LUNA INNOVATIONS INC
Form 10-K
March 29, 2016
Table of Contents

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, 2015
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, 2015, based upon the closing price of Common Stock on such date as reported by the NASDAQ Capital Market, was approximately $28.3 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 24, 2016 there were 27,644,832 shares of the registrant's common stock outstanding.
DOCUMENTS INCORPORATED BY REFERENCE
Specified portions of the registrant's Proxy Statement with respect to its 2016 Annual Meeting of stockholders, anticipated to be filed within 120 days after the end of its fiscal year ended December 31, 2015, are incorporated by reference into Part III of this annual report on Form 10-K.

Table of Contents

LUNA INNOVATIONS INCORPORATED
ANNUAL REPORT ON FORM 10-K
FOR THE YEAR ENDED DECEMBER 31, 2015
TABLE OF CONTENTS

Table of Contents

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.

PART I

ITEM 1. BUSINESS

Company Overview and Business Model

Luna Innovations Incorporated ("we" or the "Company") develops, manufactures and markets fiber optic sensing and test & measurement products focused on bringing new and innovative technology solutions to measure, monitor, protect and improve critical processes in the aerospace, automotive, energy, composite, telecommunications, and defense industries. As a result of our merger with Advanced Photonix, Inc. ("API"), as described below, we also package optoelectronic semiconductors into high-speed optical receivers ("HSOR" products), custom optoelectronic subsystems ("Optoelectronics" products), and Terahertz ("THz") instrumentation. Our HSOR transmission products are deployed in the internet infrastructure to enable the high-speed bandwidth necessary to support video and data. Our Optoelectronics products are sold to scientific instrumentation manufacturers for various applications such as metrology, currency validation, 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. We use our in-house technical expertise across a range of technologies to perform applied research services for companies and for government funded projects. Our business model is designed to accelerate the process of bringing new and innovative products to market. We continue to invest in product development and commercialization, which we anticipate will lead to increased product sales growth.

Our corporate growth strategy is focused principally in two areas: expanding our HSOR products and sales for the growing fiber-to-the-premise market and the data center communications market; and becoming the leading provider of fiber optic strain & temperature sensing solutions and standard test methods for composite, as well as non-composite materials, structures and systems.

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 our suite of products including our HSOR, Optoelectronics, and THz products, as well as our fiber optic sensing and test & measurement products. The Products and Licensing segment also includes revenues from licenses of our technologies to third parties and the funded development of potential new products for both corporate and government customers. Our Products and Licensing segment

Table of Contents

revenues represented approximately 69% and 43% of our total revenues for the years ended December 31, 2015 and 2014, respectively.

Historically our Products and Licensing segment included the funded development of our fiber optic shape sensing technology for minimally invasive medical applications. On January 21, 2014, we sold the assets associated with our fiber optic shape sensing technology in the medical field to affiliates of Intuitive Surgical, Inc. (as referring either to these affiliates in such capacity as buyers or to Intuitive Surgical, Inc., "Intuitive"), as described more fully below. As 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. We are continuing to develop and commercialize our fiber optic technology for strain & temperature sensing applications for the aerospace, automotive, and energy industries.

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 31% and 57% of our total revenues for the years ended December 31, 2015 and 2014, 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 although we expect our Product and Licensing segment to grow at a faster rate, we expect that our Technology Development segment will continue to represent a significant portion of our total revenues for the foreseeable future. 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, 2015, approximately 26% of our total revenues were generated under the SBIR program, compared to 47% for the year ended December 31, 2014.

For the years ended December 31, 2015 and 2014, 34% and 54%, respectively, of our revenues were derived from the U.S. government.

Merger with Advanced Photonix, Inc.

On May 8, 2015, we completed a merger with 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 packages optoelectronic semiconductors into high-speed optical receivers, custom optoelectronic sub systems and Terahertz instrumentation, serving the test & measurement, telecommunications, military/aerospace and medical markets. The company has 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 our Products and Licensing segment we have been successful in developing and marketing fiber optic test & measurement products which provide solutions primarily for the telecommunications industry. In 2011, we introduced our ODiSI platform of products for distributed sensing of strain and temperature. Our key initiative for long term growth is to become a leading provider of fiber optic strain and temperature sensing systems and standard test methods based upon this product platform. Our primary product lines in this 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 (“OVA”), our Optical Backscatter Reflectometer (“OBR”), and the Phoenix family of tunable lasers.

2

Table of Contents

Historically, our test & measurement products have primarily served the telecommunications industry, although most of our products have valuable applications in other fields. Our test & measurement products 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 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. Our OVA platform allows manufacturers and suppliers of optical components and sub-assemblies to reduce development, test and production costs and time-to-market by replacing multiple, time consuming and expensive measurement platforms with a single, integrated and easy-to-use instrument.

Our OBR is a highly sensitive diagnostic device which has application in the telecommunications industry and the flexibility to provide measurements in various other non-telecom applications. Our OBR allows data and telecommunications companies and the service providers who maintain their own fiber optic networks to reduce test time and improve product quality. Our OBR provides the ability to inspect fiber networks with higher resolution and better sensitivity than is possible with other existing test products. Its user-friendly graphical user interface also makes the OBR product suitable for both research and manufacturing applications. The OBR gives end users a very high resolution view that is similar to an "X-Ray" into the inner workings of a fiber optic network. The OBR also has a feature that allows users to turn standard optical fiber into multiple sensors that could be used in a variety of temperature measurement and monitoring applications including power generation, civil structure monitoring, industrial process control; component-level heating in optical amplifiers, strain and load distribution measurements of aircraft harnesses and temperature monitoring inside telecommunications cabinets and enclosures.

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 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 for various applications such as metrology, currency validation, flame monitoring, temperature sensing, particle detection, color sensing, infrared detection, and many other applications that can only be done through optical sensing.

Table of Contents

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 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 OEMs 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 $13.6 million and $12.2 million for the years ended December 31, 2015 and 2014, 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

Table of Contents

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.

Our nanomaterials activity is focused on fullerenes and tri-metal nitride endohedral fullerene ("Trimetasphere®") materials. The Trimetasphere® nanomaterial is a carbon sphere with three metal atoms and an enclosed nitrogen atom. We have obtained an exclusive license from Virginia Tech to commercialize Trimetasphere® nanomaterials under an issued U.S. patent and pending U.S. patent applications.

We are also researching other applications for nanomaterial-based drugs based on the anti-oxidative characteristics of fullerenes. These products are in the early stages of development, but if successful, could offer new market opportunities for us.

In 2009, we acquired a patent portfolio from Tego Biosciences, Inc., including in- and out-licenses, generally for the use of carbon fullerene nanomolecules in the treatment of human health. We believe this acquisition strengthened our patent position in this area, but there can be no assurances that we will be able to obtain commercial success as a result of these patents and licenses.

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.

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 284 U.S. and international patents and approximately 137 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 2015 and 2030. 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.

Table of Contents

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 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 of lasers. These U.S. 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, 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 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.

Table of Contents

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 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. The term of this agreement is 10 years, but the patent licenses become fully paid and perpetual if we fulfill our royalty obligations during this 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

Table of Contents

and $68,000 for 2015 and 2014, respectively. We also agreed to sell Coherent a limited number of lasers each year. The agreement is terminable by either party for cause after notice and an opportunity to cure.

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.

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 at least 51 percent owned and controlled by U.S. citizens or permanent resident aliens, or owned by an entity that is itself at least 51 percent owned and controlled by U.S. citizens or permanent resident aliens; and

Table of Contents

- 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 51% 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 51% 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, 2015, we, including all of our divisions, had 243 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."

FDA Regulation of Products

Some of the potential products that we are developing may be subject to regulation under the Food, Drug, and Cosmetic ("FDC") Act. In particular, any Trimetasphere® nanomaterial-based MRI contrast agent would be considered a drug, and our ultrasound diagnostic devices for measuring certain medical conditions will be considered medical devices, under the FDC Act. Both the statutes and regulations promulgated under the FDC Act govern, among other things, the testing, manufacturing, safety efficacy, labeling, storage, record keeping, advertising and other promotional practices involving the regulation of drug and devices. Compliance with the FDC Act may add time and expense to product development, and there can be no assurance that any of our products will be successfully developed and approved for marketing by the FDA.

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, 2015, we had approximately 243 total employees, including approximately 122 in research, development and engineering positions, approximately 77 in operations, approximately 12 in sales and marketing, and

Table of Contents

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 $16.7 million and $12.8 million at December 31, 2015 and 2014, 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 $3.3 million and $2.7 million as of December 31, 2015 and 2014, 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 $10.7 million and $0.6 million at December 31, 2015 and 2014, respectively. This increase in backlog resulted from the merger with API. Backlog associated with the operations of API increased $3.7 million at December 31, 2015 compared to the backlog of API as a standalone company as of December 31, 2014.

Research, Development and Engineering

We incur research, development and engineering expenses that are not related to our contract performance. These expenses were $4.3 million and $2.1 million for the years ended December 31, 2015 and 2014, respectively. In addition, during these years, we spent $10.4 million and $9.4 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.

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.

Table of Contents

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 our 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), (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 would severely limit our ability to continue 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.