

Luna Innovations (NASDAQ/LUNA)**BUY \$3.19 Price Target: \$5.55**

Luna produces fiber optic sensing and test equipment for the comms and carbon fiber markets and operates an R&D division performing government contracts.

*October 2, 2018**Barry M. Sine***Senior Research Analyst****646-422-1333****bsine@dawsonjames.com****Enabler of Two High Growth Markets**

- We initiate coverage of Luna Innovations with a Buy rating and a \$5.55 price target.
- Our price target values the business at \$5.00 per share, in line with comps even though comps are not growing as fast, plus \$0.55 per share in cash.
- Luna is an investment play on two major technology trends, that are in the early stages of adoption.
- It makes testing equipment for communications and component optical equipment. While fiber optics have been used in long distance networks since the 1980s, they are now being used to connect homes, offices, cell sites and individual servers in data centers - all to meet the insatiable global demand for data. And photonic microprocessors are in the early stages of adoption, replacing current electronic microprocessors. Luna's products are used to test all these applications.
- The other megatrend is the widespread use of carbon fiber in place of metals in manufacturing since carbon fiber is far lighter and stronger than metals. Today's applications are limited to advanced fighter jets, newer commercial aircraft and some parts of luxury cars. But we expect adoption to be widespread. Luna's products provide structural testing for these materials at a fraction of the time and cost of traditional methods.
- The company is already on a double-digit growth path, and with the deployment of cash from recent business unit sales being partially directed towards R&D, sales and marketing, this could accelerate.
- We also expect the company to deploy some of its sizable cash hoard towards M&A and expect deals to be accretive. As we discuss, management has a great track record.
- The key risk we see is that Luna is a small company while its customers and potential competitors are much larger. So, it could easily be buffeted by unforeseen events. A customer dispute led to a bankruptcy filing in 2010, although it was settled with no loss to lenders or shareholders.



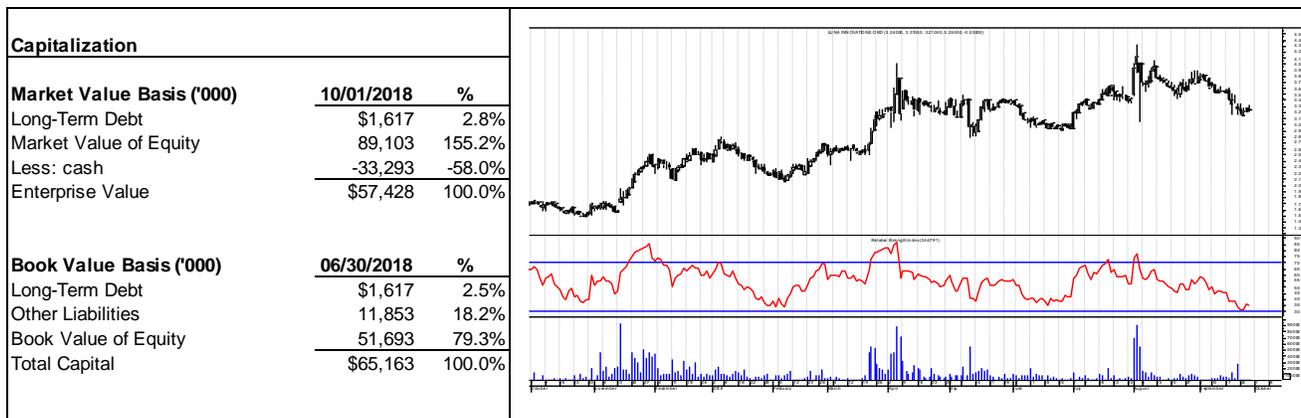
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| | | | | | | |
|-------------------------|---------|------------------------------------------------|-----------------|-----------------|---------------|---------------|
| Rating | BUY | Earnings Per Share | | | | |
| Target Price | \$5.55 | Adjusted for recent business unit sales | | | | |
| Ticker Symbol | LUNA | FYE - December | 2017 | 2018E | 2019E | 2020E |
| Market | NASDAQ | 1Q - March | (\$0.05) | (\$0.01) | \$0.00 | \$0.01 |
| Stock Price | \$3.19 | 2Q - June | (\$0.01) | \$0.01 | \$0.00 | \$0.00 |
| 52 wk High | \$4.32 | 3Q - September | (\$0.00) | \$0.00 | \$0.00 | \$0.01 |
| 52 wk Low | \$1.47 | 4Q - December | (\$0.01) | (\$0.00) | \$0.01 | \$0.01 |
| Shares Outstanding: | 27.9 M | Year | (\$0.09) | (\$0.01) | \$0.01 | \$0.02 |
| Public Market Float: | 23.7 M | Revenue (\$mm) | \$33.1 | \$39.5 | \$44.3 | \$49.9 |
| Avg. Daily Volume | 105,847 | EV/Rev | 1.7X | 1.5X | 1.3X | 1.2X |
| Market Capitalization: | \$89 M | EBITDA (\$mm) | \$0.5 | \$1.6 | \$2.0 | \$2.6 |
| Institutional Holdings: | 31.3% | EV/EBITDA | 112.1X | 35.1X | 28.9X | 21.7X |
| Dividend Yield: | 0.0% | | | | | |

| Senior Executives | | Common Ownership Profile | | |
|--------------------------|-----------------------------|--------------------------------------|----------------------|-------------------|
| | | Shareholder | Shares ('000) | % of Total |
| Scott A. Graeff | President and CEO | AMH Equity Ltd. | 1,805.9 | 6.5% |
| James T. Garrett, Ph.D. | VP - Technology Development | Renaissance Technologies LLC | 1,017.9 | 3.6% |
| Dale E. Messick | Chief Financial Officer | The Vanguard Group, Inc. | 623.2 | 2.2% |
| Margaret R. Murdock | GM - Terahertz Division | Perritt Capital Management, Inc. | 475.2 | 1.7% |
| Brian J. Soller, Ph.D. | GM - Lightwave Division | Janney Montgomery Scott LLC (Investm | 430.8 | 1.5% |
| | | Directors and Officers | 3,883 | 13.9% |

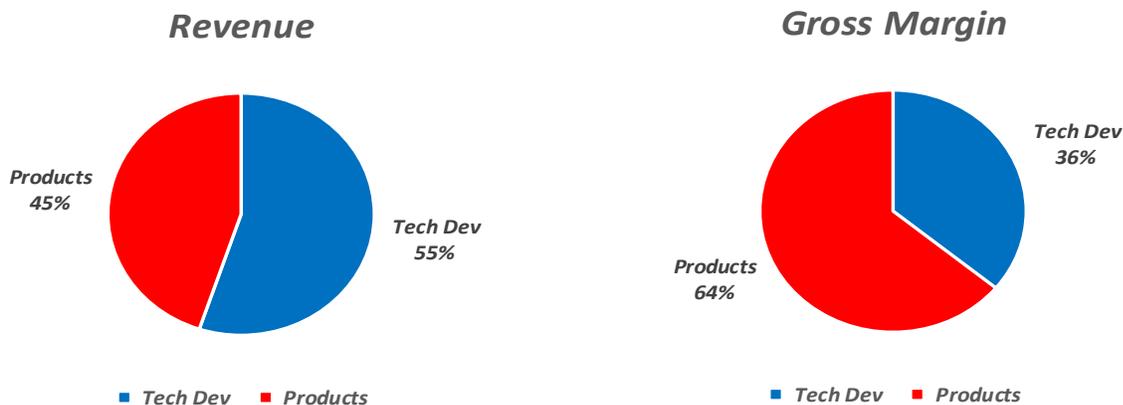


Source: Company reports, Metastock and Dawson James estimates.

Enabler of Two High Growth Markets

We initiate coverage of Luna Innovations with a Buy rating. Luna is an R&D-driven fiber optic technology company on the cutting edge of some of the most advanced technologies in use today. The company has two operating segments, the products and licenses unit sells the company’s commercial fiber optic test equipment - and accounts for 45% of revenue and 64% of gross margin, and the technology development unit which performs contract R&D for the U.S. government agencies, including the military.

Technology Development Generates More Revenue, But Products and Licensing are More Profitable



Source: Company reports and Dawson James estimates

While Luna’s fiber business looks complex, most of its technology revolves around its OFDR or optical frequency domain reflectometry patents. The technology can be used for stress testing of materials like cars or aircraft and for testing optical systems and components down to individual photonic computer chips. It can also be used to sense the location of a piece of fiber, as for example in fiber systems used for non-invasive internal examination of patients in the medical industry.

Its products are used in two very high growth areas: fiber optic communications and carbon fiber manufacturing. In communications, Luna’s products are used to test fiber optic cable and components and detect defects. Fiber has been used since the 1980s for long haul communications, but it is now being used for connectivity to most homes and businesses and to most cell sites for the wireless industry. Data centers also now rely on fiber communications due to the insatiable demand created by streaming video as the likes of Netflix and Amazon Prime grow. In manufacturing, aircraft and cars are increasingly made with carbon fiber, since it is far lighter and far stronger than other materials such as steel or aluminum. Luna’s products are used in the testing and development of products such as Lockheed Martin’s F35 Lightning fighter jet and Boeing 777X commercial plane which is being upgraded with carbon fiber wings. Carbon fiber is ten times stronger and five times lighter than steel.

We forecast revenue of \$39.5 million this year and \$44.3 million next year. This year’s revenue should be relatively flat compared to last year due to an asset sale but up around 18% on a pro forma basis. Our forecast calls for EBITDA of \$2.0 million next year, up 21.4%. Our \$5.00 per share valuation equates to 2.4x our 2019 revenue target, which is slightly lower than comps of 2.6x even though Luna should have faster EBITDA growth. Our target of \$5.55 includes the \$0.55 per share in cash on the books.

Luna Has Had a Fairly Eventful History

| | |
|--------|-------------------------------------------------------------------------|
| 1990 | Company founded in Virginia as Feor, Inc. |
| Jul-98 | Established Luna Technologies |
| Dec-98 | Name changed to F&S Technologies |
| Jul-99 | Name changed to Luna Innovations |
| Sep-05 | Acquired all stock in Luna Technologies |
| Jun-06 | Luna completes IPO at \$6 per share for gross proceeds of \$21 mm |
| Jun-07 | Hansen Medical files lawsuit for misappropriation of trade secrets |
| Apr-09 | Jury awards Hansen \$36.3 mm |
| Jul-09 | Files for chapter 11 bankruptcy |
| Jan-10 | Exits bankruptcy |
| Mar-13 | Sold secure computing business to MacAulay-Brown, Inc. for \$56.1mm |
| Jan-14 | Sold medical shape sensing technology to Intuitive Surgical for \$21 mm |
| Feb-15 | Acquired Advanced Photonix for \$16 mm in stock |
| Aug-17 | Sold HSOR business to MACOM for \$33.5 mm |
| Aug-18 | Sold Optoelectronics business to OSI for \$22.5 mm |

Source: Company reports and Dawson James estimates

The company was founded in 1990 in Virginia and has continuously maintained a close relationship with local universities. Today it has a location in Blacksburg, near Virginia Tech with 100 employees and another in Charlottesville near the University of Virginia with 60 employees. (Roanoke? See Page 2)

In 2005 it acquired Luna Technologies, which is the original basis of the company's core fiber technology. That was followed the next year by the company's IPO at \$6 per share raising \$21 million. The following year, in June 2007, Hansen Medical, for whom Luna had performed technology development work, filed a lawsuit alleging infringement of intellectual property. Luna management believe this stemmed from a disagreement over whether it could continue to use its own technology contributed during the R&D work. The next year, a jury found in Hansen's favor awarding \$36.3 million. Before the judge could make the jury's decision official, Luna filed for chapter 11 bankruptcy protection as a preemptive protective measure. The strategy was successful as the parties settled for \$5 mm and the company exited chapter 11 without either lenders or shareholders suffering any losses, except that Hansen was issued 10% of the shares of Luna, so some dilution occurred.

Beginning in 2013, the company entered a period of active M&A, which continues today. In 2013 it sold its secure computing business to MacAulay-Brown for \$5.2 million. And the following year, in 2014, it sold its medical shape sensing technology to Hansen rival Intuitive Surgical for \$12 million. It retains this technology for other uses. It then acquired publicly traded Advanced Photonix (API) for \$15.9 million in an all-stock transaction.

Today it operates two business units. The core unit is referred to as products and licensing and sells highly proprietary fiber optic test and sensing equipment. The other unit, technology development, conducts research under government grants. Some of these such as artificial blood and nano-coatings, are far removed from the company's core business, but because these are cost plus contracts and have little capital associated with them, they offer a high return on investment.

Its products and licensing division is composed of two business units. The first is its lightwave division run by Brian Soller and headquartered in Blacksburg, Virginia where Virginia Tech is located. The second is its Terahertz division, headquartered in Ann Arbor, Michigan, where the University of Michigan is located and run by Margaret Murdoch.

Luna has announced two business unit sales recently:

- This first, of its high-speed optical receivers (HSOR) business to MACOM Technology Solutions was announced on August 9, 2017. The purchase price was \$29.5 mm at closing and another \$4 mm held in escrow until December 15, 2018. MACOM approached Luna to acquire this business as the products were technologically advanced and doing well in the market. However, Luna sold a single product, where MACOM has a broader product line and can better leverage shared R&D and sales and marketing costs. Given the strong synergies for MACOM, it was able to pay a high enough price to convince Luna to part with this business unit despite its good growth prospects at the time.
- The second sale was announced on August 1, 2018 of the company's optoelectronics business to OSI Optoelectronics for \$18.5 mm. Luna initiated this sale since the products did not fit well with the company's core focus. Luna approached five competitors in an active marketing campaign to sell this unit before agreeing to the sale to OSI.

Of note is the fact that Luna has now sold about 90% of the business of Advanced Photonix which it acquired in 2015 for \$15.9 million in LUNA stock. The sale of the two business units has now brought in \$52 million or more than triple what they paid for API. Luna's success in creating value through M&A is important to note since it now has \$48 million in cash, with \$4 million more in December coming in. Given the highly specialized nature of the company's business, management generally serves as their own investment bankers. The CEO, Scott Graeff, previously worked in investment banking and ran a venture capital fund, so he has a great deal of experience in M&A.

With these two asset sales, Luna no longer makes optical products for actual day to day network operations. Instead, it focuses on test products.

Luna's core product line is as follows, three from the Lightwave division and one from the Teramatrix division:

- **Fiber optic sensing** – its ODiSI product, for measuring strain and temperature. Light is transmitted and reflected over optical fiber, the OVA can detect slight

movements in the fiber. By bonding the fiber to components to be tested, it can detect movement and stress. ODiSI can provide continuous sensing while traditional strain gauges require separate sensors at discrete points and only measure at these locations. They also cost far more and take longer to set up. For example, to test an aircraft wing, the traditional method takes 35 days to install the gauges, versus one day for ODiSI and costs \$42,000 versus \$1,200. This product sells for roughly \$90,000.

- **Component Analyzers** – these are also known as OVA for optical vector analyzers. As the name implies, this product looks inside components. As noted, a new technology development is the innovation of photonic computing where light replaces electrical impulses in microprocessors, since light, or photons, travel 100 times faster than electrons, or electricity. Therefore, photonic processors are much faster than current electronic processors. As a result, we expect photonic computing, and thus demand for Luna’s OVA line, to accelerate. This product sells for roughly \$120,000.
- **Reflectometers** – these are also known as OBR for optical backscatter reflectometers. It can detect faults in fiber such as bends, crimps or bad splices that can degrade performance. This product can test fiber optic up to hundreds of meters in length. This is ideal for the data center and local fiber applications in use in the data and telecom markets today. An emerging application of fiber is in vehicle communication networks for things like fighter jets (today) and cars (mainly in the future). OBR can allow a technician to precisely pinpoint where a defect in a fiber cable is located, making repairs faster and easier. The retail price of this product is \$100,000.
- **T-Ray** – this product from the Terametrix division is typically used in factory production settings for precise materials thickness measurements. It was also used on the tiles of the space shuttle by NASA. Terahertz (THZ) waves are between microwave and infrared waves and can pass through materials without harming humans. Historically THz waves were very difficult to generate and detect, and consequently, Luna’s products have been more expensive than prospective customers were willing to pay. One of the main areas of focus of Terametrix’s new manager, Margaret Murdock, is getting the cost of the product down, and she has seen good success.

The company still lists optical components on its website, at the request of OSI, the buyer, to ensure a smooth transition.

Luna Has Four Main Products

| | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>ODiSI \$90,000 Optical Distributed Sensor Interrogator Structural and Material Testing</p>  | <p>OBR \$100,000 Optical Backscatter Reflectometer Communications Testing</p>  | <p>OVA \$120,000 Optical Vector Analyzer Communications Testing</p>  | <p>T-Ray \$90,000 Terahertz band sensing for industrial apps</p>  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Source: Company reports and Dawson James estimates

Lockheed Martin's new F35 Lightning fighter jet is a good example of how Luna's products are used. This jet is in service by the U.S. Air Force, Marine Corps and Navy and has been ordered by the militaries of 10 other countries. Luna ODiSI is used for structural testing as the jet is made of carbon fiber. The sophisticated communications systems on the F35 uses fiber optics instead of traditional copper wiring. Luna's OBR is used to troubleshoot faults in the fiber optic and can pinpoint the exact location of a break or bend. The F35 uses a highly secret stealth coating where the application and thickness of the coating is critical. Lockheed Martin uses Luna's T-Ray sensor to measure the coating thickness. In recognition of its support of three cutting edge technologies, in August Lockheed Martin awarded Luna its Evolutionary Technology Supplier award.

Technology Development Generates High ROI

The other corporate segment is its technology development business which accepts federal government contracts for specific research projects on a fee for service basis. It is run by Dr. James Garret with operations in Blacksburg and Charlottesville, Virginia. The company utilizes its own labs facilities or leverages local universities. As such, we believe that the return on investment is very high. The government allows the company to retain the intellectual property rights to its work. Its projects have involved nanomaterials, coatings, adhesives, composites and bio-engineered materials. During our visit to the company's facilities and meetings with management we saw and discussed several projects. In one, the company was asked to development a camouflage coating for the black tires on Humvees. It has used the nanoparticle materials it developed to develop a permanent ArmorAll type coating for automobile tires and is working with tire manufacturers. In another, it has developed artificial blood that acts and coagulates like real blood for use in training by medical professionals. It is not for use as a human blood replacement in the human body. In a third project, the company has developed sensors which can predict corrosion on vehicles. Thus, organizations like the U.S. military can focus their corrosion inspections on vehicles more likely to corrode based on the environment they operated, not solely on how long the vehicle has been operated.

While this division generates consistent revenue at a high return on equity, we believe that it also presents somewhat of a poison pill to potential acquirors. Luna's contracts are under the U.S. government's SBIR program, which stands for small business innovation research. It is administered by the Small Business Administration, but the research is done for other government agencies. In Luna's case, much of its work is for the Department of Defense. The provisions of the program limit it to for profit businesses with fewer than 500 employees whereas Luna had 216 as of the end of June. Additionally, the company must be majority owned by individuals, not institutions. According to data compiled by FactSet from SEC filings, Luna is 31.29% owned by institutions with the rest held by individuals including 15.05% by management. The SBIR conditions might discourage a larger, more institutionally owned company from making a takeover bid for the company since such a large portion of revenue would be at risk. We view this challenge as surmountable - for example management could raise funds to buy the technology development division - but it does complicate matters.

We Look for Revenue Growth in the Teens

For 2018, our forecast calls for 19.5% revenue growth versus 2017 results pro forma for the recent asset sale. This is above the trend level we expect longer term as both segments have shown strong revenue growth for the first half and the company is using some of its newfound wealth to invest in increased sales and marketing.

For products and licensing we forecast 22.9% revenue growth. This implies 20.0% growth for the rest of the year, after growing 29.2% and 24.1% in the first two quarters, respectively. The gross margin for this segment has been relatively consistent at just above 50% for the last 18 months, pro forma for the asset sale, and we model 51% going forward.

The technology development group has posted 14% revenue growth for the first half, while we conservatively plug in 10% growth for the rest of this year and 5% thereafter. As noted, revenue for this business is dependent on continuing to win government SBIR contracts, which we expect will occur, but we have little external visibility into the process. The gross margin for this segment had also been above trend this year, near 28%, and we model it at 25% to be more consistent with historical levels.

Despite our conservatism, with the faster growth forecast for products and licensing, our model has a slight positive bias to the consolidated gross margin. With the loss of revenue from the business unit sale, the remaining businesses will need to cover overhead, putting downward pressure on the operating margin. Additionally, as noted, we expect the company to dedicate some of the significant cash on its balance sheet to increased R&D and sales activities. The company has already stepped up its presence at additional trade shows and hired more salespeople. So, our forecast calls for a positive 2.7% operating margin this year, down to 1.6% next year before rising to 2.3% in 2020. For EBITDA, we forecast a decline in the second half of this year versus first half, then gradual growth going forward. In terms of EPS, Luna has only recently turned the corner with positive EPS in recent quarters and we expect this to continue. We look for negligible EPS of \$0.05 this year, \$0.04 next year and \$0.06 next year.

Comps Suggest a \$5 Share Price, Plus \$0.55 Per Share in Cash

As noted, we value LUNA shares at \$5 per for the core business, which works out to 2.4x 2019 revenue. Adding in another \$0.55 in cash brings us to \$5.55. As noted, comps trade 2.5x. Most of these are larger, slower growing companies in the fiber industry, which focus on telecom, and not the materials testing Luna also performs. Offsetting the higher valuation suggested but its expected growth, is LUNA share's illiquidity.

Our Target Would Put LUNA Shares Right in Line With Comps, Which Are Slower Growing

| Company | Fiscal | | Shares | Market | Enterprise | | | | Enterprise | Enterprise | Enterprise |
|-------------------------------|------------|---------|-------------|----------|------------|---------|--------|---------|-----------------|----------------|------------------|
| Name | Period | Price | Outstanding | Value | Value | Sales | EBIT | EBITDA | Value/ Sales | Value/ EBIT | Value/ EBITDA |
| Luna Innovations | 06/30/2018 | \$3.25 | 27.9 | 90.8 | 59.1 | 45.5 | 2.3 | 2.4 | 1.3x | 25.8x | 24.8x |
| Luna @ 2019E | 12/31/19 | \$3.25 | 27.9 | 90.8 | 59.1 | 44.3 | 0.3 | 2.0 | 1.3x | 182.4x | 29.8x |
| Luna @ target on 2019E | 12/31/19 | \$5.00 | 27.9 | 139.7 | 108.0 | 44.3 | 0.3 | 2.0 | 2.4x | 333.2x | 54.4x |
| Finisar Corporation | 04/29/2018 | \$18.87 | 117.2 | 2,211.8 | 1,801.4 | 1,316.5 | 12.3 | 116.2 | 1.4x | 146.7x | 15.5x |
| Oclaro, Inc. | 06/30/2018 | \$9.13 | 170.7 | 1,558.4 | 1,238.5 | 543.2 | 73.3 | 103.4 | 2.3x | 16.9x | 12.0x |
| Agilent Technologies, Inc. | 10/31/2017 | \$70.80 | 318.8 | 22,568.9 | 22,240.9 | 4,472.0 | 840.0 | 1,054.0 | 5.0x | 26.5x | 21.1x |
| Anritsu Corporation | 03/31/2018 | - | - | 2,245.9 | 2,029.1 | 775.6 | 47.1 | 85.8 | 2.6x | 43.0x | 23.6x |
| EXFO Inc. | 08/31/2017 | \$4.00 | 22.0 | 213.0 | 214.0 | 243.8 | 9.0 | 16.2 | 0.9x | 23.7x | 13.2x |
| Applied Optoelectronics, Inc. | 12/31/2017 | \$28.36 | 19.7 | 558.6 | 541.7 | 382.3 | 87.0 | 107.3 | 1.4x | 6.2x | 5.0x |
| Lumentum Holdings, Inc. | 06/30/2018 | \$61.25 | 63.3 | 3,879.1 | 3,545.3 | 1,247.7 | 147.1 | 224.3 | 2.8x | 24.1x | 15.8x |
| Agilent Technologies, Inc. | 10/31/2017 | \$70.80 | 318.8 | 22,568.9 | 22,240.9 | 4,472.0 | 840.0 | 1,054.0 | 5.0x | 26.5x | 21.1x |
| NeoPhotonics Corporation | 12/31/2017 | \$8.30 | 45.3 | 376.0 | 376.3 | 292.9 | (48.7) | (20.3) | 1.3x | - | - |
| RADCOM Ltd. | 12/31/2017 | \$11.25 | 13.6 | 153.5 | 82.0 | 37.2 | 2.6 | 3.1 | 2.2x | 31.6x | 26.2x |
| Average | | | | | | | | | 2.5x | 38.4x | 17.1x |

Source: Company reports and Dawson James estimates

The burning question that comes up is what management will do with the \$48 million now on its balance sheet, or \$52 million factoring in the \$4 million due by December. In the short run, they can look forward to earning 2% on this in money market funds. The board also authorized a \$2 million buyback program, with \$1.1 million repurchased as of June 30. The authorization has expired with no announcement on a renewal.

Management has stated that they are actively looking for acquisitions. We expect acquisitions to be accretive, since we expect any acquired business to generate more than the meager 2% investment returns on cash. We expect them to look for small acquisitions, in the \$10 million range. Management knows the industry very well and we would expect that they have had at least informal talks with others in their niche in the industry. Given how their business unit dispositions have narrowed their focus, we would not expect them to go astray to unrelated areas in an acquisition.

Technicals – Stock Has Not Reflected Cash Infusion - Yet

An institutional investor in LUNA shares alerted us to a market anomaly which is again in investors' favor. In August of 2017 the company announced it was selling its HSOR business for \$33.5 million, but it was not until mid-November, when the company published a balance sheet with the incremental cash included, that the stock reacted. From the November 13th filing of the 10-Q, through the following April 5th, LUNA shares appreciated 140%. Now much of this was probably fundamental buying but we suspect that a good deal of it was related to quant buying as quant models generally do not recognize cash until it shows up in a filing. As noted, the company sold another business unit recently in August, but again, the new 10Q with this cash on the balance sheet is not due to be filed until mid-November. In fact, since the deal was announced, the stock is off 21%.

Cash Infusions Take Awhile to be Reflected in the Share Price



Source: Company reports and Dawson James estimates

While the cash anomaly may appeal to some investors, we also view the long-term fundamentals and long-term technical trends as attractive to fundamental investors. The cash anomaly presents an attractive entry point for these investors.

Luna Innovations, Inc. Income Forecast

Dollars in thousands, except per share data

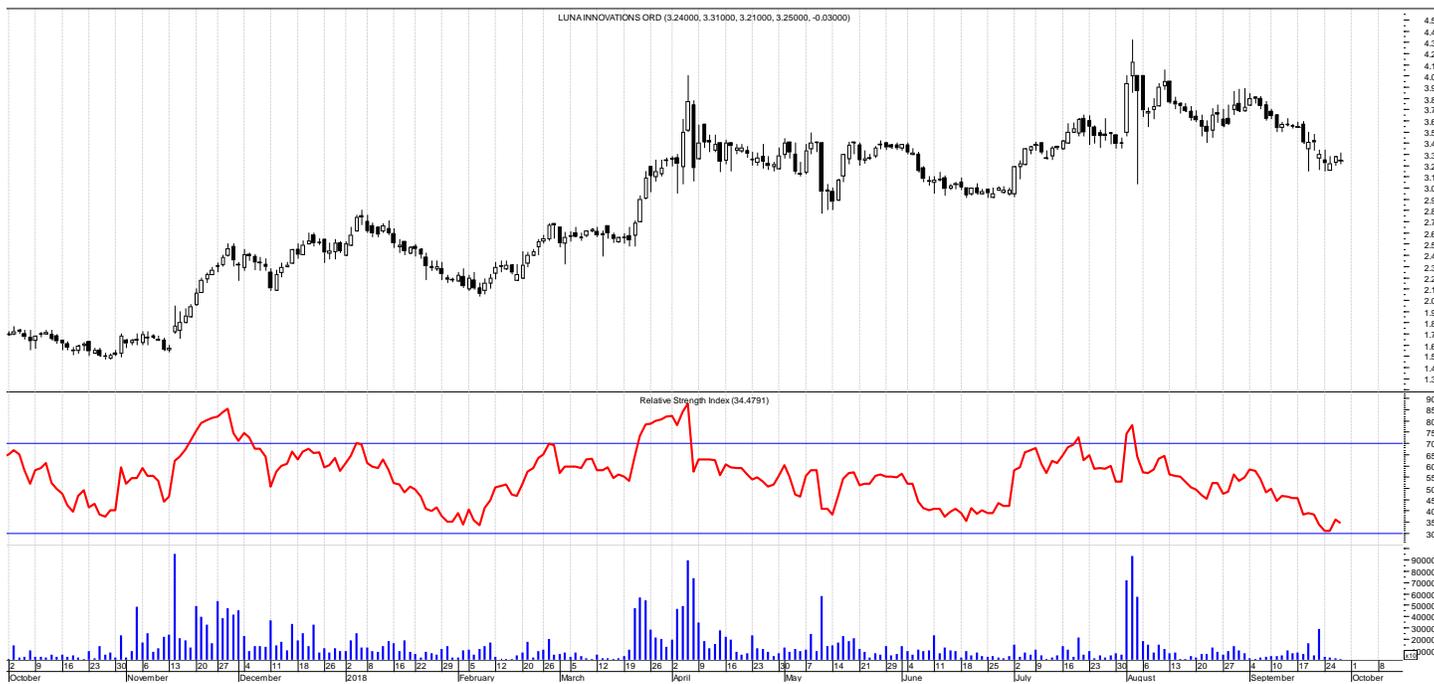
Fiscal years ended December 31

| | 2017 | | | | | 2018E | | | | | 2019E | | | | | 2020E | | | | |
|------------------------------------------|--------------------|------------------|------------------|------------------|--------------------|------------------|------------------|------------------|-------------------|-------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | 1Q | 2Q | 3Q | 4Q | YEAR | 1QA | 2QA | 3Q | 4Q | YEAR | 1Q | 2Q | 3Q | 4Q | YEAR | 1Q | 2Q | 3Q | 4Q | YEAR |
| Technology Development | 4,236,102 | 4,602,272 | 4,590,054 | 5,147,954 | 18,576,382 | 4,636,776 | 5,466,281 | 5,049,059 | 5,662,749 | 20,814,866 | 4,868,615 | 5,739,595 | 5,301,512 | 5,945,887 | 21,855,609 | 5,112,046 | 6,026,575 | 5,566,588 | 6,243,181 | 22,948,390 |
| YoY growth | | | 11.5% | 14.2% | 14.1% | | 18.8% | 10.0% | 10.0% | 12.1% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% |
| Seq growth | -6.0% | 8.6% | -0.3% | 12.2% | | -9.9% | 17.9% | -7.6% | 12.2% | 267.6% | -14.0% | 17.9% | -7.6% | 12.2% | 267.6% | -14.0% | 17.9% | -7.6% | 12.2% | 267.6% |
| Products and licensing | 2,398,000 | 3,680,000 | 3,713,000 | 4,714,000 | 14,505,000 | 4,132,000 | 4,457,000 | 4,455,600 | 5,656,800 | 18,701,400 | 4,958,400 | 5,348,400 | 5,346,720 | 6,788,160 | 22,441,680 | 5,950,080 | 6,418,080 | 6,416,064 | 8,145,792 | 26,930,016 |
| YoY growth | | | -47.5% | -35.3% | -43.3% | | 21.1% | 20.0% | 20.0% | 28.9% | 20.0% | 20.0% | 20.0% | 20.0% | 20.0% | 20.0% | 20.0% | 20.0% | 20.0% | 20.0% |
| Seq growth | -67.1% | 53.5% | 0.9% | 27.0% | 207.7% | -12.3% | 7.9% | 0.0% | 27.0% | 230.6% | -12.3% | 7.9% | 0.0% | 27.0% | 230.6% | -12.3% | 7.9% | 0.0% | 27.0% | 230.6% |
| Revenue | 6,634,102 | 8,282,272 | 8,303,054 | 9,861,954 | 33,081,382 | 8,768,776 | 9,923,281 | 9,504,659 | 11,319,549 | 39,516,266 | 9,827,015 | 11,087,995 | 10,648,232 | 12,734,047 | 44,297,289 | 11,062,126 | 12,444,655 | 11,982,652 | 14,388,973 | 49,878,406 |
| YoY growth | | | 19.8% | 14.5% | 14.8% | 32.2% | 19.8% | 14.5% | 14.8% | 19.5% | 12.1% | 11.7% | 12.0% | 12.5% | 12.1% | 12.6% | 12.2% | 12.5% | 13.0% | 12.6% |
| Seq growth | -43.7% | 124.8% | 100.3% | 118.8% | 335.4% | -11.1% | 113.2% | -4.2% | 19.1% | | -13.2% | 12.8% | -4.0% | 19.6% | | -13.1% | 12.5% | -3.7% | 20.1% | |
| Cost of Revenue | | | | | | | | | | | | | | | | | | | | |
| Technology development | 3,109,467 | 3,443,954 | 3,491,840 | 3,943,118 | 13,988,378 | 3,353,501 | 3,945,126 | 3,685,813 | 4,190,435 | 15,174,875 | 3,651,461 | 4,304,696 | 3,976,134 | 4,459,415 | 16,391,707 | 3,834,034 | 4,519,931 | 4,174,941 | 4,682,386 | 17,211,292 |
| As a percent of revenue | 73.4% | 74.8% | 76.1% | 76.6% | 75.3% | 72.3% | 72.2% | 73.0% | 74.0% | 72.9% | 75.0% | 75.0% | 75.0% | 75.0% | 75.0% | 75.0% | 75.0% | 75.0% | 75.0% | 75.0% |
| Products and licensing | 995,000 | 1,529,000 | 1,470,000 | 1,732,000 | 5,726,000 | 1,575,000 | 1,748,000 | 1,782,240 | 2,262,720 | 7,367,960 | 1,983,360 | 2,139,360 | 2,138,688 | 2,715,264 | 8,976,672 | 2,380,032 | 2,567,232 | 2,566,426 | 3,258,317 | 10,772,006 |
| As a percent of revenue | 41.5% | 41.5% | 39.6% | 36.7% | 39.5% | 38.1% | 39.2% | 40.0% | 40.0% | 39.4% | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% |
| Total COGS | 4,104,467 | 4,972,954 | 4,961,840 | 5,675,118 | 19,714,378 | 4,928,501 | 5,693,126 | 5,468,053 | 6,453,155 | 22,542,835 | 5,634,821 | 6,444,056 | 6,114,822 | 7,174,679 | 25,368,379 | 6,214,066 | 7,087,163 | 6,741,367 | 7,940,703 | 27,983,299 |
| Gross Margin | 2,529,635 | 3,309,318 | 3,341,214 | 4,186,836 | 13,367,004 | 3,840,275 | 4,230,155 | 4,036,606 | 4,866,395 | 16,973,431 | 4,192,194 | 4,643,939 | 4,533,410 | 5,559,368 | 18,928,910 | 4,848,059 | 5,357,492 | 5,241,285 | 6,448,271 | 21,895,107 |
| As a percent of revenue | 38.1% | 40.0% | 40.2% | 42.5% | 40.4% | 43.8% | 42.6% | 42.5% | 43.0% | 43.0% | 42.7% | 41.9% | 42.6% | 43.7% | 42.7% | 43.8% | 43.1% | 43.7% | 44.8% | 43.9% |
| Selling, general and administrative | 3,204,000 | 2,947,000 | 2,832,000 | 3,943,000 | 12,926,000 | 3,334,000 | 3,285,000 | 3,041,491 | 3,622,256 | 13,262,747 | 3,144,645 | 3,548,158 | 3,407,434 | 4,074,895 | 14,175,133 | 3,539,880 | 3,982,290 | 3,834,449 | 4,604,471 | 15,961,090 |
| As a percent of revenue | 48.3% | 35.6% | 34.1% | 40.0% | 39.1% | 38.0% | 32.9% | 32.0% | 32.0% | 33.6% | 32.0% | 32.0% | 32.0% | 32.0% | 32.0% | 32.0% | 32.0% | 32.0% | 32.0% | 32.0% |
| Research, development and engineering | 700,000 | 600,000 | 662,000 | 692,000 | 2,654,000 | 880,000 | 760,000 | 950,466 | 1,131,955 | 3,722,421 | 982,701 | 1,108,800 | 1,064,823 | 1,273,405 | 4,429,729 | 1,106,213 | 1,244,465 | 1,198,265 | 1,438,897 | 4,987,841 |
| As a percent of revenue | 10.6% | 7.2% | 8.0% | 7.0% | 8.0% | 10.0% | 7.7% | 10.0% | 10.0% | 9.4% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% |
| Operating Income | (1,374,365) | (237,682) | (152,786) | (448,164) | (2,212,996) | (373,725) | 205,155 | 44,649 | 112,184 | (11,737) | 64,847 | (13,019) | 61,152 | 211,068 | 324,049 | 201,967 | 130,737 | 208,572 | 404,902 | 946,177 |
| Operating margin | -20.7% | -2.9% | -1.8% | -4.5% | -6.7% | -4.3% | 2.1% | 0.5% | 1.0% | 0.0% | 0.7% | -0.1% | 0.6% | 1.7% | 0.7% | 1.8% | 1.1% | 1.7% | 2.8% | 1.9% |
| Investment income | - | - | - | - | - | 75,912 | 100,846 | 125,037 | 122,820 | 424,615 | 111,634 | 110,737 | 112,124 | 111,039 | 445,533 | 99,953 | 99,595 | 101,399 | 100,441 | 401,389 |
| Other | 351 | (1,220) | (3,389) | 175 | (4,498) | (115) | 1,187 | - | 1,072 | - | - | - | - | - | - | - | - | - | - | - |
| Interest expense, net | (64,374) | (60,387) | (55,099) | (38,647) | 218,506 | (40,738) | (33,988) | (21,685) | (12,050) | (108,462) | (2,415) | - | - | - | (2,415) | - | - | - | - | - |
| Pre-tax income | (1,438,388) | (299,289) | (211,274) | (486,636) | (1,998,988) | (338,666) | 273,200 | 148,000 | 222,954 | 305,488 | 174,066 | 97,717 | 173,277 | 322,107 | 767,167 | 301,919 | 230,332 | 309,971 | 505,343 | 1,347,565 |
| Taxes | 26,690 | 40,937 | (130,977) | (235,915) | 295,753 | 1,396 | (98,133) | 37,000 | 278,692 | 218,955 | 43,516 | 24,429 | 43,319 | 80,527 | 191,792 | 75,480 | 57,583 | 77,493 | 126,336 | 336,891 |
| Tax rate | -1.9% | -13.7% | 62.0% | -48.5% | -14.8% | 0.2% | -12.9% | 25.0% | 125.0% | 71.7% | 25.0% | 25.0% | 25.0% | 25.0% | 25.0% | 25.0% | 25.0% | 25.0% | 25.0% | 25.0% |
| Net income - continuing ops | (1,465,078) | (340,226) | (80,297) | (250,721) | (2,294,741) | (340,062) | 371,333 | 111,000 | (55,738) | 86,533 | 130,549 | 73,288 | 129,958 | 241,580 | 575,375 | 226,439 | 172,749 | 232,478 | 379,007 | 1,010,674 |
| Net income margin | -22.1% | -4.1% | -1.0% | -2.5% | -6.9% | -3.9% | 3.7% | 1.2% | -0.5% | 0.2% | 1.3% | 0.7% | 1.2% | 1.9% | 1.3% | 2.0% | 1.4% | 1.9% | 2.6% | 2.0% |
| Preferred dividends | 34,096 | 29,536 | 33,699 | 49,558 | 146,889 | 64,425 | 83,235 | 65,000 | 257,660 | 65,000 | 65,000 | 65,000 | 65,000 | 260,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 260,000 |
| Net Income Attributable to Common | (1,499,174) | (369,762) | (113,996) | (300,279) | (2,441,630) | (404,487) | 308,098 | 46,000 | (120,738) | (171,127) | 65,549 | 8,288 | 64,958 | 176,580 | 315,375 | 161,439 | 107,749 | 167,478 | 314,007 | 750,674 |
| Diluted shares outstanding | 27,541,356 | 27,600,147 | 32,714,389 | 31,790,418 | 27,579,988 | 31,198,833 | 31,506,745 | 31,506,745 | 31,506,745 | 31,429,767 | 31,506,745 | 31,506,745 | 31,506,745 | 31,506,745 | 31,506,745 | 31,506,745 | 31,506,745 | 31,506,745 | 31,506,745 | 31,506,745 |
| Seq change | | 58,791 | 5,114,242 | (923,971) | | (591,585) | 307,912 | - | (76,978) | | - | - | - | - | - | - | - | - | - | - |
| EPS diluted - continuing | (\$0.05) | (\$0.01) | (\$0.00) | (\$0.01) | (\$0.09) | (\$0.01) | \$0.01 | \$0.00 | (\$0.00) | (\$0.01) | \$0.00 | \$0.00 | \$0.00 | \$0.01 | \$0.01 | \$0.01 | \$0.00 | \$0.01 | \$0.01 | \$0.02 |
| EBITDA | | | | | | | | | | | | | | | | | | | | |
| Operating income | (1,374,365) | (237,682) | (152,786) | (448,164) | (2,212,996) | (373,725) | 205,155 | 44,649 | 112,184 | (11,737) | 64,847 | (13,019) | 61,152 | 211,068 | 324,049 | 201,967 | 130,737 | 208,572 | 404,902 | 946,177 |
| Other income | 351 | (1,220) | (3,389) | 175 | (4,498) | (115) | 1,187 | - | 1,072 | - | - | - | - | - | - | - | - | - | - | - |
| Addback: depreciation and amort. | 956,687 | 285,253 | 488,119 | 284,742 | 2,014,801 | 307,852 | 314,725 | 310,000 | 310,000 | 1,242,577 | 315,000 | 315,000 | 315,000 | 315,000 | 1,260,000 | 320,000 | 320,000 | 320,000 | 320,000 | 1,280,000 |
| Addback: stock-based comp. | 170,084 | 151,672 | 154,672 | 238,666 | 715,094 | 94,606 | 117,823 | 95,000 | 95,000 | 402,429 | 100,000 | 100,000 | 100,000 | 100,000 | 400,000 | 105,000 | 105,000 | 105,000 | 105,000 | 420,000 |
| EBITDA | (247,243) | 198,023 | 486,616 | 75,419 | 512,401 | 28,618 | 638,890 | 449,649 | 517,184 | 1,634,341 | 479,847 | 401,981 | 476,152 | 626,068 | 1,984,049 | 626,967 | 555,737 | 633,572 | 829,902 | 2,646,177 |
| EBITDA margin | -3.7% | 2.4% | 5.9% | 0.8% | 1.5% | 0.3% | 4.7% | 4.6% | 4.8% | 4.1% | 4.9% | 3.6% | 4.5% | 4.9% | 4.5% | 5.7% | 4.5% | 5.3% | 5.8% | 5.3% |
| YoY growth | -55.6% | 18.9% | -41.2% | -95.3% | -120.6% | -111.6% | 222.6% | -7.6% | 585.7% | 219.0% | 1576.7% | -37.1% | 5.9% | 21.1% | 21.4% | 30.7% | 38.2% | 33.1% | 32.6% | 33.4% |

Source: Company reports and Dawson James estimates.

Source: Company reports and Dawson James estimates

Important Disclosures:



Source: Metastock

Price target and ratings changes over the past 3 years:

Initiated – Buy – October 2, 2018 – Price Target \$5.55

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Although the statements in this report have been obtained from and are based upon recognized statistical services, issuer reports or communications, or other sources that the Firm believes to be reliable, we cannot guarantee their accuracy. All

opinions and estimates included in this report constitute the analyst's judgment as of the date of this report and are subject to change without notice.

VALUATION

Our \$5.55 price target is based on a multiple of 2.4x our 2019 revenue estimate, plus \$0.55 per share in cash.

RISK FACTORS

1. Luna is a relatively small player selling to much larger corporate entities, so sales can be unpredictable and volatile.
2. While we believe that the company's technology is unique and innovative, a number of larger companies operate in the broader fiber optic industry and could challenge Luna with superior products.
3. LUNA shares are relatively illiquid and trading history has shown a range of volatility with the shares trading down even after fundamental events which appear positive. This could occur in the future.

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Ratings Definitions:

- 1) **Buy:** the analyst believes the price of the stock will appreciate and produce a total return of at least 20% over the next 12-18 months;
- 2) **Neutral:** the analyst believes the price of the stock is fairly valued for the next 12-18 months;
- 3) **Sell:** the analyst believes the price of the stock will decline by at least 20% over the next 12-18 months and should be sold.

The following chart reflects the range of current research report ratings for all companies followed by the analysts of the Firm. The chart also reflects the research report ratings relating to those companies for which the Firm has performed investment banking services in the last twelve months.

| Ratings Distribution | Company Coverage | | Investment Banking | |
|----------------------------|------------------|-------------|--------------------|-------------|
| | # of Companies | % of Total | # of Companies | % of Totals |
| Market Outperform (Buy) | 29 | 91% | 8 | 28% |
| Market Perform (Neutral) | 3 | 9% | 0 | 0% |
| Market Underperform (Sell) | 0 | 0% | 0 | 0% |
| Total | 32 | 100% | 8 | 25% |

Analyst Certification:

The analyst(s) whose name appears on this research report certifies that 1) all of the views expressed in this report accurately reflect his (their) personal views about any and all of the subject securities or issuers discussed; and 2) no part of the research analyst's compensation was, is, or will be directly or indirectly related to the specific recommendations or views expressed by the research analyst in this research report; and 3) all Dawson James employees, including the analyst(s) responsible for preparing this research report, may be eligible to receive non-product or service specific monetary bonus compensation that is based upon various factors, including total revenues of Dawson James and its affiliates as well as a portion of the proceeds from a broad pool of investment vehicles consisting of components of the compensation generated by investment banking activities, including but not limited to shares of stock and/or warrants, which may or may not include the securities referenced in this report.