our business growth and to respond to business challenges could be significantly limited.

Our nanotechnology-enabled products are new and may be, or may be perceived as being, harmful to human health or the environment.

While we believe that none of our current products contain chemicals known by us to be hazardous or subject to environmental regulation, it is possible that our current or future products, particularly carbon-based nanomaterials, may become subject to environmental or other regulation. We intend to develop and sell carbon-based nanomaterials as well as nanotechnology-enabled products, which are products that include nanomaterials as a component to enhance those products' performance. Nanomaterials and nanotechnology-enabled products have a limited historical safety record. Because of their size or shape or because they may contain harmful elements, such as gadolinium and other rare-earth metals, our products could pose a safety risk to human health or the environment. These characteristics may also cause countries to adopt regulations in the future prohibiting or limiting the manufacture, distribution or use of nanomaterials or nanotechnology-enabled products. Such regulations may inhibit our ability to sell some products containing those materials and thereby harm our business or impair our ability to develop commercially viable products.

The subject of nanotechnology has received negative publicity and has aroused public debate. Government authorities could, for social or other purposes, prohibit or regulate the use of nanotechnology. Ethical and other concerns about

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nanotechnology could adversely affect acceptance of our potential products or lead to government regulation of nanotechnology-enabled products.

We face and will face substantial competition in several different markets that may adversely affect our results of operations.

We face and will face substantial competition from a variety of companies in several different markets. As we focus on developing marketing and selling fiber optic sensing products, we may also face substantial and entrenched competition in that market.

Many of our competitors have longer operating histories, greater name recognition, larger customer bases and significantly greater financial, sales and marketing, manufacturing, distribution, technical and other resources than we do. These competitors may be able to adapt more quickly to new or emerging technologies and changes in customer requirements. In addition, current and potential competitors have established or may establish financial or strategic relationships among themselves or with existing or potential customers or other third parties. Accordingly, new competitors or alliances among competitors could emerge and rapidly acquire significant market share. We cannot assure you that we will be able to compete successfully against current or new competitors, in which case our revenues may fail to increase or may decline.

Intense competition in our markets could result in aggressive business tactics by our competitors, including aggressively pricing their products or selling older inventory at a discount. If our current or future competitors utilize aggressive business tactics, including those described above, demand for our products could decline, we could experience delays or cancellations of customer orders, or we could be required to reduce our sales prices.

Decreases in average selling prices of our products may increase operating losses and net losses, particularly if we are not able to reduce expenses commensurately.

The market for optical components and subsystems continues to be characterized by declining average selling prices resulting from factors such as increased price competition among optical component and subsystem manufacturers, excess capacity, the introduction of new products and increased unit volumes as manufacturers continue to deploy network and storage systems. In recent years, we have observed a significant decline of average selling prices, primarily in the telecommunications market. We anticipate that average selling prices will continue to decrease in the future in response to product introductions by competitors or by us, or in response to other factors, including price pressures from significant customers. In order to sustain profitable operations, we must, therefore, reduce the cost of our current designs or continue to develop and introduce new products on a timely basis that incorporate features that can be sold at higher average selling prices. Failure to do so could cause our sales to decline and operating losses to increase.

Our cost reduction efforts may not keep pace with competitive pricing pressures. To remain competitive, we must continually reduce the cost of manufacturing our products through design and engineering changes. We may not be successful in redesigning our products or delivering our products to market in a timely manner. We cannot assure you that any redesign will result in sufficient cost reductions enabling us to reduce the price of our products to remain competitive or positively contribute to operating results.

Shifts in product mix may result in declines in gross profit.

Our gross profit margins vary among our product platforms, and are generally highest on our test & measurement instruments. Our overall gross profit may fluctuate from period to period as a result of a variety of factors including shifts in product mix, the introduction of new products, and decreases in average selling prices for older products. If our customers decide to buy more of our products with low gross profit margins or fewer of our products with high gross profit margins, our total gross profits could be harmed.

Risks Relating to our Operations and Business Strategy

If we cannot successfully transition our revenue mix from contract research revenues to product sales and license revenues, we may not be able to fully execute our business model or grow our business.

Our business model and future growth depend on our ability to transition to a revenue mix that contains significantly larger product sales and revenues from the provision of services or from licensing. Product sales and these revenues potentially offer greater scalability than contract research revenues. Our current plan is to increase our sales of commercial products, our licensing revenues and our provision of non-research services to customers so as to represent a larger percentage of our total revenues. If we are unable to develop and grow our product sales and revenues from the provision of services or from licensing

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to augment our contract research revenues, however, our ability to execute our business model or grow our business could suffer. There can be no assurance that we will be able to achieve increased revenues in this manner.

Failure to develop, introduce and sell new products or failure to develop and implement new technologies, could adversely impact our financial results.

Our success will depend on our ability to develop and introduce new products that customers choose to buy. The new products the market requires tend to be increasingly complex, incorporating more functions and operating at faster speeds than old products. If we fail to introduce new product designs or technologies in a timely manner or if customers do not successfully introduce new systems or products incorporating our products, our business, financial condition and results of operations could be materially harmed.

If we are unable to manage growth effectively, our revenues and net loss could be adversely affected.

We may need to expand our personnel resources to grow our business effectively. We believe that sustained growth at a higher rate will place a strain on our management as well as on our other human resources. To manage this growth, we must continue to attract and retain qualified management, professional, scientific and technical and operating personnel. If we are unable to recruit a sufficient number of qualified personnel, we may be unable to staff and manage projects adequately, which in turn may slow the rate of growth of our contract research revenues or our product development efforts.

We may not be successful in identifying market needs for new technologies or in developing new products.

Part of our business model depends on our ability to correctly identify market needs for new technologies. We intend to identify new market needs, but we may not always have success in doing so in part because our contract research largely centers on identification and development of unproven technologies, often for new or emerging markets. Furthermore, we must identify the most promising technologies from a sizable pool of projects. If our commercialization strategy process fails to identify projects with commercial potential or if management does not ensure that such projects advance to the commercialization stage, we may not successfully commercialize new products and grow our revenues.

Our growth strategy requires that we also develop successful commercial products to address market needs. We face several challenges in developing successful new products. Many of our existing products and those currently under development are technologically innovative and require significant and lengthy product development efforts. These efforts include planning, designing, developing and testing at the technological, product and manufacturing-process levels. These activities require us to make significant investments. Although there are many potential applications for our technologies, our resource constraints require us to focus on specific products and to forgo other opportunities. We expect that one or more of the potential products we choose to develop will not be technologically feasible or will not achieve commercial acceptance, and we cannot predict which, if any, of our products we will successfully develop or commercialize. The technologies we research and develop are new and steadily changing and advancing. The products that are derived from these technologies may not be applicable or compatible with the state of technology or demands in existing markets. Our existing products and technologies may become uncompetitive or obsolete if our competitors adapt more quickly than we do to new technologies and changes in customers' requirements. Furthermore, we may not be able to identify if and when new markets will open for our products given that future applications of any given product may not be readily determinable, and we cannot reasonably estimate the size of any markets that may develop. If we are not able to successfully develop new products, we may be unable to increase our product revenues.

We face risks associated with our international business.

We currently conduct business internationally and we might considerably expand our international activities in the future. Our international business operations are subject to a variety of risks associated with conducting business internationally, including:

- having to comply with U.S. export control regulations and policies that restrict our ability to communicate with non-U.S. employees and supply foreign affiliates and customers;
- changes in or interpretations of foreign regulations that may adversely affect our ability to sell our products, perform services or repatriate profits to the United States;

- the imposition of tariffs;
- hyperinflation or economic or political instability in foreign countries;
- imposition of limitations on, or increase of withholding and other taxes on remittances and other payments by foreign subsidiaries or joint ventures;

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- conducting business in places where business practices and customs are unfamiliar and unknown;
- the imposition of restrictive trade policies;
- the imposition of inconsistent laws or regulations;
- the imposition or increase of investment and other restrictions or requirements by foreign governments;
- uncertainties relating to foreign laws and legal proceedings;
- having to comply with a variety of U.S. laws, including the Foreign Corrupt Practices Act ("FCPA"); and
- having to comply with licensing requirements.

We do not know the impact that these regulatory, geopolitical and other factors may have on our international business in the future.

We may dispose of or discontinue existing product lines and technology developments, which may adversely impact our future results.

On an ongoing basis, we evaluate our various product offerings and technology developments in order to determine whether any should be discontinued or, to the extent possible, divested. In addition, if we are unable to generate the amount of cash needed to fund the future operations of our business, we may be forced to sell one or more of our product lines or technology developments.

We cannot guarantee that we have correctly forecasted, or that we will correctly forecast in the future, the right product lines and technology developments to dispose or discontinue or that our decision to dispose of or discontinue various investments, products lines and technology developments is prudent if market conditions change. In addition, there are no assurances that the discontinuance of various product lines will reduce operating expenses or will not cause us to incur material charges associated with such decision. Furthermore, the discontinuance of existing product lines entails various risks, including the risk that we will not be able to find a purchaser for a product line or the purchase price obtained will not be equal to at least the book value of the net assets for the product line. Other risks include managing the expectations of, and maintaining good relations with, our historical customers who previously purchased products from a disposed or discontinued product line, which could prevent us from selling other products to them in the future. We may also incur other significant liabilities and costs associated with disposal or discontinuance of product lines, including employee severance costs and excess facilities costs.

We may be liable for damages based on product liability claims relating to defects in our products, which might be brought against us directly, or against our customers in their end-use markets. Such claims could result in a loss of customers in addition to substantial liability in damages.

Our products are complex and undergo quality testing as well as formal qualification, both by our customers and by us. However, defects may occur from time to time. Our customers' testing procedures may be limited to evaluating our products under likely and foreseeable failure scenarios and over varying amounts of time. For various reasons, such as the occurrence of performance problems that are unforeseeable in testing or that are detected only when products age or are operated under peak stress conditions, our products may fail to perform as expected long after customer acceptance. Failures could result from faulty components or design, problems in manufacturing or other unforeseen reasons. As a result, we could incur significant costs to repair or replace defective products under warranty, particularly when such failures occur in installed systems. In addition, we may in certain circumstances honor warranty claims after the warranty has expired or for problems not covered by warranty in order to maintain customer relationships. Any significant product failure could result in lost future sales of the affected product and other products, as well as customer relations problems, litigation and damage to our reputation.

In addition, many of our products are embedded in, or deployed in conjunction with, our customers' products, which incorporate a variety of components, modules and subsystems and may be expected to interoperate with modules produced by third parties. As a result, not all defects are immediately detectable, and, when problems occur, it may be difficult to identify the source of the problem. These problems may cause us to incur significant damages or warranty and repair costs, divert the attention of our engineering personnel from internal product development efforts and cause significant customer relations problems or loss of customers, all of which would harm our business.

Furthermore, many of our products may provide critical performance attributes to our customers' products that will be sold to end users who could potentially bring product liability suits in which we could be named as a defendant. The sale of these products involves the risk of product liability claims. If a person were to bring a product liability suit against one of our customers, this customer may attempt to seek contribution from us. A person may also bring a product liability claim directly against us. A successful product liability claim or series of claims against us in excess of our insurance coverage for payments, for which we are not otherwise indemnified, could have a material adverse effect on our financial condition or results of operations.

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We could be negatively affected by a security breach, either through cyber-attack, cyber-intrusion or other significant disruption of our IT networks and related systems.

We face the risk, as does any company, of a security breach, whether through cyber-attack or cyber-intrusion over the internet, malware, computer viruses, attachments to e-mails, persons inside our organization or persons with access to systems inside our organization, or other significant disruption of our IT networks and related systems. The risk of a security breach or disruption, particularly through cyber-attack or cyber-intrusion, including by computer hackers, foreign governments and cyber terrorists, has increased as the number, intensity and sophistication of attempted attacks and intrusions from around the world have increased.

As a technology company, and particularly as a government contractor, we may face a heightened risk of a security breach or disruption from threats to gain unauthorized access to our proprietary, confidential or classified information on our IT networks and related systems. These types of information and IT networks and related systems are critical to the operation of our business and essential to our ability to perform day-to-day operations, and, in some cases, are critical to the operations of certain of our customers. In addition, as certain of our technological capabilities become widely known, it is possible that we may be subjected to cyber-attack or cyber-intrusion as third parties seek to gain improper access to information regarding these capabilities and cyber-attacks or cyber-intrusion could compromise our confidential information or our IT networks and systems generally, as it is not practical as a business matter to isolate all of our confidential information and trade secrets from email and internet access. There can be no assurance that our security efforts and measures will be effective or that attempted security breaches or disruptions would not be successful or damaging.

A security breach or other significant disruption involving these types of information and IT networks and related systems could disrupt the proper functioning of these networks and systems and therefore our operations, compromise our confidential information and trade secrets, or damage our reputation among our customers and the public generally. Any of these developments could have a negative impact on our results of operations, financial condition and cash flows.

Risks Relating to our Regulatory Environment

Our operations are subject to domestic and foreign laws, regulations and restrictions, and noncompliance with these laws, regulations and restrictions could expose us to fines, penalties, suspension or debarment, which could have a material adverse effect on our profitability and overall financial position.

Our operations, particularly our international sales, subject us to numerous U.S. and foreign laws and regulations, including, without limitation, regulations relating to imports, exports (including the Export Administration Regulations and the International Traffic in Arms Regulations), technology transfer restrictions, anti-boycott provisions, economic sanctions and the FCPA. The number of our various emerging technologies, the development of many of which has been funded by the Department of Defense, presents us with many regulatory challenges. Failure by us or our sales representatives or consultants to comply with these laws and regulations could result in administrative, civil, or criminal liabilities and could result in suspension of our export privileges, which could have a material adverse effect on our business. Changes in regulation or political environment may affect our ability to conduct business in foreign markets including investment, procurement and repatriation of earnings.

Environmental regulations could increase operating costs and additional capital expenditures and delay or interrupt operations.

The photonics industry, as well as the semiconductor industry, are subject to governmental regulations for the protection of the environment, including those relating to air and water quality, solid and hazardous waste handling, and the promotion of occupational safety. Various federal, state and local laws and regulations require that we maintain certain environmental permits. While we believe that we have obtained all necessary environmental permits required to conduct our manufacturing processes, if we are found to be in violation of these laws, we could be subject to governmental fines and liability for damages resulting from such violations.

Changes in the aforementioned laws and regulations or the enactment of new laws, regulations or policies could require increases in operating costs and additional capital expenditures and could possibly entail delays or interruptions of our operations.

If our manufacturing facilities do not meet Federal, state or foreign country manufacturing standards, we may be required to temporarily cease all or part of our manufacturing operations, which would result in product delivery delays and negatively impact revenues.

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Our manufacturing facilities are subject to periodic inspection by regulatory authorities and our operations will continue to be regulated by the FDA for compliance with Good Manufacturing Practice requirements contained in the quality systems regulations. We are also required to comply with International Organization for Standardization ("ISO"), quality system standards in order to produce certain of our products for sale in Europe. If we fail to continue to comply with Good Manufacturing Practice requirements or ISO standards, we may be required to cease all or part of our operations until we comply with these regulations. Obtaining and maintaining such compliance is difficult and costly. We cannot be certain that our facilities will be found to comply with Good Manufacturing Practice requirements or ISO standards in future inspections and audits by regulatory authorities. In addition, if we cannot maintain or establish manufacturing facilities or operations that comply with such standards or do not meet the expectations of our customers, we may not be able to realize certain economic opportunities in our current or future supply arrangements.

Medical products are subject to various international regulatory processes and approval requirements. If we do not obtain and maintain the necessary international regulatory approvals for any such potential products, we may not be able to market and sell our medical products in foreign countries.

To be able to market and sell medical products in other countries, we must obtain regulatory approvals and comply with the regulations of those countries. These regulations, including the requirements for approvals and the time required for regulatory review, vary from country to country. Obtaining and maintaining foreign regulatory approvals are expensive, and we cannot be certain that we will have the resources to be able to pursue such approvals or whether we would receive regulatory approvals in any foreign country in which we plan to market our products. For example, the European Union requires that manufacturers of medical products obtain the right to affix the CE mark to their products before selling them in member countries of the European Union, which we have not yet obtained and may never obtain. If we fail to obtain regulatory approval in any foreign country in which we plan to market our products, our ability to generate revenues will be harmed.

We are subject to additional significant foreign and domestic government regulations, including environmental and health and safety regulations, and failure to comply with these regulations could harm our business.

Our facilities and current and proposed activities involve the use of a broad range of materials that are considered hazardous under applicable laws and regulations. Accordingly, we are subject to a number of foreign, federal, state and local laws and regulations relating to health and safety, protection of the environment and the storage, use, disposal of, and exposure to, hazardous materials and wastes. We could incur costs, fines and civil and criminal penalties, personal injury and third party property damage claims, or could be required to incur substantial investigation or remediation costs, if we were to violate or become liable under environmental, health and safety laws. Moreover, a failure to comply with environmental laws could result in fines and the revocation of environmental permits, which could prevent us from conducting our business. Liability under environmental laws can be joint and several and without regard to fault. There can be no assurance that violations of environmental and health and safety laws will not occur in the future as a result of the inability to obtain permits, human error, equipment failure or other causes. Environmental laws could become more stringent over time, imposing greater compliance costs and increasing risks and penalties associated with violations, which could harm our business. Accordingly, violations of present and future environmental laws could restrict our ability to expand facilities, pursue certain technologies, and could require us to acquire costly equipment or incur potentially significant costs to comply with environmental regulations.

Compliance with foreign, federal, state and local environmental laws and regulations represents a small part of our present budget. If we fail to comply with any such laws or regulations, however, a government entity may levy a fine on us or require us to take costly measures to ensure compliance. Any such fine or expenditure may adversely affect our development. We cannot predict the extent to which future legislation and regulation could cause us to incur additional operating expenses, capital expenditures or restrictions and delays in the development of our products and properties.

Risks Relating to our Intellectual Property

Our proprietary rights may not adequately protect our technologies.

Our commercial success will depend in part on our obtaining and maintaining patent, trade secret, copyright and trademark protection of our technologies in the United States and other jurisdictions as well as successfully enforcing this intellectual property and defending it against third-party challenges. We will only be able to protect our technologies from unauthorized use by third parties to the extent that valid and enforceable intellectual property protections, such as patents or trade secrets, cover them. In particular, we place considerable emphasis on obtaining patent and trade secret protection for significant new technologies, products and processes. The degree of future protection of our proprietary rights is uncertain because legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep our competitive advantage. The degree of future protection of our proprietary rights is also uncertain for products that are currently

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in the early stages of development because we cannot predict which of these products will ultimately reach the commercial market or whether the commercial versions of these products will incorporate proprietary technologies. Our patent position is highly uncertain and involves complex legal and factual questions. Accordingly, we cannot predict the breadth of claims that may be allowed or enforced in our patents or in third-party patents. For example:

- we or our licensors might not have been the first to make the inventions covered by each of our pending patent applications and issued patents;
- we or our licensors might not have been the first to file patent applications for these inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies;
- it is possible that none of our pending patent applications or the pending patent applications of our licensors will result in issued patents;
- patents may issue to third parties that cover how we might practice our technology;
- our issued patents and issued patents of our licensors may not provide a basis for commercially viable technologies, may not provide us with any competitive advantages, or may be challenged and invalidated by third parties; and
- we may not develop additional proprietary technologies that are patentable.

Patents may not be issued for any pending or future pending patent applications owned by or licensed to us, and claims allowed under any issued patent or future issued patent owned or licensed by us may not be valid or sufficiently broad to protect our technologies. Moreover, protection of certain of our intellectual property may be unavailable or limited in the United States or in foreign countries, and we have not sought to obtain foreign patent protection for certain of our products or technologies due to cost, concerns about enforceability or other reasons. Any issued patents owned by or licensed to us now or in the future may be challenged, invalidated, or circumvented, and the rights under such patents may not provide us with competitive advantages. In addition, competitors may design around our technology or develop competing technologies. Intellectual property rights may also be unavailable or limited in some foreign countries, and in the case of certain products no foreign patents were filed or can be filed. This could make it easier for competitors to capture or increase their market share with respect to related technologies. We could incur substantial costs to bring suits in which we may assert our patent rights against others or defend ourselves in suits brought against us. An unfavorable outcome of any litigation could have a material adverse effect on our business and results of operations.

We also rely on trade secrets to protect our technology, especially where we believe patent protection is not appropriate or obtainable. However, trade secrets are difficult to protect. We regularly attempt to obtain confidentiality agreements and contractual provisions with our collaborators, employees and consultants to protect our trade secrets and proprietary know-how. These agreements may be breached or may not have adequate remedies for such breach. While we use reasonable efforts to protect our trade secrets, our employees, consultants, contractors or scientific and other advisors, or those of our strategic partners, may unintentionally or willfully disclose our information to competitors. If we were to enforce a claim that a third party had illegally obtained and was using our trade secrets, our enforcement efforts would be expensive and time consuming, and the outcome would be unpredictable. In addition, courts outside the United States are sometimes unwilling to protect trade secrets. Moreover, if our competitors independently develop equivalent knowledge, methods and know-how, it will be more difficult for us to enforce our rights and our business could be harmed.

If we are not able to defend the patent or trade secret protection position of our technologies, then we will not be able to exclude competitors from developing or marketing competing technologies and we may not generate enough revenues from product sales to justify the cost of developing our technologies and to achieve or maintain profitability.

We also rely on trademarks to establish a market identity for our company and our products. To maintain the value of our trademarks, we might have to file lawsuits against third parties to prevent them from using trademarks confusingly similar to or dilutive of our registered or unregistered trademarks. Also, we might not obtain registrations for our pending trademark applications, and we might have to defend our registered trademark and pending trademark applications from challenge by third parties. Enforcing or defending our registered and unregistered trademarks might result in significant litigation costs and damages, including the inability to continue using certain trademarks.

Third parties may claim that we infringe their intellectual property, and we could suffer significant litigation or licensing expense as a result.

Various U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in our technology areas. Such third parties may claim that we infringe their patents. Because patent applications can take several years to result in a patent issuance, there may be currently pending applications, unknown to us, which may later result in issued patents that our technologies may infringe. For example, we are aware of competitors with patents in technology areas applicable to our optical test equipment products. Such competitors may allege that we infringe these patents. There could also be existing patents of which we are not aware that our technologies may inadvertently infringe. We have from time to time

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been, and may in the future be, contacted by third parties, including patent assertion entities or intellectual property advisors, about licensing opportunities that also contain claims that we are infringing on third party patent rights. If third parties assert these claims against us, we could incur extremely substantial costs and diversion of management resources in defending these claims, and the defense of these claims could have a material adverse effect on our business, financial condition and results of operations. Even if we believe we have not infringed on a third party's patent rights, we may have to settle a claim on unfavorable terms because we cannot afford to litigate the claim. In addition, if third parties assert claims against us and we are unsuccessful in defending against these claims, these third parties may be awarded substantial damages as well as injunctive or other equitable relief against us, which could effectively block our ability to make, use, sell, distribute or market our products and services in the United States or abroad.

Commercial application of nanotechnologies in particular, or technologies involving nanomaterials, is new and the scope and breadth of patent protection is uncertain. Consequently, the patent positions of companies involved in nanotechnologies have not been tested, and there are complex legal and factual questions for which important legal principles will be developed or may remain unresolved. In addition, it is not clear whether such patents will be subject to interpretations or legal doctrines that differ from conventional patent law principles. Changes in either the patent laws or in interpretations of patent laws in the United States and other countries may diminish the value of our nanotechnology-related intellectual property. Accordingly, we cannot predict the breadth of claims that may be allowed or enforced in our nanotechnology-related patents or in third party patents. In the event that a claim relating to intellectual property is asserted against us, or third parties not affiliated with us hold pending or issued patents that relate to our products or technology, we may seek licenses to such intellectual property or challenge those patents. However, we may be unable to obtain these licenses on commercially reasonable terms, if at all, and our challenge of the patents may be unsuccessful. Our failure to obtain the necessary licenses or other rights could prevent the sale, manufacture or distribution of our products and, therefore, could have a material adverse effect on our business, financial condition and results of operations.

A substantial portion of our technology is subject to retained rights of our licensors, and we may not be able to prevent the loss of those rights or the grant of similar rights to third parties.

A substantial portion of our technology is licensed from academic institutions, corporations and government agencies. Under these licensing arrangements, a licensor may obtain rights over the technology, including the right to require us to grant a license to one or more third parties selected by the licensor or that we provide licensed technology or material to third parties for non-commercial research. The grant of a license for any of our core technologies to a third party could have a material and adverse effect on our business. In addition, some of our licensors retain certain rights under the licenses, including the right to grant additional licenses to a substantial portion of our core technology to third parties for non-commercial academic and research use. It is difficult to monitor and enforce such non-commercial academic and research uses, and we cannot predict whether the third-party licensees would comply with the use restrictions of such licenses. We have incurred and could incur substantial expenses to enforce our rights against them. We also may not fully control the ability to assert or defend those patents or other intellectual property which we have licensed from other entities, or which we have licensed to other entities.

In addition, some of our licenses with academic institutions give us the right to use certain technology previously developed by researchers at these institutions. In certain cases we also have the right to practice improvements on the licensed technology to the extent they are encompassed by the licensed patents and are within our field of use. Our licensors may currently own and may in the future obtain additional patents and patent applications that are necessary for the development, manufacture and commercial sale of our anticipated products. We may be unable to agree with one or more academic institutions from which we have obtained licenses whether certain intellectual property developed by researchers at these academic institutions is covered by our existing licenses. In the event that the new intellectual property is not covered by our existing licenses, we would be required to negotiate a new license agreement. We may not be able to reach agreement with current or future licensors on commercially reasonable terms, if at all, or the terms may not permit us to sell our products at a profit after payment of royalties, which could harm our business.

Some of our patents may cover inventions that were conceived or first reduced to practice under, or in connection with, U.S. government contracts or other federal funding agreements. With respect to inventions conceived or first reduced to practice under a federal funding agreement, the U.S. government may retain a non-exclusive, non-transferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the invention throughout the world. We may not succeed in our efforts to retain title in patents, maintain ownership of intellectual property or in limiting the U.S. government's rights in our proprietary technologies and intellectual property when an issue exists as to whether such intellectual property was developed in the performance of a federal funding agreement or developed at private expense.

If we fail to obtain the right to use the intellectual property rights of others which are necessary to operate our business, and to protect their intellectual property, our business and results of operations will be adversely affected.

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In the past, we have licensed certain technologies for use in our products. In the future, we may choose, or be required, to license technology or intellectual property from third parties in connection with the development of our products. We cannot assure you that third-party licenses will be available on commercially reasonable terms, if at all. Our competitors may be able to obtain licenses, or cross-license their technology, on better terms than we can, which could put us at a competitive disadvantage. Also, we often enter into confidentiality agreements with such third parties in which we agree to protect and maintain their proprietary and confidential information, including at times requiring our employees to enter into agreements protecting such information. There can be no assurance that the confidentiality agreements will not be breached by any of our employees or that such third parties will not make claims that their proprietary information has been disclosed.

RISKS RELATING TO OUR COMMON STOCK

If there are substantial sales of our common stock, or the perception that such sales may occur, our stock price could decline.

If any of our stockholders were to sell substantial amounts of our common stock, the market price of our common stock may decline, which might make it more difficult for us to sell equity or equity-related securities in the future at a time and price that we deem appropriate. Substantial sales of our common stock, or the perception that such sales may occur, may have a material adverse effect on the prevailing market price of our common stock.

Carilion Clinic holds approximately 3.5 million shares of our common stock (including approximately 1.3 million shares issuable to Carilion upon conversion of shares of Series A Convertible Preferred Stock that Carilion holds). All of these shares have been registered for resale on a Form S-3 registration statement and, accordingly, may generally be freely sold by Carilion at any time. Any sales of these shares, or the perception that future sales of shares may occur by Carilion or any of our other significant stockholders, may have a material adverse effect on the market price of our stock. Any such continuing material adverse effect on the market price of our stock could impair our ability to comply with NASDAQ’s continuing listing standards in respect of our minimum stock price, as further described below.

We may become involved in securities class action litigation that could divert management’s attention and harm our business and our insurance coverage may not be sufficient to cover all costs and damages.

The stock market has from time to time experienced significant price and volume fluctuations that have affected the market prices for the common stock of technology companies. These broad market fluctuations may cause the market price of our common stock to decline. In the past, following periods of volatility in the market price of a particular company’s securities, securities class action litigation has often been brought against that company. Securities class litigation also often follows certain significant business transactions, such as the sale of a business division or a change in control transaction. We may become involved in this type of litigation in the future. Litigation often is expensive and diverts management’s attention and resources, which could adversely affect our business.

We may not be able to comply with all applicable listing requirements or standards of The NASDAQ Capital Market and NASDAQ could delist our common stock.

Our common stock is listed on The NASDAQ Capital Market. In order to maintain that listing, we must satisfy minimum financial and other continued listing requirements and standards. One such requirement is that we maintain a minimum bid price of at least $1.00 per share for our common stock. Although we currently comply with the minimum bid requirement, in the recent past, our minimum bid price has fallen below $1.00 per share, and it could again do so in the future. If our bid price falls below $1.00 per share for 30 consecutive business days, we will receive a deficiency notice from NASDAQ advising us that we have 180 days to regain compliance by maintaining a minimum bid price of at least $1.00 for a minimum of ten consecutive business days. Under certain circumstances, NASDAQ could require that the minimum bid price exceed $1.00 for more than ten consecutive days before determining that a company complies.

In the event that our common stock is not eligible for continued listing on NASDAQ or another national securities exchange, trading of our common stock could be conducted in the over-the-counter market or on an electronic bulletin board established for unlisted securities such as the Pink Sheets or the OTC Bulletin Board. In such event, it could become more difficult to dispose of, or obtain accurate price quotations for, our common stock, and there would likely also be a reduction in our coverage by security analysts and the news media, which could cause the price of our common stock to decline further. Also, it may be difficult for us to raise additional capital if we are not listed on a major exchange.

Our common stock price has been volatile and we expect that the price of our common stock will fluctuate substantially in the future, which could cause you to lose all or a substantial part of your investment.

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The public trading price for our common stock is volatile and may fluctuate significantly. Since January 1, 2009, our common stock has traded between a high of $5.00 per share and a low of $0.26 per share. Among the factors, many of which we cannot control, that could cause material fluctuations in the market price for our common stock are:

- sales of our common stock by our significant stockholders, or the perception that such sales may occur;
- changes in earnings estimates, investors' perceptions, recommendations by securities analysts or our failure to achieve analysts' earnings estimates;
- changes in our status as an entity eligible to receive SBIR contracts and grants;
- quarterly variations in our or our competitors' results of operations;
- general market conditions and other factors unrelated to our operating performance or the operating performance of our competitors;
- announcements by us, or by our competitors, of acquisitions, new products, significant contracts, commercial relationships or capital commitments;
- pending or threatened litigation;
- any major change in our board of directors or management or any competing proxy solicitations for director nominees;
- changes in governmental regulations or in the status of our regulatory approvals;
- announcements related to patents issued to us or our competitors;
- a lack of, limited or negative industry or securities analyst coverage;
- discussions of our company or our stock price by the financial and scientific press and online investor communities; and
- general developments in our industry.

In addition, the stock prices of many technology companies have experienced wide fluctuations that have often been unrelated to the operating performance of those companies. These factors may materially and adversely affect the market price of our common stock.

If our internal control over financial reporting is found not to be effective or if we make disclosure of existing or potential material weaknesses in those controls, investors could lose confidence in our financial reports, and our stock price may be adversely affected.

Section 404 of the Sarbanes-Oxley Act of 2002 requires us to include an internal control report with our Annual Report on Form 10-K. That report must include management's assessment of the effectiveness of our internal control over financial reporting as of the end of the fiscal year.

We evaluate our existing internal control over financial reporting based on the framework issued by the Committee of Sponsoring Organizations of the Treadway Commission. During the course of our ongoing evaluation of the internal controls, we may identify areas requiring improvement, and may have to design enhanced processes and controls to address issues identified through this review. Remedying any deficiencies, significant deficiencies or material weaknesses that we identify may require us to incur significant costs and expend significant time and management resources. We cannot assure you that any of the measures we implement to remedy any such deficiencies will effectively mitigate or remedy such deficiencies. Investors could lose confidence in our financial reports, and our stock price may be adversely affected, if our internal controls over financial reporting are found not to be effective by management or if we make disclosure of existing or potential significant deficiencies or material weaknesses in those controls.

Anti-takeover provisions in our amended and restated certificate of incorporation and bylaws and Delaware law could discourage or prevent a change in control, even if an acquisition would be beneficial to our stockholders, which could affect our stock price adversely and prevent attempts by our stockholders to replace or remove our current management.

Our amended and restated certificate of incorporation and bylaws and Delaware law contain provisions that might delay or prevent a change in control, discourage bids at a premium over the market price of our common stock and adversely affect the market price of our common stock and the voting and other rights of the holders of our common stock. These provisions include:

- a classified board of directors serving staggered terms;
- advance notice requirements to stockholders for matters to be brought at stockholder meetings;
- a supermajority stockholder vote requirement for amending certain provisions of our amended and restated certificate of incorporation and bylaws; and

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- the right to issue preferred stock without stockholder approval, which could be used to dilute the stock ownership of a potential hostile acquirer.

We are also subject to provisions of the Delaware General Corporation law that, in general, prohibit any business combination with a beneficial owner of 15% or more of our common stock for three years unless the holder's acquisition of our stock was approved in advance by our board of directors or certain other conditions are satisfied. The existence of these provisions could adversely affect the voting power of holders of common stock and limit the price that investors might be willing to pay in the future for shares of our common stock.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

We lease approximately 4,400 square feet of office space in Roanoke, Virginia, which serves as our corporate headquarters and is used for general and administrative functions. This lease expires March 31, 2020.

We lease approximately 42,000 square feet of space in Blacksburg, Virginia, near Virginia Tech, which is used by both our Technology Development segment and our Products and Licensing segment. This lease expires December 31, 2024.

We lease approximately 50,000 square feet of space in Ann Arbor, Michigan, for research, development and manufacturing of our HSOR and THz product platforms. This lease expires May 31, 2021.

We lease approximately 29,000 square feet of space in Camarillo, California, for development and manufacturing of our custom optoelectronic solutions operations. This lease expires March 31, 2019.

We lease approximately 16,000 square feet of space in Charlottesville, Virginia, near the University of Virginia, for use by certain groups in our Technology Development segment. This lease expires December 31, 2020.

We lease approximately 4,000 square feet of space in Montreal, Canada for research and development of optoelectronic solutions. This lease expires in April 2017. We are currently evaluating whether to renew this lease or relocate these operations to another location.

We own a 24,000 square foot facility in Danville, Virginia. Our Technology Development segment primarily uses this facility for biomedical research and development and manufacturing.

We believe that our existing facilities are adequate for our current needs and suitable additional or substitute space will be available as needed to accommodate expansion of our operations.

ITEM 3. LEGAL PROCEEDINGS

In June 2015, we received a letter of final determination from the DCMA regarding the allowability of certain costs we included in our billings under cost-plus type research contracts during 2007. In conjunction with the DCMA's determination of those costs as expressly unallowable under the provisions of the Federal Acquisition Regulations, the DCMA assessed penalties and interest to us totaling $1.1 million. In July 2015, we filed an appeal of the assessed penalties and interest with the Armed Services Board of Contract Appeals ("ASBCA"). A hearing was held with respect to this appeal in January 2017, and a decision has not yet been reached by ASBCA. Accordingly, the appeal remains outstanding.

Additionally, from time to time, we may become involved in litigation or claims arising out of our operations in the normal course of business. Management currently believes the amount of ultimate liability, if any, with respect to these actions will not materially affect our financial position, results of operations, or liquidity.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

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PART II

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

PRICE RANGE OF COMMON STOCK

Our common stock trades on The NASDAQ Capital Market. The following table sets forth the high and low sales prices of our common stock for each period indicated as reported by NASDAQ.

	2016		2015	
Fiscal Period	High	Low	High	Low
First Quarter	$1.25	$0.74	$1.85	$1.27
Second Quarter	$1.32	$0.97	$1.47	$0.96
Third Quarter	$1.69	$1.08	$1.30	$0.88
Fourth Quarter	$1.55	$1.22	$1.23	$0.88

We have a single class of common stock outstanding. As of March 15, 2017 there were approximately 99 stockholders of record of our common stock. The number of holders of record of our common stock does not reflect the number of beneficial holders whose shares are held by depositories, brokers or other nominees.

STOCK PERFORMANCE GRAPH

The graph set forth below compares the cumulative total stockholder return on our common stock for the previous five years, during which our common stock was traded on the NASDAQ Capital Market, as compared to the cumulative total return of the NASDAQ Composite Index and the Russell 2000 Index over the same period. This graph assumes the investment of $100,000 in our common stock at the closing price on January 1, 2012, and an equivalent amount in the NASDAQ Composite Index and the Russell 2000 Index on that date, and assumes the reinvestment of dividends, if any. We have never paid dividends on our common stock and have no present plans to do so.

Since there is no published industry or line-of-business index for our business reflective of our performance, nor do we believe we can reasonably identify a peer group, we measure our performance against issuers with similar market capitalizations. We selected the Russell 2000 Index because it measures the performance of a broad range of companies with lower market capitalizations than those companies included in the S&P 500 Index.

The comparisons shown in the graph below are based upon historical data. We caution that the stock price performance shown in the graph below is not necessarily indicative of, nor is it intended to forecast, the potential future performance of our common stock.

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The preceding Stock Performance Graph is not deemed filed with the Securities and Exchange Commission and shall not be incorporated by reference in any of our filings under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.

DIVIDEND POLICY

Since our inception, we have never declared or paid any cash dividends on our common stock. We currently expect to retain any future earnings for use in the operation and expansion of our business, and therefore do not anticipate paying any cash dividends in the foreseeable future. In addition, our debt facility with Silicon Valley Bank restricts us from paying cash dividends on our capital stock without the bank’s prior written consent.

Unregistered Sales of Equity Securities

Common Stock Dividend Payable to Carilion

We issued 1,321,514 shares of Series A Preferred Stock, par value $0.001 per share, to Carilion Clinic in January 2010, which shares were issued in reliance on the exemptions from registration under the Securities Act provided by Sections 3(a)(9) and 4 (a)(2) thereof. The Series A Preferred Stock accrues dividends at the rate of $0.2815 per share per annum, payable quarterly in arrears. Accrued dividends are payable in shares of our common stock, with the number of shares being equal to the quotient of (i) the cumulative aggregate balance of accrued but unpaid dividends on each share of Series A Preferred Stock divided by (ii) the conversion price of the Series A Preferred Stock, which is currently $4.69159 per share. For the period from January 12, 2010, the original issue date of the Series A Preferred Stock, through December 31, 2016, the Series A Preferred Stock issued to Carilion has accrued $1,013,442 in dividends. The accrued dividend as of December 31, 2016 will be paid by the issuance of 552,401 shares of our common stock, which we will issue at Carilion’s written request. As the Series A

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Preferred Stock was issued in reliance on the exemption provided by Section 3(a)(9), the shares of common stock payable as dividends will also be exempt from registration in reliance on Section 3(a)(9) of the Securities Act.

Purchases of Equity Securities by the Issuer and Affiliated Parties

The following table summarizes repurchases of our common stock during the three months ended December 31, 2016.

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of a Publicly Announced Program (1)	Approximate Dollar Value of Shares that May Yet to be Purchased Under the Program
10/1/2016-10/31/2016	—	—	—	$ 1,759,184
11/1/2016-11/30/2016	6,400	$ 1.25	6,400	$ 1,751,191
12/1/2016-12/31/2016	—	$ —	—	$ 1,751,191
Total	6,400	1.25	6,400	1,751,191

(1) On June 9, 2016, we announced that our board of directors approved a stock repurchase program, authorizing the repurchase of up to $2.0 million of our common stock. Unless extended, the stock repurchase program expires on May 31, 2017.

ITEM 6. SELECTED FINANCIAL DATA

The consolidated statement of operations data for each of the years ended December 31, 2016 and 2015 and the consolidated balance sheet data as of December 31, 2016 and 2015 have been derived from our audited consolidated financial statements appearing elsewhere in this report. The consolidated statement of operations data for the years ended December 31, 2014, 2013 and 2012 and the consolidated balance sheet data as of December 31, 2014, 2013 and 2012 have been derived from our audited consolidated financial statements that do not appear in this report. The following selected consolidated financial data should be read in conjunction with our consolidated financial statements and the accompanying notes and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included at Part II, Item 7 in this Annual Report on Form 10-K. The selected data in this section is not intended to replace the consolidated financial statements, and the historical results are not necessarily indicative of the results to be expected in any future period.

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In thousands, except share and per share data	Years ended December 31, 2016	2015	2014	2013	2012
Consolidated Statement of Operations Data:					
Revenues:					
Technology development	$16,825	$13,599	$12,206	$11,422	$15,127
Products and licensing	42,386	30,421	9,054	6,912	8,339
Total revenues	59,211	44,020	21,260	18,334	23,466
Cost of revenues:					
Technology development	12,711	10,379	9,376	8,882	10,749
Products and licensing	24,765	17,141	4,047	3,403	3,825
Total cost of revenues	37,476	27,520	13,423	12,285	14,574
Gross profit	21,735	16,501	7,837	6,049	8,892
Operating expense	23,672	22,750	12,342	14,084	13,022
Operating loss	(1,937)	(6,250)	(4,505)	(8,035)	(4,130)
Other (expense)/income, net	(36)	(10)	111	347	108
Interest expense, net	(321)	(220)	(96)	(208)	(312)
Loss from continuing operations before income tax	(2,294)	(6,480)	(4,490)	(7,896)	(4,334)
Income tax expense/(benefit)	75	(471)	(1,137)	(2,387)	(1,107)
Net loss from continuing operations	(2,369)	(6,009)	(3,353)	(5,508)	(3,227)
Income from discontinued operations, net of income taxes	—	8,326	9,347	4,705	1,843
Net (loss)/income	(2,369)	2,317	5,995	(803)	(1,384)
Preferred stock dividend	105	86	112	102	120
Net (loss)/income attributable to common stockholders	$(2,475)	$2,231	$5,883	$(905)	$(1,504)
Net loss per share from continuing operations:					
Basic and diluted	$(0.09)	$(0.26)	$(0.23)	(0.38)	(0.23)
Net income per share from discontinued operations:					
Basic and diluted	$—	$0.36	$0.63	0.33	0.13
Net (loss)/income per share attributable to common stockholders:					
Basic and diluted	$(0.09)	$0.10	$0.40	(0.06)	(0.11)
Weighted-average shares:					
Basic and diluted	27,547,217	23,026,494	14,880,697	14,336,135	13,930,267

	As of December 31, 2016	2015	2014	2013	2012
Consolidated Balance Sheet Data:					
Cash and cash equivalents	$12,802	$17,464	$14,117	$7,779	$6,340
Working capital	21,129	23,417	15,413	10,106	10,509
Total assets	54,997	58,132	27,584	19,704	20,458
Total current liabilities	15,968	15,334	8,473	7,206	9,186
Total debt	4,253	6,125	625	2,125	3,625

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

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and the related notes to those statements included elsewhere in this report. In addition to historical financial information, the following discussion and analysis contains forward-looking statements that involve risks, uncertainties and assumptions. Our actual results and timing of selected events may differ materially from those anticipated in these forward-looking statements as a result of many factors, including those discussed under “Risk Factors” and elsewhere in this report.

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Merger with Advanced Photonix, Inc.

On May 8, 2015, we completed a merger with Advanced Photonix, Inc. ("API"), pursuant to the Agreement and Plan of Merger and Reorganization (the "Merger Agreement"), dated as of January 30, 2015, by and among Luna, API and API Merger Sub, Inc., our wholly owned subsidiary ("API Merger Sub"). In accordance with the terms of the Merger Agreement, upon the completion of the merger, API Merger Sub merged with and into API, with API surviving as our wholly-owned subsidiary. In the merger, former API stockholders received 0.31782 shares of our common stock for each share of API common stock they owned at the effective time of the merger. The merger is being accounted for under the acquisition method of accounting in accordance with Financial Accounting Standards Board Accounting Standard Topic 805, Business Combinations ("ASC 805") with Luna treated as the accounting acquirer.

Business Overview

We are a leader in advanced optical technology, providing unique capabilities in high speed optoelectronics and high performance fiber optic test products for the telecommunications industry and distributed fiber optic sensing for the aerospace and automotive industries. Our high-speed optical receiver ("HSOR") transmission products are deployed in the internet infrastructure to enable the high-speed bandwidth necessary to support video and data. Our distributed fiber optic sensing products provide critical stress, strain and temperature information to designers and manufacturers working with advanced materials. Our custom optoelectronic products are sold to scientific instrumentation manufacturers for various applications such as metrology, missile guidance, flame monitoring, and temperature sensing. In addition, we provide applied research services, typically under research programs funded by the U.S. government, in areas of advanced materials, sensing, and healthcare applications. Our business model is designed to accelerate the process of bringing new and innovative products to market. We use our in-house technical expertise across a range of technologies to perform applied research services for companies and for government funded projects. We continue to invest in product development and commercialization, which we anticipate will lead to increased product sales growth.

We are organized into two main business segments, our Products and Licensing segment and our Technology Development segment. Our Products and Licensing segment develops, manufactures and markets fiber optic sensing products, as well as test & measurement products, and also conducts applied research in the fiber optic sensing area for both corporate and government customers. We are continuing to develop and commercialize our fiber optic technology for strain and temperature sensing applications for the aerospace, automotive, and energy industries. Our Products and Licensing segment revenues represented approximately 72% and 69% of our total revenues for the years ended December 31, 2016 and 2015, respectively.

Our Technology Development segment performs applied research principally in the areas of sensing & instrumentation, advanced materials, and health sciences. Our Technology Development segment comprised approximately 28% and 31% of our total revenues for the years ended December 31, 2016 and 2015, respectively. Most of the government funding for our Technology Development segment is derived from the Small Business Innovation Research ("SBIR"), program coordinated by the U.S. Small Business Administration ("SBA"). Our Technology Development segment revenues have historically accounted for a large portion of our total revenues, and we expect that they will continue to represent a significant portion of our total revenues for the foreseeable future.

Within the Technology Development segment, we have historically had a backlog of contracts for which work has been scheduled, but for which a specified portion of work has not yet been completed. We define backlog as the dollar amount of obligations payable to us under negotiated contracts upon completion of a specified portion of work that has not yet been completed, exclusive of revenues previously recognized for work already performed under these contracts, if any. Total backlog includes funded backlog, which is the amount for which money has been directly authorized by the U.S. government and for which a purchase order has been received by a commercial customer, and unfunded backlog, representing firm orders for which funding has not yet been appropriated. Indefinite delivery and quantity contracts and unexercised options are not reported in total backlog. The approximate value of our Technology Development segment backlog was $17.6 million and $16.7 million at December 31, 2016 and 2015, respectively. The approximate value of our Products and Licensing segment backlog was $10.4 million and $10.7 million at December 31, 2016 and 2015, respectively.

Revenues from product sales are mostly derived from the sales of our HSOR, optoelectronics, sensing and test & measurement products that make use of light-transmitting optical fibers, or fiber optics. We continue to invest in product development and commercialization, which we anticipate will lead to increased product sales growth. Although we have been successful in licensing certain technology in past years, we do not expect license revenues to represent a significant portion of future revenues. Over time, however, we do intend to gradually increase such revenues. In the near term, we expect revenues from product sales to continue to be primarily in areas associated with our HSOR, optoelectronics, fiber optic test & measurement and sensing platforms. In the long term, we expect that revenues from product sales will represent a larger portion of our total revenues and that as we develop and commercialize new products, these revenues will reflect a broader and more diversified mix of products.

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We realized net loss attributable to common stockholders of approximately $2.5 million for the year ended December 31, 2016 and net income attributable to common stockholders of approximately $2.2 million for the year ended December 31, 2015. Excluding the effects of our medical shape sensing business, which we sold in 2014, we incurred net losses from continuing operations of approximately $2.4 million and $6.0 million for the years ended December 31, 2016 and 2015, respectively.

We may incur increasing expenses as we seek to expand our business, including expenses for research and development, sales and marketing and manufacturing capabilities. We may also grow our business in part through acquisitions of additional companies and complementary technologies, which could cause us to incur transaction expenses, amortization or write-offs of intangible assets and other acquisition-related expenses. As a result, we may incur net losses for the foreseeable future, and these losses could be substantial.

Reductions in government spending may impact the availability of new program awards in the future. For example, the Budget Control Act commits the U.S. government to reduce the federal deficit by $1.2 trillion over ten years through a combination of automatic, across-the-board spending cuts and caps on discretionary spending, or sequestration. Automatic across-the-board cuts required by sequestration could have a material adverse effect on our Technology Development segment revenues and, consequently, our results of operations. While the exact manner in which sequestration will impact our business is unclear, funding for programs in which we participate could be reduced, delayed or canceled. Our ability to obtain new contract awards also could be negatively affected.

Sale of Medical Shape Sensing Business in 2014

In January 2014, we sold our assets associated with the development of fiber optic shape sensing and localization for the medical field to affiliates of Intuitive Surgical, Inc. ("Intuitive") for total cash consideration of up to $30 million, including $6 million received at closing, $6 million received in April 2014 and up to $18 million in the future based on the achievement of certain technical milestones and royalties on system sales, if any. In December 2015, although the specified technical milestones had not yet been achieved, we and Intuitive agreed to settle all remaining potential amounts payable under the agreement for a single payment of $9 million, which we received in December 2015.

Description of Our Revenues, Costs and Expenses

Revenues

We generate revenues from technology development, product sales and commercial product development and licensing activities. We derive Technology Development segment revenues from providing research and development services to third parties, including government entities, academic institutions and corporations, and from achieving milestones established by some of these contracts and in collaboration agreements. In general, we complete contracted research over periods ranging from six months to three years, and recognize these revenues over the life of the contract as costs are incurred. Our Technology Development segment revenues represented approximately 28% and 31% of our total revenues for the years ended December 31, 2016 and 2015, respectively.

Our Products and Licensing segment revenues reflect amounts that we receive from sales of our products or development of products for third parties and, to a lesser extent, fees paid to us in connection with licenses or sub-licenses of certain patents and other intellectual property. Products and licensing revenues represented approximately 72% and 69% of our total revenues for the years ended December 31, 2016 and 2015, respectively.

Cost of Revenues

Cost of revenues associated with Technology Development segment revenues consists of costs associated with performing the related research activities including direct labor, amounts paid to subcontractors and overhead allocated to Technology Development segment activities.

Cost of revenues associated with Products and Licensing segment revenues consists of license fees for use of certain technologies, product manufacturing costs including all direct material and direct labor costs, amounts paid to our contract manufacturers, manufacturing, shipping and handling, provisions for product warranties, and inventory obsolescence, as well as overhead allocated to each of these activities.

Operating Expense

Operating expense consists of selling, general and administrative expenses, as well as expenses related to research, development and engineering, depreciation of fixed assets and amortization of intangible assets. These expenses also include compensation for employees in executive and operational functions including certain non-cash charges related to expenses

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from option grants, facilities costs, professional fees, salaries, commissions, travel expense and related benefits of personnel engaged in sales, marketing, and administrative activities; costs of marketing programs and promotional materials; salaries, bonuses and related benefits of personnel engaged in our own research and development beyond the scope and activities of our Technology Development segment; product development activities not provided under contracts with third parties; and overhead costs related to these activities.

Interest Expense, Net

In February 2010, we entered into a line of credit facility with Silicon Valley Bank ("SVB") with a borrowing capacity of $5.0 million. In May 2011, we entered into a loan modification agreement with SVB under which we repaid the outstanding balance under the prior line of credit and obtained a term loan in the amount of $6.0 million, along with a new $1.0 million line of credit. In May 2012, we entered into another loan modification agreement with SVB under which we extended the maturity date of the line of credit to May 2014 and adjusted certain covenants. On May 8, 2015, we entered into a loan modification agreement with SVB to borrow an additional $6 million, which we primarily used to repay the previously outstanding loans of API that existed at the time of our merger. On September 29, 2015, we entered into another loan modification with SVB under which we borrowed an additional $1 million to finance specified planned capital expenditures. On December 15, 2016, we entered into another loan modification with SVB, under which we and SVB adjusted specified covenants. At December 31, 2016, we had $4.3 million outstanding on the term loan.

During the years ended December 31, 2016 and 2015, interest expense primarily included interest accrued on our outstanding bank credit facilities and interest incurred with respect to our capital lease obligations.

Critical Accounting Policies and Estimates

Technology Development Revenues

We perform research and development for U.S. Federal government agencies, educational institutions and commercial organizations. We recognize revenue under research contracts when a contract has been executed, the contract price is fixed and determinable, delivery of services or products has occurred, and collectability of the contract price is considered reasonably assured and can be reasonably estimated. Revenue is earned under cost reimbursable, time and materials and fixed price contracts. Direct contract costs are expensed as incurred.

Under cost reimbursable contracts, we are reimbursed for costs that are determined to be reasonable, allowable and allocable to the contract and paid a fixed fee representing the profit negotiated between us and the contracting agency. Revenue from cost reimbursable contracts is recognized as costs are incurred plus an estimate of applicable fees earned. We consider fixed fees under cost reimbursable contracts to be earned in proportion to the allowable costs incurred in performance of the contract.

Revenue from time and materials contracts is recognized based on direct labor hours expended at contract billing rates plus other billable direct costs.

Fixed price contracts may include either a product delivery or specific service performance throughout a period. For fixed price contracts that are based on the proportional performance method and involve a specified number of deliverables, we recognize revenue based on the proportion of the cost of the deliverables compared to the cost of all deliverables included in the contract as this method more accurately measures performance under these arrangements. For fixed price contracts that provide for the development and delivery of a specific prototype or product, revenue is recognized based upon the percentage of completion method.

Our contracts with agencies of the U.S. government are subject to periodic funding by the respective contracting agency. Funding for a contract may be provided in full at inception of the contract or ratably throughout the contract as the services are provided. In evaluating the probability of funding for purposes of assessing collectability of the contract price, we consider our previous experience with our customers, communication with our customers regarding funding status and our knowledge of available funding for the contract or program. If funding is not assessed as probable, revenue recognition is deferred until realization is reasonably assured.

Contract revenue recognition inherently involves estimation, including the contemplated level of effort to accomplish the tasks under the contract, the cost of the effort and an ongoing assessment of progress toward completing the contract. From time to time, as part of normal management processes, facts may change, causing revisions to estimated total costs or revenues expected. The cumulative impact of any revisions to estimates and the full impact of anticipated losses on any type of contract are recognized in the period in which they become known.

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The underlying bases for estimating our contract research revenues are measurable expenses, such as labor, subcontractor costs and materials, and data that are updated on a regular basis for purposes of preparing our cost estimates. Our research contracts generally have a period of performance of six months to three years, and our estimates of contract costs have historically been consistent with actual results. Revisions in these estimates between accounting periods to reflect changing facts and circumstances have not had a material impact on our operating results, and we do not expect future changes in these estimates to be material.

Whether certain costs under government contracts are allowable is subject to audit by the government. Certain indirect costs are charged to contracts using provisional or estimated indirect rates, which are subject to later revision based on government audits of those costs. Management is of the opinion that costs subsequently disallowed, if any, would not likely have a significant impact on revenues recognized for those contracts.

Products and Licensing Revenues

We recognize revenue relating to our product sales when persuasive evidence of an arrangement exists, delivery has occurred, the selling price is fixed or determinable and collectability of the resulting receivable is reasonably assured. For tangible products that contain software that is essential to the tangible product's functionality, we consider the product and software to be a single unit of accounting and recognize revenue accordingly. We evaluate product sales that are a part of multiple-element revenue arrangements to determine whether separate units of accounting exist, and we follow appropriate revenue recognition policies for each separate unit. For multi-element arrangements we allocate revenue to all significant deliverables based on their relative selling prices. In such circumstances, we use a hierarchy to determine the selling price to be used for allocating revenue to deliverables: (i) vendor-specific objective evidence of fair value ("VSOE"), (ii) third-party evidence of selling price ("TPE"), and (iii) best estimate of the selling price ("ESP"). VSOE generally exists only when we sell the deliverable separately and is the price actually charged by us for that deliverable. Our product sales often include bundled products, options and services and therefore VSOE is not readily determinable. In addition, we believe that because of unique features of our products, TPE also is not available. ESPs reflect our best estimates of what the selling prices of elements would be if they were sold regularly on a stand-alone basis. We also sell extended warranties from time to time. In this case, we accrue warranty costs based on our estimate of future expense and defer revenue associated with the warranty. The deferred warranty revenue is recognized over the period of the warranty.

Our process for determining ESP for deliverables without VSOE or TPE considers multiple factors that may vary depending upon the unique facts and circumstances related to each deliverable. Key factors considered in developing the ESPs include prices charged by us for similar offerings, our historical pricing practices, the nature of the deliverables, and the relative ESP of all of the deliverables as compared to the total selling price of the product. We may also consider, when appropriate, the impact of other products and services, on selling price assumptions when developing and reviewing our ESPs.

Business Combinations

We apply the provisions of ASC 805 in the accounting for acquisitions. ASC 805 requires us to recognize separately from goodwill the assets acquired and the liabilities assumed at their acquisition date fair values. Goodwill as of the acquisition date is measured as the excess of consideration transferred over the net of the acquisition date fair values of the assets acquired and the liabilities assumed. While we use our best estimates and assumptions to accurately apply preliminary value to assets acquired and liabilities assumed at the acquisition date as well as contingent consideration, where applicable, these estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, we record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of the assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recorded in our Consolidated Statements of Operations. Accounting for business combinations requires management to make significant estimates and assumptions, especially at the acquisition date, including estimates for intangible assets, contractual obligations assumed, restructuring liabilities, pre-acquisition contingencies, and contingent consideration, where applicable. Although we believe the assumptions and estimates we have made have been reasonable and appropriate, they are based in part on historical experience and information obtained from management of the acquired companies and are inherently uncertain. Critical estimates in valuing certain of the intangible assets we have acquired include: future expected cash flows from product sales; customer contracts and acquired technologies; expected costs to develop in-process research and development into commercially viable products and estimated cash flows from the projects when completed; and discount rates. Unanticipated events and circumstances may occur that may affect the accuracy or validity of such assumptions, estimates, or actual results.

Income Taxes

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We estimate our tax liability through calculating our current tax liability, together with assessing temporary differences resulting from the different treatment of items for tax and accounting purposes. These differences result in deferred tax assets and liabilities, which we record on our balance sheet. Management then assesses the likelihood that deferred tax assets will be recovered in future periods. In assessing the need for a valuation allowance against the net deferred tax asset, management considers factors such as future reversals of existing taxable temporary differences, taxable income in prior carry back years, whether carry back is permitted under the tax law, tax planning strategies and estimated future taxable income exclusive of reversing temporary differences and carry forwards. To the extent that we cannot conclude that it is more likely than not that the benefit of such assets will be realized, we establish a valuation allowance to reduce their net carrying value.

As we assess our projections of future taxable income or other factors that may impact our ability to generate taxable income in future periods, our estimate of the required valuation allowance may change, which could have a material impact on future earnings or losses.

We recognize tax benefits from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by taxing authorities. While it is often difficult to predict the final outcome of timing of the resolution of any particular tax matter, we establish a liability at the time we determine it is probable we will be required to pay additional taxes related to certain matters. These liabilities are recorded in accrued liabilities in our consolidated balance sheets. We adjust this provision, including any impact on the related interest and penalties, in light of changing facts and circumstances, such as the progress of a tax audit. A number of years may elapse before a particular matter for which we have established a liability is audited and finally resolved. The number of years with open tax audits varies depending on the tax jurisdiction. Settlement of any particular issue would usually require the use of cash. We recognize favorable resolutions of tax matters for which we have previously established liabilities as a reduction to our income tax expense when the amounts involved become known.

Due to differences between federal and state tax law, and accounting principles generally accepted in the United States of America ("GAAP") certain items are included in the tax return at different times than when those items are reflected in the consolidated financial statements. Therefore, the annual tax rate reflected in our consolidated financial statements is different than that reported in our tax return. Some of these differences are permanent, such as expenses that are not deductible in our tax return. Some differences, such as depreciation expense, reverse over time and create deferred tax assets and liabilities. The tax rates used to determine deferred tax assets or liabilities are the enacted tax rates in effect for the year in which the differences are expected to reverse. Based on the evaluation of all available information, we recognize future tax benefits, such as net operating loss carry forwards, to the extent that realizing these benefits is considered more likely than not.

Stock-Based Compensation

We recognize stock-based compensation expense based upon the fair value of the underlying equity award on the date of the grant. The calculation of the fair value of our awards requires certain inputs that are subjective and changes to the estimates used will cause the fair values of our stock awards and related stock-based compensation expense to vary. We have elected to use the Black-Scholes-Merton ("Black-Scholes") option pricing model to determine the fair value of stock options. The fair value of a stock option award is affected by our stock price on the date of the grant as well as other assumptions used as inputs in the valuation model including the estimated volatility of our stock price over the term of the awards, the estimate period of time that we expect employees to hold their stock options and the risk-free interest rate assumption. In addition, we are required to reduce stock-based compensation expense for the effects of estimated forfeitures of awards over the expense recognition period. Although we estimate the rate of future forfeitures based on historical experience, actual forfeitures may differ.

Long-lived and Intangible Assets

Long-lived assets and certain identifiable intangibles are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset might not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to future un-discounted net cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the asset exceeds the fair value of the asset. Assets to be disposed of are reported at the lower of the carrying amount or fair value, less cost to sell.

Goodwill

Goodwill is reviewed for impairment at least annually, or more frequently if events or circumstances indicate that goodwill might be impaired. We have established October 1 as our specified annual date for impairment testing.

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Results of Operations

The following table shows information derived from our consolidated statements of operations expressed as a percentage of total revenues for the periods presented.

	Years ended December 31, 2016	2015
Revenues:		
Technology development	28.4 %	30.9 %
Products and licensing	71.6	69.1
Total revenues	100.0	100.0
Cost of revenues:		
Technology development	21.5	23.6
Products and licensing	41.8	38.9
Total cost of revenues	63.3	62.5
Gross profit	36.7	37.5
Operating expense	40.0	51.7
Operating loss	(3.3)	(14.2)
Total other expense	(0.6)	(0.5)
Loss from continuing operations before income taxes	(3.9)	(14.7)
Loss from continuing operations, net of income taxes	(4.0)	(13.7)
Income from discontinued operations, net of income taxes	—	18.9
Net (loss)/income	(4.0)%	5.2 %

Year Ended December 31, 2016 Compared to Year Ended December 31, 2015

Revenues

	Years ended December 31, 2016	2015	$ Difference	% Difference
Technology development revenues	$16,825,157	$13,599,048	$3,226,109	23.7 %
Products and licensing revenues	42,385,839	30,421,310	11,964,529	39.3 %
Total revenues	$59,210,996	$44,020,358	$15,190,638	34.5 %

Our Technology Development segment revenues increased $3.2 million to $16.8 million for the year ended December 31, 2016 compared to $13.6 million for the year ended December 31, 2015. This increase was attributable primarily to growth in our biomedical and intelligent systems groups. These groups saw a significant increase in the number of active contracts along with an increase in the average revenue per contract.

Our Products and Licensing segment revenues increased $12.0 million to $42.4 million for the year ended December 31, 2016 compared to $30.4 million for the year ended December 31, 2015. This increase was due primarily to inclusion of product sales associated with API's legacy operations for the full year of 2016 compared to the period from the closing of our merger on May 8, 2015 through December 31, 2015 for 2015. The increase in product revenue from API's legacy operations due to inclusion of the full year for 2016 was approximately $10.0 million. Sales of HSOR products for the telecom market and instrumentation for measuring strain in composite materials contributed to the additional increase in product revenues.

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Cost of Revenues

	Years ended December 31,			
	2016	2015	$ Difference	% Difference
Technology development costs	$12,711,447	$10,378,616	$2,332,831	22.5 %
Products and licensing costs	24,764,788	17,141,079	7,623,709	44.5 %
Total costs of revenues	$37,476,235	$27,519,695	$9,956,540	36.2 %

Our Technology Development segment costs increased $2.3 million, to $12.7 million for the year ended December 31, 2016 compared to $10.4 million for the year ended December 31, 2015. The overall increase in Technology Development segment costs was consistent with the rate of growth in Technology Development segment revenues.
Our Products and Licensing segment costs increased $7.6 million to $24.8 million for the year ended December 31, 2016 compared to $17.1 million for the year ended December 31, 2015. The overall increase in Products and Licensing segment costs was consistent with the rate of growth in the Products and Licensing segment revenues, when taking into account our revenue growth was driven by legacy API products. This product mix contributes to an overall lower margin for our product sales.

Operating Expense

	Years ended December 31,			
	2016	2015	$ Difference	% Difference
Selling, general and administrative expense	$18,139,966	$18,481,270	$(341,304)	(1.8)%
Research, development and engineering expense	5,532,130	4,268,988	1,263,142	29.6 %
Total operating expense	$23,672,096	$22,750,258	$921,838	4.1 %

Selling, general and administrative expenses decreased $0.3 million to $18.1 million for the year ended December 31, 2016 compared to $18.5 million for the year ended December 31, 2015. This decrease was due to $3.7 million in merger related expenses for the year ended December 31, 2015 not recurring in the year ended December 31, 2016. This decrease was partially offset by an increase of selling, general and administrative expenses of approximately $2.6 million due to the inclusion of expenses of API's legacy operations for the entire year ended December 31, 2016 compared to the period from the closing of our merger on May 8, 2015 through December 31, 2015. We also experienced an increase in costs related to annual employee salary increases and professional fees of approximately $0.8 million.

Research, development and engineering expenses increased $1.3 million to $5.5 million for the year ended December 31, 2016 compared to $4.3 million for the year ended December 31, 2015, primarily due to a $1.2 million increase resulting from the inclusion of expenses from API's legacy operations for the entire year ended December 31, 2016 compared to the period from the closing of our merger on May 8, 2015 through December 31, 2015.

Interest Expense, Net

Our net interest expense was approximately $0.3 million for the year ended December 31, 2016 compared to approximately $0.2 million for the year ended December 31, 2015. The average monthly loan balance for the year ended December 31, 2016 was $5.1 million as compared to $3.8 million for the year ended December 31, 2015, resulting in this increase in interest expense.

Income Tax

For the year ended December 31, 2016, we recorded income tax expense of $0.1 million, or 3.6% of our loss from continuing operations, compared to an income tax benefit of $0.5 million, or 7.3% of our loss from continuing operations for the year ended December 31, 2015. The change from an income tax benefit in 2015 to income tax expense in 2016 resulted from the decrease in our loss from continuing operations. Certain expenses included in our loss from continuing operations are not deductible for determination of the federal alternative minimum taxable income or state income taxes, and the recognition of those book-tax differences, which in the aggregate exceeded our loss from continuing operations, resulted in a current tax expense for the year ended December 31, 2016.

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Income from Discontinued Operations, Net of Income Taxes

For the year ended December 31, 2016, we did not recognize income from discontinued operations. For the year ended December 31, 2015, we recognized a net income from discontinued operations, net of income taxes, of $8.3 million. This income consisted of $9.0 million received from Intuitive in December 2015 in satisfaction of all remaining potential amounts payable, including future technological milestone payments and future royalty payments, associated with the sale of our medical shape sensing business for medical applications in 2014, offset by income tax expense of $0.7 million associated with the gain.

Preferred Stock Dividend

In January 2010, we issued 1,321,514 shares of our newly designated Series A Convertible Preferred Stock to Carilion. The Series A Convertible Preferred Stock carries an annual cumulative dividend of 6%, or approximately 79,292 shares of common stock per year. During each of 2016 and 2015, we accrued $0.1 million for the dividends payable to Carilion. The dividends are not payable in cash, but rather in shares of our common stock, until liquidation event occurs. During each of 2016 and 2015, 79,292 shares of common stock became issuable to Carilion as dividends and have been recorded in the statement of stockholders' equity.

Liquidity and Capital Resources

At December 31, 2016, our total cash and cash equivalents were $12.8 million.

We have two term loans with SVB which, at December 31, 2016, had an aggregate balance of $4.3 million. One term loan, with a balance of $0.7 million as of December 31, 2016, matures on December 1, 2018. The other term loan with a balance of $3.6 million as of December 31, 2016, matures on May 1, 2019.

We may prepay amounts due under the term loans at any time, subject to prepayment penalties of up to 2% of the amount of prepayment.

Amounts due under the term loans are secured by substantially all of our assets, including intellectual property, personal property and bank accounts.

The term loans contain customary events of default, including nonpayment of principal, interest or other amounts, violation of covenants, material adverse change, an event of default under any subordinated debt documents, incorrectness of representations and warranties in any material respect, bankruptcy, judgments in excess of a threshold amount, and violations of other agreements in excess of a threshold amount. If any event of default occurs SVB may declare due immediately all borrowings under the credit facility and foreclose on the collateral. Furthermore, an event of default under the credit facility would result in an increase in the interest rate on any amounts outstanding. The credit facility requires us to comply with certain operational and financial covenants, including maintaining a minimum cash balance of at least $5.0 million. As of December 31, 2016, we were in compliance with all covenants under the credit facility.

We maintain a letter-of-credit in the amount of $1.0 million as a condition of our lease on our Blacksburg office.

We believe that our cash balance as of December 31, 2016 will provide adequate liquidity for us to meet our working capital needs over the next twelve months. Additionally, we believe that should we have the need for increased capital spending to support our planned growth, we will be able to fund such growth through either third-party financing on competitive market terms or through our available cash.

Discussion of Cash Flows

	Years ended December 31,	
	2016	2015
Net cash used in operating activities	$(399,837)	$(5,087,907)
Net cash (used in)/provided by investing activities	(2,000,184)	8,294,714
Net cash (used in)/provided by financing activities	(2,261,561)	140,264
Net (decrease)/increase in cash and cash equivalents	$(4,661,582)	$3,347,071

During 2016, operations used $0.4 million of net cash, as compared to 2015, when operations used $5.1 million of net cash. In 2016, our net loss of $2.4 million included charges for depreciation and amortization of $3.7 million and stock-based

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compensation of $0.9 million and bad debt of $0.3 million, which are non-cash expenses and do not impact cash flow for the period. Additionally, changes in working capital resulted in a net cash outflow of $2.9 million, principally driven by an increase in accounts receivable of $3.6 million, partially offset by an increase in accounts payable and accrued liabilities of $0.6 million.

In 2015, our net income of $2.3 million included a benefit of an $8.3 million after-tax gain associated with contingent consideration received in 2015 from the sale of our medical shape sensing business in 2014 and a tax benefit of $0.5 million. Absent the effects of that gain and the tax benefit, our pre-tax loss from continuing operations was $6.5 million. The pre-tax loss from continuing operations included charges for depreciation and amortization of $2.5 million and stock-based compensation of $1.1 million, each of which are non-cash items that do not impact cash flow for the period. In 2015, our cash used in operating activities also included $3.7 million of expenses associated with completing our merger with API.

Cash used in investing activities in 2016 consisted of a cash outflow of $2.0 million related to the purchase of property and equipment to expand our manufacturing capability for HSOR products as well as capitalized costs associated with securing intellectual property rights.

Cash provided by investing activities in 2015 consisted of a cash inflow of $9.0 million related to a payment arising from the sale of our medical shape sensing business in 2014, cash of $0.4 million acquired in our merger with API, and cash outflows of $0.7 million for the purchase of equipment and $0.4 million in patent costs associated with certain intangible assets, primarily associated with our fiber optic platform and our THz sensing platform.

Cash used in financing activities for the year ended December 31, 2016 was $2.3 million, compared to cash provided by financing activities of $0.1 million in 2015. During 2016, we repaid $1.9 million on our term loans with SVB. We also used $0.3 million to repurchase our common stock under our stock repurchase program. During 2015, we repaid $6.7 million on our outstanding term loan with SVB and borrowed $7.0 million under a new term loan with SVB.

Summary of Contractual Obligations

The following table sets forth information concerning our known contractual obligations as of December 31, 2016 that are fixed and determinable.

	Total	Less than 1 year	1 - 3 years	3 - 5 years	More than 5 years
Long-term debt obligations (1)	$4,291,666	$1,833,333	$2,458,333	$—	$—
Operating facility leases (2)	8,244,602	1,601,292	3,054,013	2,148,120	1,441,177
Other leases (3)	186,501	61,244	85,737	39,520	—
Purchase order obligation (4)	1,522,642	1,522,642	—	—	—
Other liabilities (5)	880,000	220,000	440,000	220,000	—
Total	$15,125,411	$5,238,511	$6,038,083	$2,407,640	$1,441,177

(1) Amounts due under our debt obligations to SVB are payable in monthly installments, plus accrued interest, through May 2019.

(2) We lease our facilities in Blacksburg, Charlottesville and Roanoke, Virginia, Ann Arbor, Michigan, Camarillo California, and Montreal, Canada under operating leases that as of December 31, 2016, are scheduled to expire between April 2017 and December 2024. Upon expiration of our office leases, we may exercise certain renewal options as specified in the leases. Rental payments associated with these option periods are not included in the table above.

(3) In August 2013 and January 2016, we executed leases in the amounts of $51,000, and $207,000, respectively, for office equipment. These equipment leases expire in 2018 and 2021, respectively.

(4) In 2016, our Luna Technologies subsidiary executed two non-cancelable purchase orders in the amounts of $0.5 million and $1.0 million for multiple shipments of tunable lasers to be delivered over an 18-month period beginning in July 2016. In addition, in 2016 we issued two purchase orders for component parts and capital

equipment for our HSOR products with an aggregate value of $0.8 million for delivery through the second quarter of 2017, of which $0.5 million was outstanding as of December 31, 2016.

(5) Other liabilities include remaining amounts payable for minimum royalty payments for certain licensed technologies payable over the remaining patent terms of the underlying technology.

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Off-Balance Sheet Arrangements

We have no off-balance sheet arrangements as defined in Regulation S-K, Item 303(a)(4)(ii).

Inflation

We do not believe that inflation has had a material effect on our business, financial condition or results of operations.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. We do not hold or issue financial instruments for trading purposes or have any derivative financial instruments. Our exposure to market risk is limited to interest rate fluctuations due to changes in the general level of U.S. interest rates.

Interest Rate Risk

We do not use derivative financial instruments as a hedge against interest rate fluctuations, and, as a result, interest income earned on our cash and cash equivalents and short-term investments is subject to changes in interest rates. However, we believe that the impact of these fluctuations does not have a material effect on our financial position due to the immediate available liquidity or short-term nature of these financial instruments.

We are exposed to interest rate fluctuations as a result of our SVB debt facility having a variable interest rate. We do not currently use derivative instruments to alter the interest rate characteristics of our debt. The principal amount of $4.3 million outstanding under the term loan as of December 31, 2016, is scheduled to amortize in monthly installments through May 2019. A change of 1% in the applicable interest rate during 2017 would have an impact of approximately $33,000 in our annual interest expense under the SVB debt facility.

Foreign Currency Exchange Rate Risk

As of December 31, 2016, all payments made under our research contracts have been denominated in U.S. dollars. Our product sales to foreign customers are also generally denominated in U.S. dollars, and we do not receive payments in foreign currency. As such, we are not directly exposed to significant currency gains or losses resulting from fluctuations in foreign exchange rates.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders
Luna Innovations Incorporated

We have audited the accompanying consolidated balance sheets of Luna Innovations Incorporated (a Delaware corporation) and subsidiaries (the “Company”) as of December 31, 2016 and 2015, and the related consolidated statements of operations, changes in stockholders’ equity, and cash flows for each of the two years in the period ended December 31, 2016. Our audits of the basic consolidated financial statements included the financial statement schedule listed in the index appearing under Item 15(a)(2). These consolidated financial statements and financial statement schedule are the responsibility of the Company’s management. Our responsibility is to express an opinion on these consolidated financial statements and financial statement schedule based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement. We were not engaged to perform an audit of the Company’s internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the consolidated financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall consolidated financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Luna Innovations Incorporated and subsidiaries as of December 31, 2016 and 2015, and the results of their operations and their cash flows for each of the two years in the period ended December 31, 2016 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the related financial statement schedule, when considered in relation to the basic consolidated financial statements taken as a whole, presents fairly, in all material respects, the information set forth therein.

/s/ GRANT THORNTON LLP
Arlington, Virginia
March 20, 2017

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CONSOLIDATED BALANCE SHEETS

	December 31, 2016	December 31, 2015
Assets		
Current assets:		
Cash and cash equivalents	$12,802,458	$17,464,040
Accounts receivable, net	14,297,725	11,034,557
Inventory, net	8,370,235	8,863,167
Prepaid expenses and other current assets	1,627,175	1,388,439
Total current assets	37,097,593	38,750,203
Property and equipment, net	6,780,838	6,614,238
Intangible assets, net	8,681,263	10,404,312
Goodwill	2,348,331	2,274,112
Other assets	88,948	88,948
Total assets	$54,996,973	$58,131,813
Liabilities and stockholders' equity		
Current liabilities:		
Current portion of long term debt obligations	$1,833,333	$1,833,333
Current portion of capital lease obligations	52,128	31,459
Accounts payable	4,466,192	4,054,425
Accrued liabilities	8,667,100	8,304,686
Deferred revenue	949,603	1,109,759
Total current liabilities	15,968,356	15,333,662
Long-term portion of deferred rent	1,403,957	1,564,229
Long-term debt obligations	2,420,032	4,291,667
Long-term capital lease obligations	114,940	35,237
Total liabilities	19,907,285	21,224,795
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, par value $0.001, 1,321,514 shares authorized, issued and outstanding at December 31, 2016 and 2015	1,322	1,322
Common stock, par value $0.001, 100,000,000 shares authorized, 27,988,104 and 27,644,833 shares issued, 27,541,277 and 27,477,181 shares outstanding at December 31, 2016 and 2015, respectively	28,600	28,178
Treasury stock at cost, 446,827 and 167,652 shares at December 31, 2016 and 2015, respectively	(517,987)	(184,934)
Additional paid-in capital	82,451,958	81,461,907
Accumulated deficit	(46,874,205)	(44,399,455)
Total stockholders' equity	35,089,688	36,907,018
Total liabilities and stockholders' equity	$54,996,973	$58,131,813

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

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CONSOLIDATED STATEMENTS OF OPERATIONS

	Years ended December 31,	
	2016	2015
Revenues:		
Technology development	$16,825,157	$13,599,048
Products and licensing	42,385,839	30,421,310
Total revenues	59,210,996	44,020,358
Cost of revenues:		
Technology development	12,711,447	10,378,616
Products and licensing	24,764,788	17,141,079
Total cost of revenues	37,476,235	27,519,695
Gross profit	21,734,761	16,500,663
Operating expense:		
Selling, general and administrative	18,139,966	18,481,270
Research, development and engineering	5,532,130	4,268,988
Total operating expense	23,672,096	22,750,258
Operating loss	(1,937,335)	(6,249,595)
Other expense:		
Other expense, net	(35,849)	(9,967)
Interest expense, net	(320,942)	(220,403)
Total other expense	(356,791)	(230,370)
Loss from continuing operations before income taxes	(2,294,126)	(6,479,965)
Income tax expense/(benefit)	75,366	(470,605)
Net (loss)/income from continuing operations	(2,369,492)	(6,009,360)
Income from discontinued operations, net of income taxes of $0 and $0.7 million	—	8,326,386
Net (loss)/income	(2,369,492)	2,317,026
Preferred stock dividend	105,258	85,830
Net (loss)/income attributable to common stockholders	$(2,474,750)	$2,231,196
Net loss per share from continuing operations:		
Basic and diluted	$(0.09)	$(0.26)
Net income per share from discontinued operations:		
Basic and diluted	$—	$0.36
Net (loss)/income per share attributable to common stockholders:		
Basic and diluted	$(0.09)	$0.10
Weighted average shares:		
Basic and diluted	27,547,217	23,026,494

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

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CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY

	Preferred Stock		Common Stock		Treasury Stock		Additional Paid in Capital	Accumulated Deficit	Total
	Shares	$	Shares	$	Shares	$	$	$	$
Balance—January 1, 2015	1,321,514	1,322	15,088,199	15,541	22,727	(32,221)	64,147,666	(46,630,651)	17,501,657
Exercise of stock options	—	—	233,704	233	—	—	82,283	—	82,516
Stock-based compensation	—	—	453,522	453	—	—	1,018,224	—	1,018,677
Non-cash compensation	—	—	—	—	—	—	280,202	—	280,202
Issuance of stock to former API stockholders	—	—	11,872,557	11,872	—	—	15,659,902	—	15,671,774
Options issued in exchange for API options	—	—	—	—	—	—	187,879	—	187,879
Stock dividends (1)	—	—	—	79	—	—	85,751	(85,830)	—
Forfeitures of restricted stock grants	—	—	(25,876)	—	—	—	—	—	—
Purchase of treasury stock	—	—	(144,925)	—	144,925	(152,713)	—	—	(152,713
Net Income	—	—	—	—	—	—	—	2,317,026	2,317,026
Balance—December 31, 2015	1,321,514	$1,322	27,477,181	$28,178	167,652	$(184,934)	$81,461,907	$(44,399,455)	$36,907,018
Stock-based compensation	—	—	319,000	319	—	—	859,896	—	860,215
Non-cash compensation	—	—	24,271	24	—	—	24,976	—	25,000
Stock dividends (1)	—	—	—	79	—	—	105,179	(105,258)	—
Purchase of treasury stock	—	—	(279,175)	—	279,175	(333,053)	—	—	(333,053
Net loss	—	—	—	—	—	—	—	(2,369,492)	(2,369,492
Balance—December 31, 2016	1,321,514	$1,322	27,541,277	$28,600	446,827	$(517,987)	$82,451,958	$(46,874,205)	$35,089,688

(1) The stock dividends payable in connection with the Series A Convertible Preferred Stock are issuable upon the request of Carilion.

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

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CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years ended December 31, 2016	2015
Cash flows used in operating activities:		
Net (loss)/income	$(2,369,492)	$2,317,026
Adjustments to reconcile net income to net cash used in by operating activities:		
Depreciation and amortization	3,713,879	2,457,032
Stock-based compensation	860,215	1,124,379
Gain on sale of discontinued operations, net of income taxes	—	(8,326,386)
Bad debt	305,593	10,375
Tax benefit from utilization of loss from current year operations	—	(510,772)
Changes in operating assets and liabilities:		
Accounts receivable	(3,568,761)	(2,040,323)
Inventory	492,932	(252,934)
Other assets	(238,736)	(131,411)
Accounts payable and accrued liabilities	564,689	16,429
Deferred revenue	(160,156)	248,678
Net cash used in operating activities	(399,837)	(5,087,907)
Cash flows (used in)/provided by investing activities:		
Acquisition of property and equipment	(1,509,984)	(710,348)
Intangible property costs	(490,200)	(367,050)
Cash acquired in business combination	—	374,517
Proceeds from sale of discontinued operations, net	—	8,997,595
Net cash (used in)/provided by investing activities	(2,000,184)	8,294,714
Cash flows (used in)/provided by financing activities:		
Payments on debt obligations	(1,871,635)	(6,712,355)
Payments on capital lease obligations	(56,873)	(77,184)
Purchase of treasury stock	(333,053)	(152,713)
Borrowings under term loans	—	7,000,000
Proceeds from the exercise of options and warrants	—	82,516
Net cash (used in)/provided by financing activities	(2,261,561)	140,264
Net change in cash and cash equivalents	(4,661,582)	3,347,071
Cash and cash equivalents—beginning of period	17,464,040	14,116,969
Cash and cash equivalents—end of period	$12,802,458	$17,464,040
Supplemental disclosure of cash flow information		
Cash paid for interest	$308,116	$187,017
Cash paid for income taxes	$233,732	$40,167
Cash received for income tax refunds	$67,127	
Value of common stock issued for business combination	$—	$15,485,187
Dividend on preferred stock, 79,292 shares of common stock issuable for each of the years ended December 31, 2016 and 2015	$105,258	$85,830

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

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Organization and Summary of Significant Accounting Policies

Luna Innovations Incorporated (“we” or the "Company”), headquartered in Roanoke, Virginia, was incorporated in the Commonwealth of Virginia in 1990 and reincorporated in the State of Delaware in April 2003.

We are a leader in advanced optical technology, providing unique capabilities in high speed optoelectronics and high performance fiber optic test products for the telecommunications industry and distributed fiber optic sensing for the aerospace and automotive industries. Our high-speed optical receiver ("HSOR") transmission products are deployed in the internet infrastructure to enable the high-speed bandwidth necessary to support video and data. Our distributed fiber optic sensing products provide critical stress, strain and temperature information to designers and manufacturers working with advanced materials. Our custom optoelectronic products are sold to scientific instrumentation manufacturers for various applications such as metrology, missile guidance, flame monitoring, and temperature sensing. In addition, we provide applied research services, typically under research programs funded by the U.S. government, in areas of advanced materials, sensing, and healthcare applications. Our business model is designed to accelerate the process of bringing new and innovative products to market. We use our in-house technical expertise to perform applied research services on government funded projects across a range of technologies and also for corporate customers in the fiber optic sensing area. We are organized into two business segments: our Technology Development segment and our Products and Licensing segment. Our Technology Development segment performs applied research principally on government-funded projects. Most of the government funding in our Technology Development segment is derived from the U.S. government’s Small Business Innovation Research ("SBIR") program coordinated by the U.S. Small Business Administration ("SBA"). Our Products and Licensing segment focuses on fiber optic test & measurement, sensing, and instrumentation products and also conducts applied research in the fiber optic sensing area to corporate and government customers.

We have a history of net losses and negative cash flow from operations. We have historically managed our liquidity through cost reduction initiatives, debt financings, capital markets transactions and the sale of assets.

Although there can be no guarantees, we believe that our current cash and cash equivalents balance, provides adequate liquidity for us to meet our working capital needs for the foreseeable future.

Consolidation Policy

Our consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States ("GAAP") and include the accounts of the Company and its wholly owned subsidiaries. We eliminate from our financial results intercompany transactions.

Use of Estimates

The preparation of our consolidated financial statements in accordance with GAAP requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities in our consolidated financial statements and accompanying notes.

Although these estimates are based on our knowledge of current events and actions we may undertake in the future, actual results may differ from such estimates and assumptions.

Technology Development Revenues

We perform research and development for U.S. government agencies, educational institutions and commercial organizations. We recognize revenues under research contracts when a contract has been executed, the contract price is fixed and determinable, delivery of services or products has occurred and collection of the contract price is considered reasonably assured. Revenue is earned under cost reimbursable, time and materials and fixed price contracts. Direct contract costs are expensed as incurred.

Under cost reimbursable contracts, we are reimbursed for costs that are determined to be reasonable, allowable and allocable to the contract and are paid a fixed fee representing the profit negotiated between us and the contracting agency. Revenue from cost reimbursable contracts is recognized as costs are incurred plus a portion of the fee earned. Revenue from time and materials contracts is recognized based on direct labor hours expended at contract billing rates plus other billable direct costs.

Revenue from fixed price research contracts that involve the delivery of services and a prototype model is recognized under the percentage of completion method. Revenue from fixed price arrangements are recognized under the percentage of

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completion method by determining proportional performance based upon the ratio of costs incurred to achieve contract milestones to total estimated cost as this method more accurately measures performance under these arrangements. Losses on contracts, if any, are recognized in the period in which they become known and estimable.

Product Sales Revenues

Revenues from product sales are generated by the sale of commercial products and services under various sales programs to the end user and through distribution channels. We sell fiber optic sensing systems to end users for use in numerous fiber optic based measurement applications. Revenues are recorded net of applicable sales taxes collected from customers and payable to state or local governmental entities.

We recognize revenue relating to our products when persuasive evidence of an arrangement exists, delivery has occurred, the selling price is fixed or determinable and collectability of the resulting receivable is reasonably assured. For multi-element arrangements that include tangible products that contain software that is essential to the tangible product's functionality, we allocate revenue to all deliverables based on their relative selling prices. Other deliverables include extended warranty, training and various add-on products. In such circumstances, we use a hierarchy to determine the selling price to be used for allocating revenue to deliverables: (i) vendor-specific objective evidence of fair value ("VSOE"), (ii) third-party evidence of selling price ("TPE"), and (iii) best estimate of the selling price ("ESP"). VSOE generally exists only when we sell the deliverable separately and is the price actually charged by us for that deliverable. Due to the uniqueness of our products comparable third party evidence is generally not available. ESPs reflect our best estimates of what the selling prices of elements would be if they were sold regularly on a stand-alone basis.

Our process for determining our ESP for deliverables without VSOE or TPE considers multiple factors that may vary depending upon the unique facts and circumstances related to each deliverable. Key factors considered in developing the ESPs include prices charged by us for similar offerings, our historical pricing practices, the nature of the deliverables, and the relative ESP of all of the deliverables as compared to the total selling price of the product. We may also consider, when appropriate, the impact of other products and services on selling price assumptions when developing and reviewing our ESPs.

Revenues from product sales that require no ongoing obligations are recognized as revenues when shipped to the customer, title has passed and collection is reasonably assured.

Allowance for Uncollectible Receivables

Accounts receivable are recorded at their face amount, less an allowance for doubtful accounts. We review the status of our uncollected receivables on a regular basis. In determining the need for an allowance for uncollectible receivables, we consider our customers' financial stability, past payment history and other factors that bear on the ultimate collection of such amounts. The allowance was $252,639 at December 31, 2016 and $134,811 at December 31, 2015.

Cash Equivalents

We consider all highly liquid investments with maturities of three months or less when purchased to be cash equivalents. To date, we have not incurred losses related to cash and cash equivalents. Our cash transactions are processed through reputable commercial banks. We regularly maintain cash balances with financial institutions which exceed Federal Deposit Insurance Corporation ("FDIC") insurance limits. At December 31, 2016 and December 31, 2015, we had approximately $12.6 million and $17.2 million, respectively, in excess of FDIC insured limits.

We have outstanding term loans that require us to comply with certain financial covenants, including maintaining a minimum cash balance of at least $5.0 million.

Fair Value Measurements

Our financial assets and liabilities are measured at fair value, which is defined as the price that would be received to sell an asset, or paid to transfer a liability, in an orderly transaction between market participants. Valuation techniques are based on observable or unobservable inputs. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect our market assumptions. These two types of inputs have created the following fair value hierarchy:

- Level 1—Quoted prices for identical instruments in active markets.
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Level 2—Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which significant value drivers are observable.

- Level 3—Valuations derived from valuation techniques in which significant value drivers are unobservable.

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The carrying values of cash and cash equivalents, accounts receivable and accounts payable approximate fair value because of the short-term nature of these instruments. We consider the terms of the Silicon Valley Bank ("SVB") debt facility including its interest rate of prime plus 2%, to be at market based upon similar instruments that would be available to us.

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation. We record depreciation using the straight-line method over the following estimated useful lives:

Equipment	3 – 7 years
Furniture and fixtures	7 years
Software	3 years
Leasehold improvements	Lesser of lease term or life of improvements

Intangible Assets

Intangible assets consist of patents related to certain intellectual property that we have developed or acquired and identifiable intangible assets recognized in connection with our merger with Advanced Photonix, Inc. ("API"). (See Note 2) We amortize our patents over their estimated useful life of five years, and analyze the reasonableness of the remaining useful life whenever events or circumstances indicate that the carrying amount may not be recoverable to determine whether their carrying value has been impaired.

Research, Development and Engineering

Research, development and engineering expenses not related to contract performance are expensed as incurred. We expensed $5.5 million and $4.3 million of non-contract related research, development and engineering expenses for the years ended December 31, 2016 and 2015, respectively.

Valuation of Long-Lived Assets

We review our long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets is measured by comparing the carrying amount of an asset to future undiscounted net cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the assets exceeds their fair value. Assets to be disposed of by sale are reflected at the lower of their carrying amount or fair value less cost to sell.

Inventory

Inventory consists of finished goods, work in process and raw materials valued at the lower of cost (determined on the first-in, first-out basis) or market.

Net (Loss)/Income per Share

Basic per share data is computed by dividing net (loss)/income attributable to common stockholders by the weighted average number of shares outstanding during the period. Diluted per share data is computed by dividing net (loss)/income attributable to common stockholders by the weighted average shares outstanding during the period increased to include, if dilutive, the number of additional common share equivalents that would have been outstanding if potential common shares had been issued using the treasury stock method. Diluted per share data would also include the potential common share equivalents relating to convertible securities by application of the if-converted method. The effect of 5.5 million and 6.0 million common stock equivalents (which include outstanding warrants, preferred stock and stock options) are not included for the years ended December 31, 2016 and 2015, respectively, as they are anti-dilutive to earnings per share due to us having a net loss from continuing operations.

Stock-Based Compensation

We have two stock-based compensation plans, which are described further in Note 10. We recognize compensation expense based upon the fair value of the underlying equity award as of the date of grant. We have elected to use the Black-Scholes option pricing model to value any awards granted. We recognize stock-based compensation for such awards on a straight-line method over the requisite service period of the awards taking into account the effects of the employees' expected exercise and post-vesting employment termination behavior.

We recognize expense for equity instruments issued to non-employees based upon the fair value of the equity instruments issued.

Advertising

We expense the cost of advertising as incurred. Advertising expenses were $111,181 and $57,000 for the years ended December 31, 2016 and 2015, respectively.

Income Taxes

We recognize deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates in effect for the year in which those temporary differences are expected to be recovered or settled. We evaluate our ability to benefit from all deferred tax assets and establish valuation allowances for amounts we believe are not more-likely-than-not to be realizable. For uncertain tax positions, we use a more-likely-than-not threshold, 51% or greater, based on the technical merits of the income tax position taken. Income tax positions that meet the more-likely-than-not recognition threshold are measured in order to determine the tax benefit recognized in the financial statements. Penalties, if probable and reasonably estimable, and interest expense related to uncertain tax positions are recognized as a component of the tax provision.

We account for income taxes using the liability method. Deferred tax assets or liabilities are determined based on the difference between the financial statement and tax basis of assets and liabilities as measured by the enacted tax rates which will be in effect when the differences reverse. A valuation allowance against net deferred tax assets is provided unless we conclude it is more likely than not that the deferred tax assets will be realized.

Recent Accounting Pronouncements

In January 2017, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2017-04, Intangibles—Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment. This update simplifies the subsequent measurement of goodwill. The guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. A goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. The accounting standard will be effective for reporting periods beginning after December 15, 2019. We do not expect ASU 2017-04 will have a material impact on our financial statements.

In December 2016, the FASB issued ASU No. 2016-20, Technical corrections and improvements to Topic 606, Revenue from Contracts with Customers. This update provides additional clarification and implementation guidance on the previously issued ASU 2014-09, Revenue from Contracts with Customers (Topic 606). ASU No. 2014-09 supersedes nearly all existing revenue recognition guidance under GAAP. The core principle of ASU 2014-09 is to recognize revenues when promised goods or services are transferred to customers in an amount that reflects the consideration to which an entity expects to be entitled for those goods or services. ASU 2014-09 defines a five step process to achieve this core principle and, in doing so, more judgment and estimates may be required within the revenue recognition process than are required under existing GAAP. The standard, as subsequently updated in July 2015, is effective for annual periods beginning after December 15, 2017, and interim periods therein, using either of the following transition methods: (i) a full retrospective approach reflecting the application of the standard in each prior reporting period with the option to elect certain practical expedients, or (ii) a retrospective approach with the cumulative effect of initially adopting ASU 2014-09 recognized at the date of adoption (which includes additional footnote disclosures). We are currently identifying our various revenue streams which may be subject to new recognition criteria under ASU 2014-09 and assessing the potential impacts on our financial statements. We plan to utilize a modified retrospective approach with the cumulative effect of initial adoption recognized at the date of adoption.

In August 2016, the FASB issued ASU No. 2016-15, Statement of Cash Flows (Topic 230), which addresses eight specific cash flow issues with the objective of reducing the existing diversity in practice in how cash receipts and cash payments are presented in the statement of cash flows. ASU 2016-15 is effective for public entities for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years, with early adoption permitted. The amendments should

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be applied retrospectively to all periods presented. We do not expect ASU 2016-15 will have a material impact on our financial statements.

In March 2016, the FASB issued ASU No. 2016-09, Improvements to Employee Share-Based Payment Accounting. The amendments apply to several aspects of accounting for share-based compensation including the recognition of excess tax benefits and deficiencies and their related presentation in the statement of cash flows as well as accounting for forfeitures. ASU No. 2016-09 is effective for fiscal years beginning after December 15, 2016, including interim periods and allows for prospective, retrospective or modified retrospective adoption, depending on the area covered in the update, with early adoption permitted. We adopted ASU 2016-09 on January 1, 2017, and we do not expect the adoption to have a material impact on our financial statements.

In February 2016, the FASB issued ASU No. 2016-02, Leases, which requires a lessee to recognize in its statement of financial position an asset and liability for most leases with a term greater than 12 months. Lessees should recognize a liability to make lease payments and a right-of-use asset representing the lessee's right to use the underlying asset for the lease term. The amendment is effective for fiscal years ending after December 15, 2018, including interim periods within those fiscal years. We are currently evaluating the impact the adoption of this standard will have on our consolidated financial statements.

In September 2015, the FASB issued ASU No. 2015-16, Simplifying the Accounting for Measurement Period Adjustments, which requires that an acquirer recognize adjustments to provisional amounts that are identified during the measurement period in the reporting period in which the adjustment amounts are determined. The amendment is effective for fiscal years beginning after December 15, 2015 and requires acquirer to record, in the same period’s financial statements, the effect on earnings of changes in depreciation, amortization, or other income effects, if any, as a result of the change to the provisional amounts, calculated as if the accounting had been completed at the acquisition date. Additionally, an entity is to present separately on the face of the income statement or disclose in the notes the portion of the amount recorded in current-period earnings by line item that would have been recorded in previous reporting periods if the adjustment to the provisional amounts had been recognized as of the acquisition date. We adopted ASU 2015-16 on January 1, 2016.

2. Merger with Advanced Photonix, Inc.

On May 8, 2015, we completed our merger with API (the "Merger") pursuant to the Agreement and Plan of Merger (the "Merger Agreement") for a total purchase consideration of $15.9 million. In accordance with the terms of the Merger Agreement, API shareholders received 0.31782 shares of our common stock for each share of API common stock they owned. The Merger has been accounted for under the acquisition method of accounting in accordance with ASC 805, with Luna treated as the accounting acquirer. We incurred approximately $3.7 million in Merger-related costs for the year ended December 31, 2015, which are included within selling, general and administrative expenses in the consolidated statement of operations. For the period from the closing of the Merger on May 8, 2015, through December 31, 2015, we recognized revenues of $20.6 million and income of $0.5 million associated with the operations of API.

The total purchase consideration of $15.9 million consisted of the following:

	Purchase Consideration
Fair value of Luna common stock Issued to API shareholders	$ 15,671,775
Fair value of vested API options assumed by Luna	187,879
Total purchase consideration	$ 15,859,654

Under the acquisition method of accounting, the total estimated purchase consideration is allocated to the acquired tangible and intangible assets and assumed liabilities based on their estimated fair values as of the acquisition date. Any excess of the fair value of assets acquired and liabilities assumed over the fair value of the acquisition consideration is recognized as a gain by the acquirer. We have completed the following allocation of the purchase consideration with the assistance of a third-party valuation expert.

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	Allocation of Purchase Consideration
Cash	$ 374,517
Accounts receivable	3,314,994
Inventory	5,246,000
Other current assets	541,726
Property and equipment	3,601,850
Identifiable intangible assets	11,100,000
Goodwill	2,348,331
Other assets	86,953
Accounts payable and accrued expenses	(5,508,789)
Debt	(5,212,355)
Other liabilities	(33,573)
Total purchase consideration	$ 15,859,654

The preliminary identifiable intangible assets acquired and their estimated lives were as follows:

	Estimated Fair Value	Estimated Useful Life
Developed technology	$4,500,000	2 - 10 years
In-process research and development	3,900,000	Indefinite
Customer base	1,300,000	9 - 11 years
Trade names	1,000,000	10 years
Backlog	400,000	1 year
	$ 11,100,000	

Developed technologies acquired primarily consist of API's existing technologies related to HSOR products, optoelectronic systems, modules and components, and Terahertz solutions. The developed technologies of API were valued using both the "relief-from-royalty" method and the "multi-period excess earnings" method, under the income approach. This multi-period excess earnings method reflects the present value of the projected cash flows that are expected to be generated by the developed technologies less charges representing the contribution of other assets to those cash flows. A discount rate of 32.5% was used to discount the cash flows to the present value.

In-process research and development represents the estimated fair values of incomplete API research and development projects that had not reached technological feasibility as of the closing date of the Merger. As of December 31, 2016, all of the technologies associated with $3.9 million of in-process research and development were placed into service. The fair value of in-process research and development was determined using the multi-period excess earnings method. A discount rate of 37.5% was used to discount the cash flows to the present value.

Customer base represents the fair value of projected cash flows that will be derived from the sale of products to API's existing customers as of the closing date of the Merger. Customer relationships were valued utilizing both a multi-period excess earnings method and the "distributor" method, under the income approach. Under this premise, the margin of a distributor within the industry is deemed to be the margin attributable to customer relationships. This isolates the cash flows attributable to the customer relationships that a market participant would be willing to pay for. A discount rate of 32.5% was used to discount the cash flows to the present value.

Trade names and trademarks are considered a type of guarantee of a certain level of quality or performance represented by the API brand. Trade names and trademarks were valued using the "relief-from-royalty" method of income approach. This

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method is based on the assumption that in lieu of ownership, a market participant would be willing to pay a royalty in order to exploit the related benefits of this asset. A discount rate of 24.5% was used to discount the cash flows to the present value.

Backlog represents the fair value of projected cash flows that will be derived from the sale of products under existing contracts and customer orders as of the closing date of the Merger. The fair value of the customer backlog was determined using the multi-period excess earnings method. A discount rate of 21.5% was used to discount the cash flows to the present value.

Goodwill

Goodwill represents the excess of consideration transferred over the net of the acquisition date fair values of the assets acquired and the liabilities assumed in connection with the Merger. During 2015, we recognized various measurement period adjustments to the value of assets acquired and liabilities assumed in the Merger. These adjustments primarily related to the estimated value of trade names acquired and certain deferred compensation liabilities assumed, with an offsetting increase to the recorded value of goodwill. During 2016, we recognized measurement period adjustments to the value of assets acquired and liabilities assumed in the Merger. These adjustments primarily related to the estimated value of accrued liabilities assumed, with an offsetting increase to the recorded value of goodwill. We performed a qualitative analysis of the goodwill balance as of October 1, 2016, and determined no impairment of goodwill is necessary.

Goodwill as of January 1, 2015	$—
Goodwill recorded at acquisition date of API	614,184
Measurement period adjustments	1,659,928
Goodwill as of December 31, 2015	2,274,112
Measurement period adjustments	74,219
Goodwill as of December 31, 2016	$2,348,331

Pro Forma Consolidated Results of Operations

The following unaudited pro forma financial information presents combined results of operations for each of the periods presented as if the Merger had been completed on January 1, 2015. The pro forma information includes adjustments to depreciation expense for property and equipment acquired, to amortization expense for the intangible assets acquired, to interest expense for the new debt facility, and to eliminate the Merger transaction expenses recognized in each period. Transaction related expenses associated with the merger and excluded from the pro forma loss from continuing operations for the year ended December 31, 2015 were $4.7 million. The pro forma data are for informational purposes only and are not necessarily indicative of the consolidated results of operations of the combined business had the Merger actually occurred on January 1, 2015, or the results of future operations of the combined business. For instance, planned or expected operational synergies following the Merger are not reflected in the pro forma information. Consequently, actual results will differ from the unaudited pro forma information presented below.

	Years ended December 31,	
	2016	2015
	(unaudited)	
Revenue	$59,210,996	$52,887,000
Loss from continuing operations	$(2,369,492)	$(4,641,000)

3. Inventory

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Inventory consists of finished goods, work-in-process and raw materials valued at the lower of cost (determined on the first-in, first-out basis) or market.
Components of inventory are as follows:

	December 31,	
	2016	2015
Finished goods	$1,993,543	$1,938,466
Work-in-process	1,098,173	1,227,270
Raw materials	5,278,519	5,697,431
	$8,370,235	$8,863,167

4. Debt

Silicon Valley Bank Facility

We currently have a Loan and Security Agreement with SVB under which we have a term loan with an original borrowing amount of $6.0 million (the “Term Loan”). The Term Loan was to be repaid by us in 48 monthly installments, plus accrued interest payable monthly in arrears and matured on May 1, 2015. On May 8, 2015, in connection with the Merger with API, we entered into the Joinder, Consent and Sixth Loan Modification Agreement (the "2015 Term Loan") under which we borrowed $6.0 million and used the proceeds principally to repay the then outstanding debt of API at the time of the Merger. The 2015 Term Loan is to be repaid by us in 48 monthly installments, plus accrued interest payable monthly in arrears and matures at the earlier of May 1, 2019, or upon an event of a default under the loan agreement. The term loan carries a floating annual interest rate equal to prime rate then in effect, as published in the Wall Street Journal, plus 2%. We may prepay amounts due under the 2015 Term Loan at any time, subject to an early termination fee of up to 2% of the amount of prepayment.

On September 29, 2015, we entered into the Waiver and Seventh Loan Modification Agreement with SVB, under which we borrowed an additional $1.0 million in December 2015 to fund certain anticipated capital expenditures (the "2015 Equipment Term Loan"). The principal amount plus accrued interest of the 2015 Equipment Term Loan is to be repaid by us in 36 monthly installments. The 2015 Equipment Term Loan carries a floating annual interest rate equal to the prime rate then in effect, as published in the Wall Street Journal, plus 2%. We may prepay amounts due under the 2015 Equipment Term Loan at any time, subject to an early termination fee of up to 2% of the amount of prepayment.

In December 2016, we entered into the Eighth Loan Modification Agreement with SVB, under which the financial covenants were modified.

Amounts due under the 2015 Term Loan and the 2015 Equipment Term Loan (collectively, the "Term Loans") are secured by substantially all of our assets, including intellectual property, personal property and bank accounts.

In addition, the Term Loans contain customary events of default, including nonpayment of principal, interest or other amounts, violation of covenants, material adverse change, an event of default under any subordinated debt documents, incorrectness of representations and warranties in any material respect, bankruptcy, judgments in excess of a threshold amount, and violations of other agreements in excess of a threshold amount. The Term Loans require that we meet certain financial covenants, including a minimum cash balance of $5.0 million, and a minimum liquidity coverage ratio, each as defined in the 2015 Equipment Term Loan. If any event of default occurs, SVB may declare due immediately all borrowings under the Term Loans and foreclose on the collateral. Furthermore, an event of default under the Term Loans would result in an increase in the interest rate on any amounts outstanding. As of December 31, 2016, we were in compliance with all covenants under the Term Loans.

The balance under the Term Loans at December 31, 2016 was $4.3 million, of which $1.8 million was classified as short-term. The effective rate of our Term Loans at December 31, 2016 was 5.75%.

The following table presents a summary of debt outstanding as of December 31, 2016 and 2015:

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	December 31, 2016	December 31, 2015
Silicon Valley Bank Term Loans	$4,291,666	$6,125,000
Less: unamortized debt issuance costs	38,301	—
Less: current portion	1,833,333	1,833,333
Total long-term debt obligations	$2,420,032	$4,291,667

Debt issuance costs associated with the issuance of the SVB Term Loans totaled $55 thousand. Amortization of debt issuance costs is computed using the straight line method and is included in interest expense. Amortization of the debt issuance costs totaled $16 thousand for the year ended December 31, 2016.

Maturities on long-term debt are as follows:

Year	Amount
2017	$1,833,333
2018	1,833,333
2019	625,000
Total	$4,291,666

Interest expense for the years ended December 31, 2016 and 2015 consisted of the following:

	Years ended December 31, 2016	Years ended December 31, 2015
Interest expense on Term Loans	$287,491	$202,994
Amortization of debt issuance costs	16,308	9,072
Other interest expense	17,143	8,337
Total interest expense	$320,942	$220,403

5. Accounts Receivable—Trade

Accounts receivable consist of the following:

	December 31, 2016	December 31, 2015
Billed	$12,299,453	$9,661,387
Unbilled	2,231,432	1,412,381
Other	19,479	95,600
	14,550,364	11,169,368
Less: allowance for doubtful accounts	(252,639)	(134,811)
	$14,297,725	$11,034,557

Unbilled receivables result from contract retainages and revenues that have been earned in advance of billing and can be invoiced at contractually defined intervals, milestones, or at completion of the contract. Unbilled amounts are expected to be billed in future periods and are classified as current assets in accordance with industry practice.

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6. Property and Equipment

Property and equipment, net, consists of the following:

	December 31,	
	2016	2015
Building	$69,556	$69,556
Equipment	12,589,998	11,055,886
Furniture and fixtures	656,769	666,654
Software	1,225,992	1,092,484
Leasehold improvements	5,267,349	5,257,703
	19,809,664	18,142,283
Less—accumulated depreciation	(13,028,826)	(11,528,045)
	$6,780,838	$6,614,238

Depreciation for the years ended December 31, 2016 and 2015 was approximately $1.5 million and $1.2 million, respectively.

7. Intangible Assets

The following is a summary of intangible assets, net:

	December 31,	
	2016	2015
Patent costs	$3,169,920	$2,723,971
Developed technology	8,400,000	6,100,000
In-process research and development	—	2,300,000
Customer base	1,300,000	1,300,000
Trade names	1,000,000	1,000,000
Backlog	400,000	400,000
	14,269,920	13,823,971
Accumulated amortization	(5,588,657)	(3,419,659)
	$8,681,263	$10,404,312

During 2016, the development was completed for certain products that were in process at the time of the Merger, and those products began being marketed. Accordingly $2.3 million of in-process research and development recorded in the initial purchase price allocation has been reclassified to developed technology as of December 31, 2016. Amortization for the years ended December 31, 2016 and 2015 was approximately $2.2 million and $1.2 million, respectively. Estimated aggregate amortization, based on the net value of intangible assets at December 31, 2016, for each of the next five years and beyond is as follows:

Year Ending December 31,	
2017	1,754,967
2018	1,405,228
2019	894,325
2020	814,956
2021	807,043
2022 and beyond	3,004,744
	$8,681,263

8. Accrued Liabilities

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Accrued liabilities consist of the following:

	December 31,	
	2016	2015
Accrued compensation	$5,442,723	$4,719,533
Accrued sub-contracts	483,477	351,847
Accrued professional fees	67,719	133,847
Accrued income tax	—	160,438
Deferred rent	155,138	137,889
Royalties	345,895	351,003
Warranty reserve	185,125	173,687
Claims reserve	1,577,123	1,752,904
Accrued liabilities - other	409,900	523,538
Total accrued liabilities	$8,667,100	$8,304,686

9. Income Taxes

Income tax expense/(benefit) from continuing operations consisted of the following for the periods indicated:

	Years ended December 31,	
	2016	2015
Current:		
Federal	$—	$(510,772)
State	75,366	40,167
Deferred Federal	—	—
Deferred State	—	—
Income tax expense/(benefit)	$75,366	$(470,605)

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Deferred tax assets and liabilities consist of the following components:

	December 31, 2016		December 31, 2015	
	Current	Long-Term	Current	Long-Term
Bad debt and inventory reserve	$382,075	$ —	$157,847	$ —
Inventory adjustment	—	940,885	—	939,793
UNICAP	—	46,593	—	40,752
Deferred revenue	—	154,608	—	131,489
Deferred rent	—	550,419	—	599,094
Depreciation and amortization	—	(3,490,869)	—	(4,231,265)
Charitable contributions	—	5,741	—	4,954
Net operating loss carryforwards- Luna	—	4,779,976	—	5,106,166
Net operating loss carryforwards- API	—	9,783,512	—	9,783,512
Net operating loss carryforwards - state	—	281,799	—	323,557
Net operating loss carryforwards- Canada	—	10,503	—	39,867
Research and development credits	—	4,250,803	—	4,250,803
California manufacturing credit	—	15,554	—	15,554
Accrued liabilities	1,067,019		1,211,752	—
Deferred compensation	—	267,897	—	192,547
Stock-based compensation	—	1,867,947	—	1,804,338
AMT credit	—	395,083	—	388,342
Total	1,449,094	19,860,451	1,369,599	19,389,503
Valuation allowance	(1,449,094)	(19,860,451)	(1,369,599)	(19,389,503)
Net deferred tax asset	$—	$ —	$—	$ —

The expense/(benefit) from income taxes from continuing operations differs from the amount computed by applying the federal statutory income tax rate to our loss from continuing operations before income taxes as follows for the periods indicated:

	Years ended December 31,	
	2016	2015
Income tax expense at federal statutory rate	34.00 %	34.00 %
State taxes, net of federal tax effects	(1.15)%	3.34 %
Change in valuation allowance	(23.99)%	(10.50)%
Incentive stock options	(11.08)%	(4.84)%
Provision to return adjustments	(1.01)%	0.18 %
Meals and entertainment	(0.78)%	(0.25)%
Capitalized merger costs	— %	(14.95)%
Windfall deduction	— %	0.26 %
Other permanent differences	0.44 %	0.01 %
Income tax (expense)/benefit	(3.57)%	7.25 %

The realization of our deferred income tax assets is dependent upon sufficient taxable income in future periods. In assessing whether deferred tax assets may be realized, we consider whether it is more likely than not that some portion, or all, of the deferred tax asset will be realized. We consider scheduled reversals of deferred tax liabilities, projected future taxable

income and tax planning strategies that we can implement in making our assessment. We have U.S. federal income tax net operating loss carryforwards at December 31, 2016 of approximately $12.6 million for Luna and net operating loss carryforwards of approximately $28.8 million for API expiring at varying dates through 2025. We have research and development tax credit carryforwards at December 31, 2016 of approximately $4.3 million, which expire at varying dates through 2024.

In 2015, we performed a formal section 382 study and determined that we do not have a limitation on our net operating loss available to offset future income for the Luna net operating losses. As a result of the acquisition of API, the API net operating loss carryover and research and development credits will be subject to the Section 382 limitation. A formal Section 382 study has not been prepared, however, based on our estimated calculations it is likely that that a portion of the net operating losses and research and development credits will expire unutilized. As there is a valuation allowance against the API deferred tax assets, there will not be a statement of operations impact to any expiration of the net operating losses or research and development credits.

The U.S. federal statute of limitations remains open for the year 2007 and onward. We currently have no federal income tax returns under examination. U.S. state jurisdictions have statutes of limitation generally ranging from three to seven years. We currently have no state income or franchise tax returns under examination. We currently do not file tax returns in any foreign tax jurisdiction other than Canada.

We currently have no positions for which we expect that the amount of unrecognized tax benefit will increase or decrease significantly within twelve months of the reporting date or for which we believe there is significant risk of disallowance upon audit. We have no tax interest or penalties reported in either our statement of operations or statement of financial position for any year reported herein. Management believes it is not more likely than not that the deferred tax assets at December 31, 2016 or December 31, 2015 will not be realized, and as a result a valuation allowance was established against all such deferred tax assets.

Windfall equity-based compensation deductions are tracked, but will not be recorded to the balance sheet until management determines it is more likely than not that such amounts will be utilized. As of December 31, 2016, we had no windfall stock compensation deductions. If and when realized, the tax benefit associated with these deductions will be credited to additional paid-in capital. These excess benefit deductions are included in the total federal net operating losses disclosed above.

10. Stockholders’ Equity

Series A Convertible Preferred Stock

In January 2010, we entered into a transaction with Carilion, in which Carilion agreed to exchange all of its Senior Convertible Promissory Notes with an original principal amount of $5.0 million plus all accrued but unpaid interest, totaling $1.2 million, for 1,321,514 shares of our newly designated Series A Convertible Preferred Stock. The Series A Convertible Preferred Stock is non-voting, carries a dividend of 6% payable in shares of common stock and maintains a liquidation preference up to $6.2 million. As of December 31, 2016, 552,401 shares of common stock were issuable to Carilion as dividends and have been recorded in the statement of stockholders’ equity. These dividends are issuable on demand. Each share of Series A Convertible Preferred Stock may be converted into one share of our common stock at the option of the holder. We recorded the fair value of the Series A Convertible Preferred Stock, determined based upon the conversion value immediately prior to the exchange, the fair value of the new warrant issued to Carilion, determined using the Black-Scholes valuation model, and the incremental fair value of the prior warrant due to the re-pricing and extension of maturity to stockholders’ equity.

Warrants

Carilion Clinic holds unexercised warrants for 366,000 shares of our common stock. The warrants have an exercise price of $2.50 and expire on December 31, 2020.

Equity Incentive Plans

In January 2006, we adopted our 2006 Equity Incentive Plan (the "2006 Plan"). Under the 2006 Plan, our Board of Directors was authorized to grant both incentive and non-statutory stock options to purchase common stock and restricted stock awards to our employees, directors, and consultants. The 2006 Plan expired in January 2016.

In April 2016, we adopted our 2016 Equity Incentive Plan (the "2016 Plan") as a successor to the 2006 Plan. Under the 2016 Plan, our Board of Directors is authorized to grant both incentive and non-statutory stock options to purchase common stock and restricted stock awards to our employees, directors, and consultants. The 2016 Plan provides for the issuance of

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3,500,000 shares plus any amounts forfeited from grants under the 2006 Plan after the expiration date of the 2006 Plan. Options generally have a life of 10 years and exercise price equal to or greater than the fair market value of the Common Stock as determined by the Board of Directors.
Vesting for employees typically occurs over a four-year period.
The following table sets forth the activity of the options to purchase common stock under the 2006 Plan and the 2016 Plan. The prices represent the closing price of our Common Stock on the NASDAQ Capital Market on the respective dates.

	Options Outstanding				Options Exercisable		
	Number of Shares	Price per Share Range	Weighted Average Exercise Price	Aggregate Intrinsic Value (1)	Number of Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value (1)
Balance at January 1, 2015	4,289,631	$0.35 - 6.55	$ 1.93	$ 512,901	3,111,199	$ 2.11	$ 453,032
Forfeited	(789,412)	$0.35 - 9.03	$ 2.86				
Exercised	(230,672)	$0.35 - 1.77	$ 0.37				
Granted	65,500	$0.94 - 1.45	$ 1.21				
Issued in exchange for API options	465,681	$1.38 - 9.03	$ 4.83				
Balance at December 31, 2015	3,800,728	$0.61 - 8.43	$ 2.17	$ 111,314	3,045,150	$ 2.39	$ 103,603
Forfeited	(963,614)	$1.18 - 8.43	$ 2.99				
Exercised	—	—	$ —				
Granted	20,000	$ 1.15	$ 1.15				
Balance at December 31, 2016	2,857,114	$0.61 - 6.83	$ 1.89	$ 107,063	2,367,630	$ 1.93	$ 101,071

(1) The intrinsic value of an option represents the amount by which the market value of the stock exceeds the exercise price of the option of in-the-money options only.

The fair value of each option granted is estimated as of the grant date using the Black-Scholes option pricing model with the following assumptions:

	Years ended December 31,	
	2016	2015
Risk-free interest rate range	1.5%	1.88% – 1.95%
Expected life of option-years	7.5	7.5
Expected stock price volatility	73%	75% - 103%
Executive turnover rates	—%	—%
Non-executive turnover rates	14.0%	40.0%
Expected dividend yield	—%	—%

The risk-free interest rate is based on U.S. Treasury interest rates, the terms of which are consistent with the expected life of the stock options. Expected volatility is based upon the average historical volatility of our common stock over the period commensurate with the expected term of the related instrument. The expected life and estimated post-employment termination behavior is based upon historical experience of homogeneous groups, executives and non-executes, within our company. We do not currently pay dividends on our common stock nor do we expect to in the foreseeable future.

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	Options Outstanding				Options Exercisable	
	Range of Exercise Prices	Options Outstanding	Weighted Average Remaining Life in Years	Weighted Average Exercise Price	Options Exercisable	Weighted Average Exercise Price of Options Exercisable
Year ended December 31, 2015	$0.61 - $8.43	3,800,728	5.55	$ 2.17	3,045,150	$ 2.39
Year ended December 31, 2016	$0.61- $6.83	2,857,114	5.09	$ 1.89	2,637,630	$ 1.93

	Total Intrinsic Value of Options Exercised	Total Fair Value of Options Vested
Year ended December 31, 2015	198,013	741,619
Year ended December 31, 2016	—	370,654

For the years ended December 31, 2016 and 2015, the weighted average grant date fair value of options granted was $1.15 and $0.97, respectively, per share. We estimate the fair value of options at the grant date using the Black-Scholes model.

Restricted Stock Issuances

In 2016 and 2015, we issued 319,000 and 334,000, respectively, shares of restricted stock to certain employees. These shares vest in four equal annual installments on the anniversary dates of their grant. In 2016 and 2015, 245,583 and 168,750 shares vested, respectively.

The following table summarizes our restricted stock awards:

	Number of Unvested Shares	Weighted Average Grant Date Fair Value	Aggregate Value of Unvested Shares
Balance at January 1, 2015	530,250	$1.34	$710,535
Granted	334,000	$1.12	$374,080
Vested	(168,750)	$1.33	$(224,438)
Forfeitures	(25,875)	$1.35	$(35,018)
Balance at December 31, 2015	669,625	$1.23	$825,159
Granted	319,000	$1.15	$366,850
Vested	(245,583)	$1.23	$(303,245)
Forfeitures	—	$ —	$—
Balance at December 31, 2016	743,042	$1.20	$888,764

We recognized $0.9 million and $1.1 million in stock-based compensation expense, which is recorded in selling, general and administrative expenses on the consolidated statement of operations for the years ended December 31, 2016 and 2015, respectively, and we will recognize $0.9 million over the remaining requisite service period. For all stock options granted through December 31, 2016, the weighted average remaining service period is 0.8 years.

Restricted Stock Units

We issue restricted stock units, ("RSUs"), to our non-employee directors for service provided. Under our non-employee director compensation plan RSUs issued for annual retainer fees vest on the earlier of the one year anniversary of the

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grant or the following shareholder meeting. Amounts issued for quarterly fees vest immediately upon their issuance. A summary of our RSU activity for 2015 and 2016 is as follows.

	Number of RSUs			Intrinsic Value	
	Issued	Unvested	Weighted Average Grant Date Fair Value per Share	Outstanding	Unvested
Balance at January 1, 2015	329,524	—	$1.53		
Granted	152,697	72,813	$1.01		
Vested	—	—	$0.00		
Forfeitures	—	—	$0.00		
Converted	(118,297)	—	$1.46		
Balance at December 31, 2015	363,924	72,813	$1.33		
Granted	188,857	86,956	$1.18		
Vested	—	(72,813)	$1.01		
Forfeitures	—	—	$0.00		
Converted	(24,271)	—	$1.01		
Balance at December 31, 2016	528,510	86,956	$1.29	$776,910	$127,825

Stock Repurchase Program

In May 2016, our board of directors authorized us to repurchase up to $2,000,000 of our common stock through May 31, 2017. Our stock repurchase program does not obligate us to acquire any specific number of shares. Under the program, shares may be repurchased in privately negotiated or open market transactions, including under plans complying with Rule 10b5-1 under the Securities Exchange Act of 1934, as amended. As of December 31, 2016, we had repurchased a total of 205,500 shares for an aggregate purchase price of $0.2 million. The following chart details our share repurchases during each month of the quarter ended December 31, 2016:

	Total Number of Shares Repurchased	Average Price Paid per Share
October 2016	—	$ —
November 2016	6,400	$ 1.25
December 2016	—	$ —

We currently maintain these repurchased shares as treasury stock.

11. Commitments and Contingencies

Obligation under Operating Leases

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We lease facilities in Virginia, Michigan, California, and Canada under operating leases that as of December 31, 2016 were scheduled to expire between April 2017 and December 2024. Certain of the leases are subject to fixed escalations and provide for possible termination prior to their expiration dates. We recognize rent expense on such leases on a straight-line basis over the lease term. The difference between the straight line method and cash paid is reflected in changes to the deferred rent balance in our consolidated balance sheets. Deferred rent primarily resulted from recognition of the value of certain leasehold improvements associated with our Blacksburg, Virginia facility at the inception of the lease. Rent expense under these leases recorded in selling, general and administrative expense on our statements of operations totaled approximately $1.5 million and $1.1 million, respectively, for the years ended December 31, 2016 and 2015.

Minimum future payments, as of December 31, 2016, under the aforementioned operating leases for each of the next five years and thereafter are:

2017	$1,601,292
2018	1,602,932
2019	1,451,081
2020	1,341,255
2021	806,865
Thereafter	1,441,177
	$8,244,602

Purchase Commitment

In the third quarter of 2016 we executed two non-cancelable purchase orders totaling $1.5 million for multiple shipments of tunable lasers to be delivered over an 18-month period beginning in the third quarter of 2016. At December 31, 2016, approximately $1.0 million of this commitment remained under these purchase agreements. In 2016, we also executed two purchase orders for component parts and capital equipment related to our HSOR products in the aggregate amount of $0.7 million for delivery through the second quarter of 2017. As of December 31, 2016, approximately $0.5 million remained outstanding under these purchase orders.

Royalty Agreement

We have licensed certain third-party technologies from vendors for which we owe minimum royalties aggregating $0.9 million payable over the remaining patent terms of the underlying technology.

12. Employee Profit Sharing Plan

We maintain a salary reduction/profit-sharing plan under provisions of Section 401(k) of the Internal Revenue Code. The plan is offered to all permanent employees of Luna Innovations Incorporated and its wholly-owned subsidiaries. We contribute 25% of the salary deferral elected by each employee up to a maximum deferral of 10% of annual salary.

We contributed approximately $305,000 and $180,000 to the plan for the years ended December 31, 2016 and 2015, respectively.

13. Litigation and Other Contingencies

From time to time, we may become involved in litigation in relation to claims arising out of our operations in the normal course of business. While management currently believes it is not reasonably possible the amount of ultimate liability, if any, with respect to these actions will have a material adverse effect on our financial position, results of operations or liquidity, the ultimate outcome of any litigation is uncertain.

In September 2014, we received a preliminary audit report from the Defense Contract Audit Agency ("DCAA"), with respect to our 2007 incurred cost submission and questioning $0.8 million of claimed costs that the DCAA believes are expressly unallowable under the Federal Acquisition Regulations and, therefore, subject to potential penalty. In June 2015, we received from the Defense Contract Management Agency (the "DCMA") a final determination and demand for payment of penalties, interest, and over billing in the aggregate amount of $1.1 million. In July 2015, we filed an appeal with the Armed Services Board of Contract Appeals ("ASBCA"). In January 2017, a hearing was held before ASBCA. No ruling has yet been issued with respect to our appeal. The appeals process remains ongoing, and we are unable to estimate the amount of loss, if any, that may be realized.

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We have made, and will continue to make, efforts to comply with current and future environmental laws. We anticipate that we could incur additional capital and operating costs in the future to comply with existing environmental laws and new requirements arising from new or amended statutes and regulations. In addition, because the applicable regulatory agencies have not yet promulgated final standards for some existing environmental programs, we cannot at this time reasonably estimate the cost for compliance with these additional requirements. The amount of any such compliance costs could be material. We cannot predict the impact that future regulations will impose upon our business.

14. Relationship with Major Customers

During the years ended December 31, 2016 and 2015, approximately 28% and 34%, respectively, of our consolidated revenues were attributable to contracts with the U.S. government. In addition, we had one commercial customer whose revenues accounted for 11% of our consolidated revenues for 2016.

At December 31, 2016 and 2015, receivables with respect to contracts with the U.S. government represented 10% and 17% of total billed trade receivables, respectively. At December 31, 2016, receivables from the above noted commercial customer represented 19% of our billed trade receivables.

15. Financial Information About Segments

Our operations are divided into two operating segments: Technology Development and Products and Licensing. Our engineers and scientists collaborate with our network of government, academic and industry experts to identify technologies and ideas with promising market potential. We then compete to win fee-for-service contracts from government agencies and industrial customers who seek innovative solutions to practical problems that require new technology. The Technology Development segment derives its revenue primarily from services. The Technology Development segment provides applied research to customers in our areas of focus.

The Products and Licensing segment develops and sells products or licenses technologies based on commercially viable concepts developed by the Technology Development segment. The Products and Licensing segment derives its revenue from product sales, funded product development and technology licenses.

Our President and Chief Executive Officer and his direct reports collectively represent our chief operating decision makers, and they evaluate segment performance based primarily on revenue and operating income or loss. Information about the results of operations for each segment is set forth in the table below. There were no significant inter-segment sales during the years ended December 31, 2016 and 2015.

During the years ended December 31, 2016 and 2015, 29% and 30%, respectively, of our total sales took place outside the United States. Revenues from customers in China represented approximately 16% and 9% of total revenues for the years ended December 31, 2016 and 2015, respectively. No other single country, outside of the United States, represented more than 10% of total revenues during the years ended December 31, 2016 or 2015.

	Years ended December 31,	
	2016	2015
Technology Development revenue	$16,825,157	$13,599,048
Products and Licensing revenue	42,385,839	30,421,310
Total revenue	59,210,996	44,020,358
Technology Development operating loss	(193,244)	(3,708,710)
Products and Licensing operating loss	(1,744,091)	(2,540,885)
Total operating loss	$(1,937,335)	$(6,249,595)
Depreciation, Technology Development	$352,435	$399,857
Depreciation, Products and Licensing	$1,148,195	$920,932
Amortization, Technology Development	$195,619	$88,423
Amortization, Products and Licensing	$2,017,629	$1,152,072

Additional segment information is as follows:

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	December 31, 2016	2015
Total segment assets:		
Technology Development	$16,923,090	$21,203,211
Products and Licensing	38,073,883	36,928,602
Total	$54,996,973	$58,131,813
Property plant and equipment and intangible assets, Technology Development	$2,602,803	$2,917,448
Property plant and equipment and intangible assets, Products and Licensing	$15,207,630	$16,375,215

16. Quarterly Results (unaudited)

The following table sets forth our unaudited historical revenues, operating loss and net (loss)/income by quarter during 2016 and 2015.

(Dollars in thousands, except per share amounts)	Quarter Ended March 31, 2016	June 30, 2016	September 30, 2016	December 31, 2016	March 31, 2015	June 30, 2015	September 30, 2015	December 31, 2015
Revenues:								
Technology development	$3,723	$4,137	$4,312	$4,653	$2,876	$3,728	$3,277	$3,718
Products and licensing	10,264	10,510	10,307	11,305	2,463	6,298	9,928	11,732
Total revenues	13,987	14,647	14,619	15,958	5,339	10,026	13,205	15,450
Gross margin	4,844	5,171	5,609	6,111	2,289	4,197	4,979	5,036
Operating (loss)/income	(1,352)	(652)	(362)	427	(2,615)	(2,123)	(723)	(815)
Net (loss)/income from continuing operations	(1,460)	(771)	(445)	306	(2,627)	(2,168)	(802)	(414)
Income from discontinued operations net of income taxes	—	—	—	—	—	—	—	8,329
Net (loss)/income	(1,460)	(771)	(445)	306	(2,627)	(2,168)	(802)	7,914
Net (loss)/income attributable to common stockholders	$(1,481)	$(796)	$(474)	$276	$(2,654)	$(2,189)	$(820)	$7,893
Net (loss)/income per share from continuing operations:								
Basic and diluted	$(0.05)	$(0.03)	$(0.02)	$0.01	$(0.17)	$(0.10)	$(0.03)	$(0.02)
Net income per share from discontinued operations:								
Basic and diluted	$—	$—	$—	$—	$—	$—	$—	$0.30
Net (loss)/income attributable to common stockholders:								
Basic and diluted	$(0.05)	$(0.03)	$(0.02)	$0.01	$(0.18)	$(0.10)	$(0.03)	$0.29
Weighted average shares:								
Basic and diluted	27,477,181	27,557,960	27,605,028	27,538,606	15,117,679	21,997,768	27,393,392	27,464,993

17. Discontinued Operations

On January 21, 2014, we sold our assets associated with the development of fiber optic shape sensing and localization for the medical field to affiliates of Intuitive Surgical, Inc. ("Intuitive"), for total cash consideration of up to $30 million, including $6 million received at closing, and $6 million to be received within 90 days of closing, and up to $18 million that may be received in the future based on the achievement of certain technical milestones and royalties on system sales, if any. In the transaction, we sold equipment and intellectual property associated with our shape sensing technology. Ten employees were

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transferred to Intuitive. Included in the transaction were current assets of totaling approximately $0.2 million and long term assets with a net book value of approximately $0.2 million.

In December 2015, although the required technical milestones specified in our agreement with Intuitive had not yet been achieved by Intuitive, we and Intuitive agreed to settle all remaining future payment obligations related to the technical milestones and royalties on system sales for a lump-sum payment of $9 million, which we received in December 2015.

We have reported the payment received from Intuitive in 2015 as discontinued operations in our consolidated financial statements. We allocated a portion of the consolidated tax expense to discontinued operations based on the ratio of the discontinued groups' income or loss before allocations.

The key components of income from discontinued operations were as follows:

	Year ended December 31, 2015
Net revenues	$—
Cost of revenues	—
Operating expenses	—
Loss before income taxes	—
Allocated tax benefit	—
Operating loss from discontinued operations	—
Gain on sale, net of $0.7 million of related income taxes	8,326,386
Income from discontinued operations, net of income taxes	$8,326,386

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 maintain "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"), which are controls and other procedures that are designed to provide reasonable assurance that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. In addition, the design of any system of controls also is 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. Over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a control system, misstatements due to error or fraud may occur and not be detected.

Under the supervision and with the participation of our management, including our President and Chief Executive Officer and our Chief Financial Officer, we evaluated the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the period covered by this report. Based on this evaluation, our President and Chief Executive Officer and our Chief Financial Officer have concluded that, as of December 31, 2016, our disclosure controls and procedures were effective at the reasonable assurance level.

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Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting identified in connection with the evaluation required by paragraph (d) of Securities Exchange Act Rule 13a-15(e) and Rule 15d-15(e) that occurred in the quarter ended December 31, 2016 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Our internal control over financial reporting is designed, under the supervision of our principal executive and principal financial officers, 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 accounting principles generally accepted in the United States of America ("GAAP"). Our internal control over financial reporting includes those policies and procedures that: (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on our financial statements.

There are inherent limitations in the effectiveness of any internal control over financial reporting, including the possibility of human error and the circumvention or overriding of controls. Accordingly, even effective internal control over financial reporting can provide only reasonable assurance with respect to financial statement preparation and may not prevent or detect all misstatements. Further, because of changes in conditions, effectiveness of internal control over financial reporting may vary over time. Our internal control system was designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP.

Under the supervision and with the participation of our management, including our President and Chief Executive Officer, and our Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2016. This evaluation was based on the criteria established in the 2013 Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our evaluation under the framework established in the 2013 Internal Control—Integrated Framework, our President and Chief Executive officer, and our Chief Financial Officer concluded that our internal control over financial reporting was effective as of December 31, 2016 to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP.

ITEM 9B. OTHER INFORMATION.

None

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PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by Item 10 of Form 10-K will be included in the proxy statement related to our 2017 Annual Meeting of Stockholders, (the "2017 Proxy Statement"), anticipated to be filed with the SEC within 120 days after December 31, 2016, and is incorporated into this report by reference.

ITEM 11. EXECUTIVE COMPENSATION.

The information required by Item 11 of Form 10-K is incorporated into this report by reference to the information to be provided in our 2017 Proxy Statement.

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

Other than the information below relating to securities authorized for issuance under our equity compensation plans, the information required by Item 12 of Form 10-K is incorporated into this report by reference to the information to be provided in our 2017 Proxy Statement.

EQUITY COMPENSATION PLANS

The following table summarizes our equity compensation plans as of December 31, 2016:

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders	3,223,114	$ 1.96	3,749,619
Total	3,223,114	$ 1.96	3,749,619

Our 2016 Equity Incentive Plan allows for forfeited awards to be added back to our pool of available awards, including awards forfeited from the 2006 Plan after the expiration date of our 2006 Plan.

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

The information required by Item 13 of Form 10-K is incorporated into this report by reference to the information to be provided in our 2017 Proxy Statement.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by Item 14 of Form 10-K is incorporated into this report by reference to the information to be provided in our 2017 Proxy Statement.

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PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULE

(a) The following documents are filed as part of this Annual Report on Form 10-K:

(1) Financial Statements. See Index to Consolidated Financial Statements at Item 8 of this Report on Form 10-K.

(2) Schedules.

Schedule II

Luna Innovations Incorporated

Valuation and Qualifying Accounts

Column A	Column B Balance at beginning of Period	Column C Additions	Column D Deductions	Column E Balance at end of period
Year Ended December 31, 2015				
Reserves deducted from assets to which they apply:				
Deferred tax valuation allowance	$12,690,449	$8,068,653	$—	$20,759,102
Allowances for doubtful accounts	134,811	10,375	(10,375)	134,811
	$12,825,260	$8,079,028	$(10,375)	$20,893,913
Year Ended December 31, 2016				
Reserves deducted from assets to which they apply:				
Deferred tax valuation allowance	$20,759,102	$550,444	$—	$21,309,546
Allowances for doubtful accounts	134,811	305,593	(187,765)	252,639
	$20,893,913	$856,037	$(187,765)	$21,562,185

All other schedules are omitted as the required information is inapplicable or the information is presented in the Consolidated Financial Statements and notes thereto in Item 8 of Part II of this Annual Report on Form 10-K.

(3) Exhibits. The exhibits filed as part of this report are listed under “Exhibits” at subsection (b) of this Item 15.

(b) Exhibits

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EXHIBIT INDEX

Exhibit No.	Exhibit Document
2.1(1)	Findings of Fact, Conclusions of Law, and Order under 11 U.S.C. §§ 1129(a) and (b) and Fed. R. Bankr. P. 3020 Confirming First Amended Joint Plan of Reorganization of Luna Innovations Incorporated and Luna Innovations, Inc., debtors and debtors-in-possession, dated January 12, 2010 (Exhibit 2.1)
2.2(1)	First Amended Joint Plan of Reorganization of Luna Innovations Incorporated and Luna Technologies, Inc., dated December 18, 2009 (Exhibit 2.2)
2.3(1)	First Amended Disclosure Statement in support of First Amended Joint Plan of Reorganization of Luna Innovations Incorporated, et al., under Chapter 11 of the Bankruptcy Code, dated December 18, 2009 (Exhibit 2.3)
2.4(2)*	Asset Purchase Agreement, dated March 1, 2013, by and between Luna Innovations Incorporated and MacAulay-Brown, Inc. (Exhibit 2.4)
2.5(3)*	Asset Purchase Agreement by and between Luna innovations Incorporated and Luna Technologies, Inc. and Intuitive Surgical Operations, Inc., and Intuitive Surgical International, Ltd., dated as of January 17, 2014 (Exhibit) 2.1)
2.6(4)	Agreement and Plan of Merger and Reorganization dated as of January 30, 2015, by and among Luna Innovations Incorporated, API Merger Sub, Inc. and Advanced Photonix, Inc. (Exhibit 2.1)
3.1(5)	Amended and Restated Certificate of Incorporation of the Registrant (Exhibit 3.2)
3.2(6)	Certificate of Designations of the Series A Convertible Preferred Stock (Exhibit 3.1)
3.3(7)	Amended and Restated Bylaws of the Registrant (Exhibit 3.4)
3.4(8)	Amendment to Amended and Restated Bylaws (Exhibit 3.1)
3.4(4)	Amendment to Amended and Restated Bylaws (Exhibit 3.1)
4.1(9)	Specimen Common Stock certificate of the Registrant (Exhibit 4.1)
4.2(9)	2006 Equity Incentive Plan (Exhibit 10.9)
4.3(7)	Form of Stock Option Agreement under 2006 Equity Incentive Plan (Exhibit 4.7)
4.4(10)	Form of Performance Unit Award Agreement (Exhibit 4.5)
4.5(39)	2016 Equity Incentive Plan (Exhibit 4.7)
4.6(39)	Form of Stock Option Grant Notice and Stock Option Agreement under 2016 Equity Incentive Plan (Exhibit 4.8)
4.7(39)	Form of Restricted Stock Unit Grant Notice and Restricted Stock Unit Award Agreement under 2016 Equity Incentive Plan (Exhibit 4.9)
4.8(40)	Form of Restricted Stock Award Grant Notice and Restricted Stock Award Agreement under 2016 Equity Incentive Plan (Exhibit 10.1)
10.1(11)	Form of Indemnification Agreement for directors and executive officers (Exhibit 10.1)
10.2(12)	Commercial Lease, dated March 15, 2007, between Canvasback Real Estate & Investments LLC and Luna Innovations Incorporated (705 Dale Avenue, Charlottesville, Virginia) (Exhibit 10.1)
10.3(9)**	License Agreement No. DN-982, dated June 10, 2002, by and between the National Aeronautics and Space Administration (NASA) and Luna Innovations Incorporated; Modification No. 1 to License Agreement No. DN-982, dated January 23, 2006, by and between NASA and Luna Innovations Incorporated (Exhibit 10.22)
10.4(9)**	License Agreement No. DN-951, dated December 20, 2000, by and between NASA and Luna Technologies, Inc. (Exhibit 10.23)
10.5(9)**	Amended and Restated License Agreement, dated March 19, 2004, by and between Virginia Tech Intellectual Properties, Inc. and Luna Innovations Incorporated (Exhibit 10.26)
10.6(13)	Asset Transfer and License Agreement by and between Luna Innovations Incorporated and Coherent, Inc. (Exhibit 10.21)
10.7(14)**	Development and Supply Agreement, dated December 12, 2006, by and between Luna Innovations Incorporated and Intuitive Surgical, Inc. dated June 11, 2007 (Exhibit 10.1)
10.8(15)	

	Amendment to Commercial Lease, by and between Luna Innovations Incorporated and Canvasback Real Estate & Investments LLC dated March 18, 2008 (Exhibit 10.5)
10.9(16)	Confidential Settlement Agreement, dated as of December 11, 2009, by and between Luna Innovations, Inc. and Luna Technologies, Inc. and Hansen Medical, Inc. (Exhibit 10.26)
10.10(6)	Securities Purchase and Exchange Agreement, dated January 12, 2010, by and between Luna Innovations Incorporated and Carilion Clinic (Exhibit 10.1)

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10.11(6)	Warrant No. 1 to Purchase Common Stock, dated January 13, 2010, issued to Carilion Clinic (Exhibit 10.2)
10.12(6)	Warrant No. 2 to Purchase Common Stock, dated January 13, 2010, issued to Carilion Clinic (Exhibit 10.3)
10.13(6)	Amended and Restated Investor Rights Agreement, dated January 13, 2010, by and among Luna Innovations Incorporated, Carilion Clinic, and certain stockholders of Luna Innovations Incorporated (Exhibit 10.4)
10.14(17)	Non-Employee Directors' Deferred Compensation Plan (Exhibit 10.37)
10.15(18)**	License Agreement, effective January 12, 2010, by and among Luna Innovations Incorporated, Luna Technologies, Inc. and Hansen Medical, Inc. (Exhibit 10.6)
10.16(18)**	Development and Supply Agreement, effective January 12, 2010, by and among Luna Innovations Incorporated, Luna Technologies, Inc. and Hansen Medical, Inc., as amended on February 17, 2010 and April 2, 2010 (Exhibit 10.7)
10.17(18)**	License Agreement, effective January 12, 2010, by and among Luna Innovations Incorporated, Luna Technologies, Inc. and Intuitive Surgical, Inc. (Exhibit 10.8)
10.18(18)**	Amendments to Development and Supply Agreement, effective January 12, 2010 and April 27, 2010, by and between Luna Innovations Incorporated and Intuitive Surgical, Inc. (Exhibit 10.9)
10.19(18)	Confidential Mutual Release, effective as of January 12, 2010, by and among Luna Innovations Incorporated, Luna Technologies, Inc. and Hansen Medical, Inc. (Exhibit 10.13)
10.20(18)	Industrial Lease Agreement, dated as of March 21, 2006, by and between Luna Innovations Incorporated and the Economic Development Authority of Montgomery County, Virginia, as amended by a First Amendment effective as of May 11, 2006, a Second Amendment effective as of July 15, 2009 and a Third Amendment effective as of March 23, 2010 (Exhibit 10.14)
10.21(18)	Lease for Riverside Center, dated December 30, 2005, by and between Carilion Medical Center and Luna Innovations Incorporated, as amended by an Amended Lease dated July 20, 2006, a Second Amendment dated on or about October 5, 2007 and a Third Amendment effective as of April 1, 2010 (Exhibit 10.15)
10.22(18)	Loan and Security Agreement, dated February 18, 2010, by and between Luna Innovations Incorporated, Luna Technologies, Inc. and Silicon Valley Bank (Exhibit 10.5)
10.23(19)	Third Amendment to Commercial Lease dated June 21, 2010, by and between Canvasback Real Estate & Investments, LLC and Luna Innovations, Incorporated (Exhibit 10.5)
10.24(20)**	Amendment No.3 to the Development Supply Agreement, dated as of September 2, 2010, by and between Luna Innovations Incorporated and Intuitive Surgical, Inc. (Exhibit 10.5)
10.25(21)	First Loan Modification Agreement, dated as of March 7, 2011, by and between Luna Innovations Incorporated and Silicon Valley Bank (Exhibit 10.1)
10.26(22)**	Amendment No. 4 to the Development and Supply Agreement, dated as of March 23, 2011, by and between Luna Innovations Incorporated and Intuitive Surgical, Inc. (Exhibit 10.2)
10.27(22)	Fourth Amendment to Industrial Lease Agreement, dated as of March 1, 2011, by and between The Economic Development Authority of Montgomery County and Luna Innovations Incorporated (Exhibit 10.3)
10.28(23)	Second Loan Modification Agreement, dated as of May 18, 2011, by and between Luna Innovations Incorporated, Luna Technologies, Inc. and Silicon Valley Bank (Exhibit 10.1)
10.29(24)	Fifth Amendment to Industrial Lease Agreement, dated as of November 1, 2011, by and between The Economic Development Authority of Montgomery County and Luna Innovations Incorporated
10.30(24)	Employment Agreement dated March 28, 2012, by and between My E. Chung and Luna Innovations Incorporated
10.31(24)	Employment Agreement dated March 28, 2012, by and between Dale E. Messick and Luna Innovations Incorporated
10.32(24)	Employment Agreement dated March 28, 2012, by and between Scott A. Graeff and Luna Innovations Incorporated

10.33(25)**	Amendment No. 5 to Development and Supply Agreement, dated as of March 22, 2012, by and between Luna Innovations Incorporated and Intuitive Surgical, Inc. (Exhibit 10.1)
10.34(26)	Fourth Amendment to Commercial Lease, dated as of April 15, 2012, by and between Canvasback Real Estate & Investments, LLC and Luna Innovations Incorporated (Exhibit 10.3)
10.35(27)	Development Agreement, dated as of April 25, 2012, by and between Luna Innovations Incorporated and Philips Medical Systems Nederland BV (Exhibit 10.1)
10.36(28)	Third Loan Modification Agreement, dated as of May 17, 2012, by and between Luna Innovations Incorporated, Luna Technologies, Inc. and Silicon Valley Bank (Exhibit 10.1)
10.37(29)	Fourth Loan Modification Agreement, dated March 21, 2013, by and between Luna Innovations Incorporated, Luna Technologies, Inc. and Silicon Valley Bank (Exhibit 10.1)

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10.38(29)	Fourth Amendment to Luna Innovations Lease of Riverside Center, dated March 21, 2013, by and between Carilion Clinic Properties, LLC and Luna Innovations Incorporated (Exhibit 10.2)
10.39(30)**	Amendment No. 6 to the Intuitive-Luna Development and Supply Agreement, dated December 15, 2012, by and between Luna Innovations Incorporated and Intuitive Surgical Operations, Inc., a successor in interest to Intuitive Surgical, Inc. (Exhibit 10.2)
10.40(30)**	Amendment No. 7 to the Intuitive-Luna Development and Supply Agreement, entered into on June 28, 2013, by and between Luna Innovations Incorporated and Intuitive Surgical Operations, Inc., a successor in interest to Intuitive Surgical, Inc. (Exhibit 10.3)
10.41(31)	Fifth Amendment to Luna Innovations Lease of Riverside Center, dated December 13, 2013, by and between Carilion Clinic Properties, LLC and Luna Innovations Incorporated (Exhibit 10.44)
10.42(3)**	Cross-License Agreement by and among Luna Innovations Incorporated and Luna Technologies, Inc., and Intuitive Surgical Operations, Inc., and Intuitive Surgical international, Ltd., dated as of January 17, 2014 (Exhibit 10.2)
10.43(3)**	Consent, Release and Fifth Loan Modification Agreement between Luna Innovations incorporated and Silicon Valley Bank dated as of January 21, 2014 (Exhibit 10.3)
10.44(32)	Sixth Amendment to Industrial lease Agreement by and between the Economic Development Authority of Montgomery County, Virginia and Luna Innovations Incorporated dated October 1, 2014
10.45(32)	Industrial Lease Agreement by and between The Economic Development Authority of Montgomery County, Virginia and Luna Innovations Incorporated dated October 1, 2014
10.46(32)	Lease Agreement by and between SBA Tenant, LLC and Luna Innovations Incorporated dated November 2014
10.47(33)	Joinder, Consent, and Sixth Loan Modification Agreement between Luna Innovations Incorporated, Luna Technologies, Inc., Advanced Photonix, LLC and Silicon Valley Bank, dated as of May 8, 2015 (Exhibit 10.1)
10.48(34)	Joinder, Consent, and Seventh Loan Modification Agreement between Luna Innovations Incorporated, Luna Technologies, Inc., Advanced Photonix, LLC and Silicon Valley Bank, dated as of September 29, 2015 (Exhibit 10.1)
10.49(35)	First Amendment to Industrial Lease Agreement by and between the Economic Development Authority of Montgomery County, Virginia and Luna Innovation Incorporated, dated January 20, 2015 (Exhibit 10.3)
10.50(35)	Sixth Amendment to Luna Innovations Lease of Riverside Center, dated January 20, 2015, by and between Carilion Clinic Properties, LLC and Luna Innovations Incorporated (Exhibit 10.4)
10.51(36)	Amended and Restated Non-Employee Director Compensation Policy, dated June 30, 2015 (Exhibit 10.1)
10.52(37)	Fifth Amendment to Commercial Lease by and between Canvasback Real Estate and Investments, LLC and the Registrant, dated as of August 5, 2015 (Exhibit 10.2)
10.53(38)	Addendum to Asset Purchase Agreement, by and among Luna Innovations Incorporated, Intuitive Surgical Operations, Inc. and Intuitive Surgical International, Ltd., dated as of December 22, 2015 (Exhibit 10.1)
10.54	Eighth Loan Modification Agreement, dated December 15, 2016, by and between Luna Innovations Incorporated, Luna Technologies, Inc., Advanced Photonix, LLC and Silicon Valley Bank
21.1(10)	List of Subsidiaries (Exhibit 21.1)
23.1	Consent of Grant Thornton LLP, Independent Registered Public Accounting Firm
24.1	Power of Attorney (see signature page)
31.1	Certification of the Principal Executive Officer pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of the Principal Financial Officer pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1***	Certification of Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

32.2***	Certification of Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101	The following materials from the Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, are formatted in XBRL (eXtensible Business Reporting Language): (i) Consolidated Balance Sheets at December 31, 2016 and 2015, (ii) Consolidated Statements of Operations for the years ended December 31, 2016 and 2015, (iii) Consolidated Statements of Changes in Stockholder's Equity for the years ended December 31, 2016 and 2015 (iv) Consolidated Statements of Cash Flows for the years ended December 31, 2016 and 2015, and (v) Notes to Audited Consolidated Financial Statements.

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(1) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on January 15, 2010 (reporting under Items 1.03, 5.02 and 9.01). The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(2) Incorporated by reference to the Registrant’s Annual Report on Form 10-K, Commission File No. 000-52008, filed on March 29, 2013. The number in parentheses indicates the corresponding exhibit number in such Form 10-K.

(3) Incorporated by reference to the exhibit to the Registrant's Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on May 13, 2014. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(4) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on February 2, 2015. The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(5) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on June 8, 2006. The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(6) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on January 15, 2010 (reporting under Items 1.01, 3.02, 3.03, 5.03 and 9.01). The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(7) Incorporated by reference to the exhibit to the Registrant’s Registration Statement on Form S-1, Commission File No. 333-131764, filed on February 10, 2006. The number given in parentheses indicates the corresponding exhibit number in such Form S-1.

(8) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed with the Securities and Exchange Commission on May 10, 2010. The number in parentheses indicates the corresponding exhibit number in such Form 8-K.

(9) Incorporated by reference to the exhibit to Amendment No. 5 of the Registrant’s Registration Statement on Form S-1, Commission File No. 333-131764, filed on April 19, 2006. The number given in parentheses indicates the corresponding exhibit number in such Form S-1.

(10) Incorporated by reference to the exhibit to the Registrant’s Annual Report on Form 10-K, Commission File No. 000-52008, filed on March 29, 2016. The number given in parentheses indicates the corresponding exhibit number in such Form 10-K.

(11) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on July 17, 2009 (reporting under Items 1.01, 5.02 and 9.01). The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(12) Incorporated by reference to the exhibit to Registrant’s Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on May 15, 2007. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(13) Incorporated by reference to the exhibit to Amendment No. 1 to Registrant’s Annual Report on Form 10-K, Commission File No. 000-52008, filed on April 6, 2007. The number given in parentheses indicates the corresponding exhibit number in such Form 10-K/A.

(14) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on June 14, 2007. The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(15) Incorporated by reference to the exhibit to Registrant’s Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on May 9, 2008. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(16) Incorporated by reference to the exhibit to Registrant’s Annual Report on Form 10-K, Commission File No. 000-52008, filed on March 26, 2010. The number given in parentheses indicates the corresponding exhibit number in such Form 10-K.

(17) Incorporated by reference to the exhibit to Registrant’s Annual Report on Form 10-K, Commission File No. 000-52008, filed on March 16, 2009. The number given in parentheses indicates the corresponding

exhibit number in such Form 10-K.

(18) Incorporated by reference to the exhibit to Registrant's Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on May 17, 2010. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(19) Incorporated by reference to the exhibit to Registrant's Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on August 16, 2010. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(20) Incorporated by reference to the exhibit to Registrant's Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on November 15, 2010. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(21) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on March 9, 2011. The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(22) Incorporated by reference to the exhibit to Registrant’s Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on May 16, 2011. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(23) Incorporated by reference to the exhibit to Registrant’s Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on August 12, 2011. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(24) Incorporated by reference to the exhibit to the Registrant’s Annual Report on Form 10-K, Commission File No. 000-52008, filed on March 29, 2012. The number given in parentheses indicates the corresponding exhibit number in such Form 10-K.

(25) Incorporated by reference to the exhibit to the Registrant’s Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on May 10, 2012. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(26) Incorporated by reference to the exhibit to the Registrant’s Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on August 9, 2012. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(27) Incorporated by reference to the exhibit to the Registrant’s Amendment No. 1 to Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on August 10, 2012. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(28) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on July 11, 2012. The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(29) Incorporated by reference to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on March 27, 2013. The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(30) Incorporated by reference to the exhibit to the Registrant’s Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on August 8, 2013. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(31) Incorporated by reference to the exhibit to the Registrant's Annual Report on Form 10-K, Commission File No. 000-52008, filed on April 10, 2014. The number given in parentheses indicates the corresponding exhibit number in such Form 10-K.

(32) Incorporated by reference to the exhibit to the Registrant's Annual Report on Form 10-K, Commission File No. 000-52008, filed on March 16, 2015. The number given in parentheses indicates the corresponding exhibit number in such Form 10-K.

(33) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on May 11, 2015. The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(34) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on October 5, 2015. The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(35) Incorporated by reference to the exhibit to the Registrant’s Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on May 14, 2015. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(36) Incorporated by reference to the exhibit to the Registrant’s Current Report on Form 8-K, Commission File No. 000-52008, filed on August 14, 2015. The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(37)

Incorporated by reference to the exhibit to the Registrant's Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on November 13, 2015. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

(38) Incorporated by reference to the exhibit to the Registrant's Current Report on Form 8-K, Commission File No. 000-52008, filed on December 29, 2015. The number given in parentheses indicates the corresponding exhibit number in such Form 8-K.

(39) Incorporated by reference to the exhibit to the Registrant's Registration Statement on Form S-8, Commission File No. 333-211802, filed on June 3, 2016. The number given in parentheses indicates the corresponding exhibit number in such Form S-8.

(40) Incorporated by reference to the exhibit to the Registrant's Quarterly Report on Form 10-Q, Commission File No. 000-52008, filed on August 10, 2016. The number given in parentheses indicates the corresponding exhibit number in such Form 10-Q.

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* Confidential treatment has been granted with respect to portions of this exhibit, indicated by asterisks, which has been filed separately with the Securities and Exchange Commission. Pursuant to Item 601(b)(2) of Regulation S-K, the schedules and exhibits to this agreement are omitted, but will be furnished to the Securities and Exchange Commission upon request.

** Confidential treatment has been granted with respect to portions of this exhibit, indicated by asterisks, which has been filed separately with the Securities and Exchange Commission.

*** These certifications are being furnished solely to accompany this annual report pursuant to 18 U.S.C. Section 1350, and are not being filed for purposes of Section 18 of the Securities Exchange Act of 1934 and are not to be incorporated by reference into any filing of the registrant, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

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ITEM 16. FORM 10-K SUMMARY

Not applicable.

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.

LUNA INNOVATIONS INCORPORATED

By: /s/ Dale E. Messick
Dale E. Messick
Chief Financial Officer

March 20, 2017

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Scott A. Graeff and Dale E. Messick, and each of them acting individually, as his true and lawful attorneys-in-fact and agents, with full power of each to act alone, with full powers of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K with all exhibits thereto and all documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, with full power of each to act alone, 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 for all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or his or their substitutes, may lawfully do or cause to be done by virtue hereof.

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

Signature	Title	Date
/s/ My E. Chung My E. Chung	President, Chief Executive Officer and Director (Principal Executive Officer)	March 20, 2017
/s/ Dale E. Messick Dale E. Messick	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	March 20, 2017
/s/ Michael W. Wise Michael W. Wise	Director	March 20, 2017
/s/ Donald Pastor Donald Pastor	Director	March 20, 2017
/s/ John B. Williamson III John B. Williamson III	Director	March 20, 2017
/s/ Gary Spiegel Gary Spiegel	Director	March 20, 2017
/s/ Richard W. Roedel Richard W. Roedel	Chairman of the Board of Directors	March 20, 2017