12-Sep-2019

Viavi Solutions, Inc. (VIAV)

Analyst Day

Copyright © 2001-2019 FactSet CallStreet, LLC

CORPORATE PARTICIPANTS

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

OTHER PARTICIPANTS

John Marchetti
Analyst, Stifel, Nicolaus & Company

Alex Henderson
Analyst, Needham & Co. LLC

Meta A. Marshall
Analyst, Morgan Stanley & Co. LLC

Samik Chatterjee
Analyst, JPMorgan Securities LLC

Tim Savageaux
Analyst, Northland Securities, Inc.

Zach Borovik
Analyst, Loomis, Sayles & Company

MANAGEMENT DISCUSSION SECTION

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

Welcome to VIAVI's Analyst Day 2019. I'm Bill Ong, Head of Investor Relations. And we have a exciting presentation ahead of us. So we're going to begin with our CEO, Oleg Khaykin discussing the VIAVI strategy, and then we'll follow with a Q&A. And then we'll have a break around 10 o'clock, and then immediately afterwards our CFO, Amar Maletira will present the financial update, and then we'll have another Q&A, and that will end around 11:30, and then we'll close the webcast at that time.

We will have some demos in the back talking about Fiber, **[5G, Wireless and 3D Sensing. This presentation contains forward-looking statements 27A of the Securities Act of 1934. Forward-looking statements are all statements we make other than those dealing specifically with historical matters. These forward-looking statements include, among other things, financial guidance. Please refer to the Company's filings with the Securities and Exchange Commission, including our annual report on Form 10-K filed August 27, 2019 for additional factors that could cause actual results to differ] materially from current expectations.

The forward-looking statements including this presentation are valid only as of today's date except or otherwise noted. VIAVI Solutions Inc., undertakes no obligation to updates these statements.

This presentation and the Q&A that follows includes non-GAAP financial measures which complement the company's preliminary consolidated GAAP financials. These non-GAAP financials are not intended to supersede or replace the company's preliminary GAAP financials. We provide detailed reconciliation of preliminary GAAP financials and non-GAAP results in the appendix to this presentation and in the – that we issued today. This presentation is also located in the Investor Relations section on our website at www.viavisolutions.com.

Copyright © 2001-2019 FactSet CallStreet, LLC

Okay, with that, I'll turn over to Oleg.

Oleg Khaykin

President, Chief Executive Officer & Director, Viavi Solutions, Inc.

Thank you, Bill. Good morning, everybody and welcome to VIAVI's Analyst Day here in sunny Northern California. What I'd like to do is start off this morning and share with you our perspective on our strategy, where we came from, where we are going. Then we'll follow up with Amar discussing our financial model, financial projections and all the other information that provides forward-looking view in the next three years.

Okay, before I start, I'd like to kick it off to where we left off three years ago, just about the same time in Santa Clara, it was about six months after I joined VIAVI. It was about a year after it got separated from JDS Uniphase.

At that time, we laid out our vision to be number one or at least a strong number two in every market where we compete. And we have launched on a significant restructuring of the company and the strategy for us was for each one of our business units. For NSE, we launched what we called a market leadership and network enablement mostly in instrumentation, reinforced by highly focused service enablement.

That meant we've retrenched significantly, made a lot of costs in our software business where we did not have the critical mass or we were subscale, and we doubled down on the traditional strength of JDS, [indiscernible] (00:03:35) before that mainly field and lab and production instrumentation. And we deployed our balance sheet to drive focused corporate development to drive greater operating leverage and utilize some of our NOLs. In case of our optical security and performance products, we focused on reinforcing our position in our core business there, which is anti-counterfeiting to make sure that business is secure, and we – it was very early stages of the 3D Sensing that was coming on the horizon. We've put a lot of investment, a lot of focus to really make sure we become successful in this space.

So fast forward three years, what have we done? Well, the first is we will spend about $1.3 billion plus both organically and inorganically in driving the top line growth. Internally, we focused a lot of our investment and CapEx in four areas. The first one is refreshing and redeveloping our products and platforms in fiber, cable and increasingly wireless instrumentation which is a new business for us.

Historically, JDS was a wireline and a fiber play. And in the last three years, we've embarked on developing wireless instrumentation to enter the wireless field instruments. That's a much faster growing segment than many of the others.

The second element was the 3D Sensing. As I said earlier, we – three years ago, we just were kicking off with a 3D Sensing facial recognition in the early adopters. We've invested into the manufacturing infrastructure, into the R&D and in product development and we've captured significant share of this emerging market and we continue to grow this business rapidly.

The third element was anti-counterfeiting. As I will discuss later, it's a pretty stable, very profitable business unit and we continue to invest in it to maintain our leadership and to bring continuous innovation to this market.

And last but not the least, even though we have significantly paired back our software development and our software play, we used that time to retrench and rethink how we would re-enter this market at a later time looking for the right inflection point and laying down the foundation for a much more effective software development part within VIAVI.

Copyright © 2001-2019 FactSet CallStreet, LLC

In terms of the inorganic, we have made a set of acquisitions right ahead of the each respective wave. We acquired Trilithic, which was a competitor to us in the cable space, but they were positioned at the lower end of the market. Our solutions usually come in at the high end of the market and we bought them just before the DOCSIS 3.1 took off, as a result we were able to thoroughly dominate the DOCSIS 3.1 adoption.

We had a high end solution used by major companies, and we had a point solution for a price sensitive segment. So we effectively bifurcated the cable market and captured significant share at the high-end, as well as at the low-end. And today we have probably the best cable position we've had ever.

And by the way that's not over, because after DOCSIS 3.1, there will be symmetric technology coming up in the next couple of years, so we are very well-positioned in cable as a result of it.

Then we have made a major acquisition. About two thirds of that $630 million buying Cobham/Aeroflex test and measurement assets, and it gave us a significant presence in the emerging 5G lab space and more importantly longer term in a middle era of communication market.

Recently about a year ago we acquired RPC Photonics to expand our footprint in 3D Sensing, starting out three years ago we had mainly filters on the return path infrared low angle shift infrared filters. With the RPC Photonics we gained the diffusion technology which is as you know and I'll talk about it later in the – in case of a time-of-flight technology diffuser is just as important as having a good filter.

So we now play on both sides of the equation. I'll talk more about it later. And most recently about three months ago, we acquired a company called 3Z Telecom, and it's further expanding our portfolio of the wireless 5G instruments for the antenna, deployment and alignment market.

At the same time, we have embarked on significant revenue diversification. JDS historically was very much a North American focused company. And we had a disproportionate share of North America. And when I came in I looked at it, and said hey, we are pygmy in Europe and Asia, and we're not really getting our fair share. So we've redeployed a number of our resources, refocused on those markets, and have driven significant growth in the last three years in both Europe and Asia.

At the same time, we all aware that the North American market has had a significant headwinds with a decline in spend and increased M&A by major service providers. And overall our Americas has weathered the storm fairly well with about 3% decline, which means actually the North America had a higher decline, but the growth in Central and South America has offset some of it.

So overall it was a very good diversification strategy for NSE, and today we're in a much stronger, more resilient position in the market.

And last but not the least, we have fundamentally transformed the financial and growth profile of the company. At the time of the separation of JDS Uniphase in August of 2015, the company was very much a combination of businesses that were fairly mature, there was not much secular growth in any of the business we are playing in, and overall we're about $875 million in revenue with 100% of the profit coming in from the Optical Security and Performance Products and NSE was effectively a profitless prosperity.

2016 was a very strong year where we saw increased use of anti-counterfeiting pigment, so we had a very strong growth, as well as some good performance in the NSE. But even then we only got to about 2% operating profit in

Copyright © 2001-2019 FactSet CallStreet, LLC

NSE, and almost all of the profit came from OSP. Throughout the fiscal 2017, we embarked on major restructuring where we shut down various product lines, scaled some product lines back and redeployed our investment. So we have shrunk our revenue about $100 million, yet our operating profit barely [indiscernible] (00:11:08) purely by reducing the cost across the company and really getting us into a more economically viable financial footprint for the company of our size.

These restructuring measures were a gut-wrenching changes and the company paid off handsomely for us in fiscal 2018, where we saw the both top line growth and we saw the margin expansion in NSE and the continued growth in OSP. And most importantly just the fiscal 2019, we closed the year which also includes the acquisition of Cobham assets. The revenue came in at about $1.13 billion, total of the VIAVI operating profit 17%, but more importantly NSE is a 12% operating profit and actually accounting for almost half of our total operating profit.

So, today both OSP and NSE roughly dropped $100 million to the bottom line, and we continue to drive this momentum forward. But what's even more impressive is if we look at our portfolio today, we are no longer what I would call a mature stagnating company, about a little more than half of our revenue comes from areas which we deem as having significant secular growth over the next decade, namely fiber, 5G wireless and 3D Sensing.

So, if we look at our revenue profile today and the prospective outlook for our end markets, about little over 50% of our revenue is in the markets which we deem as a secularly growing market. The remaining slightly under 50% revenue is mostly stable or gradually declining in maturing markets. And I'll talk more about it down the road.

So, that brings us today what's next. Last three years was all about retrenching, restructuring the company, kind of getting the ship in order and deciding where we're going to be when we grew up, and the next three years is really it's all about shifting gears and focusing on starting to grow and expanding our position in our core markets.

So, our vision remains unchanged to always be number one or at the very least very strong number two with a path to number one in every market we compete. And our strategy is composed of four key elements. The first one is defend and expand the base business, because no matter how successful you are in your growth businesses, if your base business is ignored or underinvested, you'll find the whole base sinking. So, in NSE, we continue with the same strategy Big NE, Focused SE, which means focus on being the best in instrumentations and supplement it and reinforce it with the smart use of our software technologies, which leverages our big installed instrumentation base.

And in case of OSP, it's continued to maintain strong position and technology innovation in anti-counterfeiting and high value optical coatings. So, that's our first part is defend and expand the base business to ensure that the base business is stable.

The second one is, I call it, ride the waves. And it's leveraging the secular trends in our portfolio to drive growth and expanding our total addressable market. The first bullet is fiber everywhere. We are already a major player in fiber and we feel that this business is going to continue to grow over the next decade, driven by wireless, cable and fiber to everywhere network. So, clearly winning more than our fair share in that business is a key element for us.

The second one is 5G. Unlike 3G, 4G, 4.5G LTE, 5G, we see as a fundamental inflection point which can allow significant shifts in market share. It's a very disruptive technology which in many cases negates the incumbency and we feel this is our opportunity to enter this market and carve out significant share there in the RF instrumentation, but more importantly, this is where we plan to enter with our service assurance technology to start rebuilding that business.

Copyright © 2001-2019 FactSet CallStreet, LLC

And the last one is 3D Sensing technology adoption in consumer, automotive and industrial applications. We feel this is going to be another super trend over the next decade where 3D Sensing will penetrate pretty much everywhere.

The third strategy is continued disciplined corporate development and M&A. Our – well, I'll talk about it later, we view as go deep strategy, we're basically acquiring companies in our space, where we have significant operating leverage, a lot of operating synergies is the key element for us to continue scaling the operating scale of the company and driving further operating leverage. And also we would consider looking selectively at the adjacent markets at a very highly profitable revenue profile companies that help us monetize our significant NOLs, and I'll talk about it later as well.

And the last but not the least is continue to optimize our operating engine. It's continuous productivity improvements in operations, R&D and SG&A, I mean we started it in fiscal 2016, we continue to execute on it for the last three years and we have more dry powder in that bucket for us to continue extracting productivity and operating performance improvements in the company.

So what I'd like to do is, as I go through our strategy, I'll go through each one of these points, and expand more on them. So first, we'll start as define and expand the base of the business. Today, we are a leader in every market where we compete. On the NSE side, we're number one in cable, we're number one in access, which is mostly DSL, it's a mature declining market, but it still got a major presence in many markets.

Cable on the other hand is going to be around for a long time, and there's number of new innovations coming out in next coming years which will bring an additional wave of growth. Number one in metro and transport, in many cases a lot of these segments are converging, metro and transport is predominantly fiber, and now we've also seen fiber driving very deep in the cable, so effectively being number one in all these markets reinforces our position as the convergence of this markets take place.

And of course number one in fiber. We started number two, we have been successful in growing our share and growing our revenues, and today we are number one in the market. Although there's a very close competitor right behind us, and we intend to keep putting distance between ourselves and them.

With the acquisition of our AvComm and Wireless Test and Measurement business, we're now number one in RANtoCore Network Test. We're number one in land-mobile and military radio testing, and we are number one in navigation and communication and transponder testing in the Avionics. And in case of the OSP business unit, we are number one in anti-counterfeiting and pigment materials, and number one in 3D Sensing optical filters and diffusers.

Now when we look at our NSE business unit, it's easy to see why we make such a big focus on defending and expanding the base. We have a huge deployed ecosystem. We are the market leader in that space. We have – starting from the bottom up, we have instruments for every form fit and function in the field installation base, in various fiber probes and cable probes. So whether its fiber cable, DSL, or any end termination on the edge, we have a strong position with our field instrumentation.

But it's not over because field instruments all are networked and they generate a lot of signal flow and a lot of information that we sell through three as family of software solutions StrataSync, ONMSi and XPERTrak. StrataSync captures all the measurement information from the field that technicians make and uploads it into the customer cloud where they can extract this data and run analytics.

Copyright © 2001-2019 FactSet CallStreet, LLC

ONMSi is Optical Network Monitoring System. If you have a big fiber plant, you have a lot of probes put all over your network that are continuously monitoring your fiber network and sense parametric data and measurement data into the software collected by ONMSi, and exactly the same thing happens in the cable where you have various cable probe monitoring the cable network and uploading all this information to our XPERTrak solution.

These softer platforms allow costumer to capture all these data, analyze it, provide important KPI information and gets up, and then we have an overwhelm – overarching solution called NITRO Platform with various deployments can collect this data, organize it, provide analytics reporting, set the policy and help the customers to manage and control their network.

So it's not just a tool that goes in about, every one of our tools collect is effectively a probe that collects the data that can be uploaded all the way to the network operating center.

So this is our ecosystem. So if customer has our software deployed, it's much easier to sell them the next generation of instruments. If they have all of our instruments deployed, we can sell them our software solution. It's very sticky, it's very synergistic and with every generation of technology we are able to capture bigger and bigger share, because we are effectively automating the workflow, and it's really – it's not about fixing the cable or the DSL, it's all about effectively managing your network and reducing the cost of repair and maintenance at every step. So that's what – this is our strategy and our base portfolio is to continue drive the synergistic development between our field instruments, our customer software and our assurance software.

In case of OSP, I'll talk later about the growth business, we have two mature segments. One is anti-counterfeiting and the other one is government and defense. Government and defense was a struggling business for between like say 2012-2016. There's been a big drop in spending, however, that has been reversed in the last several years and it's enjoying a very strong demand from various Tier 1 aerospace and defense companies.

In anti-counterfeiting, one of the common concerns I hear from our customers or from our investors is that well we hear all this money is going away, there is mobile payments, credit cards and all that. And listen, we cannot judge the book by the country which we live in, right. Yes, if you're living in Sweden you're seeing a lot less currency in circulation. However, you've got to take a global view, and if you look at the global view, the number of bank notes being printed is actually expected to continue to be increasing, although at a moderate rate the number of bank notes continues to increase worldwide. The biggest economies China, India continue to print money and number of banknotes in circulation is expected to continue to grow between now and 2023.

Sure, you look at a company like Eurozone, I mean they're almost flat. And some companies that clearly scaling back like Sweden. But frankly they haven't been using much cash to start with, they were mainly using credit cards. So, in many ways the cash is still going to be around in the foreseeable future, and it continues to be. But it's only part of the equation.

So, first you got to start and you got to look at the world of banknotes. And then you've got to say okay, what's happening to those banknotes, what's happening is more and more of the advancement anti-counterfeiting features are trickling down into like Tier 2, Tier 3 countries, and into lower denominations, which means for us if I look at the we're not going to talk about dollars and cents, but we're going to talk about tonnes of pigments that we ship, right.

So between 2005 and 2009 our primary product we sold was the OVP pigments. Then we introduced OVMP and the early adopters our shipments and tonnage have jumped significantly. And now with a continued penetration of

Copyright © 2001-2019 FactSet CallStreet, LLC

that new OVMP technologies of various countries you see over here that level between 2015 and 2019 has gone even higher.

Now, one other things that's happening, the features are getting bigger, more prominent, we continue to introduce more colors and pigments, and many economies are now moving these features from the higher denominations to ever lower denominations. So in the end, our business is driven by the number of tonnes that we ship.

Now is it going to continue? Well, I think at a certain point, it's going to stall and may start to decrease, but over the next five years, that's a business where we can continue to make a lot of money. Okay.

So next let's talk about the riding the waves, the growth segments for VIAVI, and that's really everybody likes to talk about growth. I mean, clearly you got to take care of your base business, you got to continue to improve productivity, but growth solves a lot of problems, and I'm very pleased that today in the way VIAVI is trifecta. If you think about some of the hottest trends in the next decade, growth of fiber, 5G deployment, 3D Sensing, we've got three of them, so in the way VIAVI is a trifecta stock in that respect, okay that's my last pitch for the stock.

But let me tell you why we're excited, right? So if you look at our place where we play, I mean we play in the Lab & Production for test and measurement and we play in the service provider field, that's a service provider value chain, okay. So when we look at this thing, on the access traditionally you have a fiber, it's playing on the fiber-to-the-curb or to the building what have you. Cable is a coax, but fiber is moving closer and closer to the home. DSL is still copper and is declining being replaced by FTTx, and increasingly wireless as we're looking at the local loop is going to be fiber going to the antenna.

So I mean in a way if you look at fiber, it's pretty much fiber technology is proliferating pretty much everywhere in the network, and in Lab & Production, when you're having all this, well you've got to start making instruments and modules, there are for fiber networking, and it's providing significant growth for our fiber instruments in Lab & Production. In the back when you afterwards you go to our stands, you can see the fiber solutions where we show everything from fiber in the lab to fiber in the field, and I'll talk about it more shortly.

The other one is wireless, a relatively new product area for us. Traditionally JDS was very much a wireline fiber company, we've started a while back with kind of putting our toes in the wireless space and over the years, it has grown tremendously, and 5G really provides us with a big opportunities with acquisition of Cobham we have instantly got propelled to being a market leader in system test and lab and with the, a lot of internal development, we are building a strong portfolio of wireless products. And of course the assurance platform is playing to our strength in the wireless edge.

So talking about fiber, before I'm going into individual segments, there is just some basic statistics. As the fiber gets deployed, when you look at fiber there is, the access networks, you got the whole slow of wireless networks from small cell to metro cells, you got the front-haul, backhaul, any kind of haul, you got the hyperscale data centers, and you got, of course, the core metro and the core fiber network.

If you look at it just like to give you an idea of what's happening in fiber, in many ways, 5G, and wire, and fiber are almost interchangeable. Just to deploy top 25 metro areas in United States, you'll need to lay about 1.4 million miles of fiber. That means that fiber needs to be tested. It needs to be interconnected. It needs to be connected to various routers, switches, which all have fiber back points that all drives need for fiber components and fiber equipment, which drives the need for fiber testing in a Lab & Production.

Copyright © 2001-2019 FactSet CallStreet, LLC

So, if I look at the access-to-the-home, we are seeing tremendous fiber penetration. So, when we think about cable network, it's really no longer cable, we should call them fiber networks because with the remote file evolution of – to full duplex hybrid fiber coax, fiber is going to move even deeper into the cable plant closer to the home. And every time you move closer and closer to the edge, you have a – almost a fibonacci sequence of number of endpoints that are increasing, each one of those endpoints needs to be connected, tested, qualified, certified, which means you need a lot of technicians with a lot of instruments.

And one of the recent estimate is 100,000-plus technicians will need new instruments, because fiber is not a fiber is not a fiber, continuously, just because you have a fiber instrument today, it doesn't mean this fiber instrument is going to be good for you tomorrow. Because as the fiber gets penetrated deeper into the network, you have new wavelengths being introduced, new modulation protocols, and for that you need a more updated fiber testing equipment.

Then, of course, PON, passive optical network, fiber-to-the-home, fiber-to-the-building, it's proliferating even deeper, the same story there. And, of course, I talked about 5G wireless local loop, it's fiber-to-the-antenna. And if we look at 5G, you're going to need about five to six times more locations than the current 4G for tower and antenna deployment. That means more endpoints, more connections, more testing and measurement and certification.

Hyperscale data centers, as the data center is getting bigger and bigger, the copper backplane is disappearing and you increasingly see all fiber interconnect within the data center. And these data centers are getting so huge, they resemble miniature metro network. It means you need the same fiber monitoring solutions that you need for metro network inside the data center because you have all these connections, you got to know if the connection is going bad or it's broken or whatever. It gives you guarantees of better uptime for the data center. So we actually see that evolving as a very interesting opportunity for us as well.

The wireless network, we talked about the build-out, it's all fiber. There is no longer any copper or coax. Fiber goes all the way to the antenna and everything in between is fiber. But also it does something else. To test all those interfaces, now you need a fiber tool, right? Before, you had a typical coax or a wireless tool. Now you need to start with the fiber in order to test all the protocols. And that's actually gives us an advantage being coming from the fiber side of the equation to enter the RF space.

And last but not the least, if you upgrade all of these networks around it, well, it just means you need to upgrade your core to carry much bigger data, to go from 100-gig to 400-gig to 800-gig ultimately. So, clearly, the metro and the core networks are going to get [ph] upgraders also (00:31:50) it's a nice virtuous cycle for the fiber.

Now one of the things I said is just deployment of fiber is not the end of it. It's continuously refreshing market and we're seeing it everywhere. Even the areas where fiber is already deployed, we see continuous refresh and replacement of the fiber instruments. In the enterprise to data center interconnect or service provider or metro networks, we are seeing everybody moving from 40-gig to 100-gig. It requires new tools, new modulation protocols to test, so on and so forth. In case of metro and core networks, moving from 100-gig to 200-gig to ultimately to 400-gig, the same kind of problems, right. And in case of advanced R&D was being developed today, 400-gig is now the introduction moving ultimately R&D to 600-gig and 800-gig. And in fact, in the back, you can see one of our instruments for 800-gig testing for the current labs as this new technology is being developed.

So what's really interesting here because we do play across the whole spectrum, what we're developing today 600-gig, 800-gig, in couple years we move it to the instrumentation that plays in this space, in a couple years we move to instrumentation that plays in this space. So, our technology is now getting monetized over a longer

Copyright © 2001-2019 FactSet CallStreet, LLC

lifecycle. It starts in the lab and production, moves to the metro, core deployments and moves ultimately to the data centers and the enterprise networks.

And I'm not going to dwell on this one, but if you look at it today, we have the broadest, the most extensive portfolio of fiber instruments and we have by far one of the best IP portfolio in fiber overall and we offer solutions for every stage of the value chain, which is for manufacturing, development, turn-up and installation, troubleshooting, maintenance, monitoring, assurance and you can read the slide at your own leisure. And we have the right form, fit and function as well as the software and analytics for each stage of the fiber deployment.

Now, come to wireless, it's a new story. In wireless, we are the new kid on the block, and our foray into the wireless space started with 2G, 3G and 3.5G. And if you think about it, that time this network, that's what's really grew in the late 1990s and early 2000s. That was all the growth. And the first product that a predecessor at that time of VIAVI introduced was cable analyzer. We knew cable, we knew coax – cable/antenna analyzer, right. So we were able to take the technology we developed in many other areas and through acquisition, the first product we introduced was a cable/antenna analyzer. And then we made some acquisitions in software to increase our presence in this market, mostly the geolocation and the GPRS core assurance.

Our success in that area was mixed. We were fairly successful with this acquisition here for the geolocation and not so much with the GPRS core. We had a point solution. It was not really linked to anything else and there was a lot of strong incumbents in that space.

Then came 4G and LTE introduction and the big growth of smartphones. It's all became about data. So we went from analog voice to everything it's all about the data. And we introduced our next product, the CPRI, CellAdvisor Analyzer. And the reason for that is one of the things you have here, you took the Node B and RNC and all of it got collapsed to eNB. So, eNB, these became a black box. So now you had to test it by looking into it at the signals coming in and out of it. And that was our next instrument. Both of these are cable/antenna analyzer and the CPRI were fairly successful and it gave us more understanding of the market. Then we extended our geolocation and the core assurance to these markets as well. And as I said, this continue to be fairly successful and this one not so much.

And now comes 5G. I mean, the 4.5G Evolution LTE and ultimately 5G. And here what we noticed is we see much more – it's now all about data. And we've seen consolidation of emergence of small cells, the baseband unit hotels and the whole nature of the network has changed quite dramatically. And it showed us there's a lot of new interfaces to test and they really look more and more like a traditional network less than RF and it played very well to our strength. And as of today, with acquisition of Cobham wireless business and internal development, we now have a fairly comprehensive set of tools to test every interface or most of the interfaces in the 5G network as well as also we noticed by integrating our geolocation and some of our core assurance, we can now do a RANtoCore analytics.

And if you think about it, we were always very strong in the edge. We're not very strong in the core. Well, 5G is all about the edge. All the intelligence is moving to the edge. A lot of computing is moving to the edge. That means our traditional strength here is now as we integrate our core assurance with the edge, we actually have a solution that plays to our traditional strength. So, in addition to all the instruments attached to all the interface in between the CU, GU, the antenna, it plays to our strength. And more importantly, as you now [indiscernible] (00:38:17) this BBU hotels, another problem emerging in these networks is the whole thing of synchronization and timing, right. And that's very much more a traditional telecom network problem to solve, which plays very well to our instruments like CellAdvisor 5G and MTS-5800 and so on and so forth. Okay?

Copyright © 2001-2019 FactSet CallStreet, LLC

So, our strategy in 5G, take our strength in the RANtoCore that we acquired with the acquisition of the Aeroflex business and roll it out together with our instruments to take that strength, parlay it into the deployment and testing and ultimately field instruments and ultimately into assurance. So it's, we call it, lab to field to assurance. That's at least our vision, the strategy, and that's what we are planning to execute on.

Give you an example how we look at the wireless 5G network today. So you have your [ph] EEs (00:39:17), you have RUs, GUs, CUs and 5G [ph] virtualized (00:39:21) core. Well, we have strongest market position presence in the [ph] EE (00:39:29) emulation with our TM500 instruments that came from Aeroflex. We are at every major OEM for the wireless equipment. Then, as these products get into the field, into the service provider labs and the initial deployment, one of the first things you need to do is to see really if the radio is working, if the beams are being formed correctly, doing a lot of analysis to see if – just kind of check if everything is going to work. So, you take our protocol analyzer and you can check how it is going to interact with the network as you deploy it in the field.

The next thing is you say, okay, I now got it all working. Now, let's make sure that the backhaul, front-haul is working and we have all the right synchronization, timing and activation, followed by a RAN analyzer, collecting the data from the field and seeing how it's performing, is everything going according to plan, is the CU/DU split into networking working effectively, providing visibility at every little link in that chain. And last but not the least, you can introduce a 5G Core Emulator that before you turn this whole thing on, you can put an emulator and really check out that whole sequence to see if it's working properly.

So, that is the first step you do in deploying, testing and kind of finding a way around whether your technology is working or your network architecture is working, so on and so forth. And we are today engaged with the lead service providers who are deploying and testing 5G in the field and providing them with a lot of these capabilities.

Well, once the network is deployed and now it's really going into big time rollout, well, that plays very much to our traditional strength because we know how to play in the field. Because field is all about workflow automation whereas in the testing and deployment and experimentation use very sophisticated technicians with a vans full of instrumentation who can operate very complex instruments in racks mounted from traditional big RF players. When you get to the field, it's your typical – you're lucky if your technician has an associate degree, most of them are high school grads with some training and you got to make sure they are productive. So you want to automate their workflow, just tell them connect this to this, this to this, press the button. If it's green, you're done. If it's red, call for help.

So, for us, it all starts with the construction and installation tool, which we'll be releasing shortly, then goes about installing the aligning antennas, scanning RF, looking if your beam forming is working, your base station is operating, so you can qualify, certify and release it, ensure that the timing between all the elements and synchronization is working, your transport is working. Then verify your beams, make sure they are all going in the right direction, and we're going to have an interesting presentation later today after the meeting, if some of you want to stay on to see – get more tutorial on how these things work.

And then, of course, once you have all this data capture, you want to take and upload it through StrataSync into the service provider cloud so that their operating center, they see all the data and they can police it and see up that's what we expect. We plan the network and here's the actual data comes in, correlate the two, yeah, they're all correct. And then last but not the least, implementing the assurance and monitoring network to continue collect all the data and make sure your network is running smoothly.

Copyright © 2001-2019 FactSet CallStreet, LLC

So, in that respect, a lot of these things were already exist for us, many of them are coming out in the next six to nine months. By next summer, we'll have pretty much the complete solution to provide the workflow automation for service providers as they go into deploying 5G. And if you think about it, ultimately your 5G is going to have to have five to six times more location than your existing 4G LTE networks. It's going to be a major headache. So how fast and how cost effectively you can deploy? Having a solution that gives you predictability, automation I think is going to be a big plus, and our intent is to carve out a major part of that market when it's all said and done.

All right. Now shifting gears to the 3D Sensing. That's the growth part – profile of our OSP business unit. And today, I mean, we see two major opportunities in that space. Today, it's mostly consumer with some spattering of the industrial application, but it's really [indiscernible] (00:44:35) it's smartphones. 3G and smartphones is where it's at. Longer term, it's going to be automotive and ADAS. Although today already we have – in automotive, we have some applications and you can see some of the demos over there that we do in-cabin monitoring, gesture recognition, things like that, but the big time for automotive will come with the ADAS.

So, if we look at the consumer applications, there's really two technologies out there today, and depending which one is being deployed will define the size of our opportunity. Of course, there is a structured light, which is much more precise. It's great for facial recognition, higher security application. But in this one, we only sell one product, which is filter, right? And then there is a time-of-flight, which many vendors are implementing for both a world-facing as well as the rear-facing cameras. And there we actually have two sockets. So we have a diffuser that sits right in front of the laser and we have a filter that sits in front of the sensor.

So if I think about our opportunity in this market, while it's really going to be a function of penetration. First of all is we know how big is the smartphone market. It's about 1.5 billion units a year. We also know – then we say, okay, what percentage of the market is going to adopt 3D sensor. Then you have to ask yourself, is it going to be structured light or time-of-flight and is it going to be only a rear camera or rear and world-facing camera. As you kind of roll out that whole tree, you can then put how many sockets are available to VIAVI between the structured light and the time-of-flight. Our estimate today this year and next, 2020, we're probably going to achieve around 15% penetration of the smartphone market. And that's probably going to extend to about, our assessment, to about a third of the market by 2022. So, it's about two-and-a-half years, realistically speaking.

And for us, based on various assumptions of how many cameras get deployed, which technology, so on and so forth, we are looking at the addressable market for us to be between $125 million next year plus/minus $10 million to about $0.25 billion in two-and-a-half years plus/minus $20 million. And that's kind of our conservative estimates of what the opportunity is going to present to us in that space.

Now further down the road, 2022, 2023, 2024, that's why I said this is a decade-long trend is the automotive. Today we already see some deployment in luxury cars for in-cabin sensing, facial recognition, see if you're alert or gesture recognition so you can control various systems and ultimately the big opportunity comes with the ADAS system, mainly the LiDAR and the other technologies that are coming out with it. And today we're working with the automotive manufacturers with our Tier 1 suppliers and various companies that are developing components and subsystems for ADAS and working with them for both the diffusers and the filters.

So, the next stack is the disciplined corporate M&A. And let me tell you, we pretty much use the exact same framework as we did before. So we always look at corporate development between going deep and going wide. Going deep means buying more of the same, acquiring our competitors, consolidating space. Going wide – diversifying away from our core business, maybe a little or a lot. So, our preference is to always be within this funnel.

Copyright © 2001-2019 FactSet CallStreet, LLC

Three years ago, we were about here, we were doing a lot of things and not so well in many of them. First thing we did is we consolidated, kind of shifted to the core business. We really sharpened our focus where we are playing. We are looking to go from the strength and then grow from there. Over the last three years, we made a number of acquisitions, very much in line with what I call go deep and maybe slightly go wide, like with the introduction of the diffusers, which is an adjacency to the filters, and buying some of the wireless instrumentation. Today, we are sitting roughly, I would say, here. And going forward, our expectations to continue pretty much, our first focus is keep moving in this direction, and potentially consider some select opportunities here, where we can take advantage of our significant NOLs.

The reason we want to stay in this space, because it's all about operating leverage. And that's really, if you think about it, as you – it's a log-log curve, if you are – as you keep doubling your revenue, and this is your effective, think of it as your OpEx. Your OpEx drops dramatically, if you go deep, lesser dramatically if you go wide. As long as you stay within this funnel, you get significant operating leverage. And Amar will later talk to you about and show you example, how we got to where we are, and it's exactly driven by that, okay.

And the last but not least is that continuing driving operational effectiveness. So, at this point in time, driving operational effectiveness is deeply ingrained in every function within VIAVI. And there is no sacred cows. I'll give you an example, in the last three, and by the way, we're continuing with these efforts, it doesn't stop. It starts off, how do we develop all these instruments and continue to grow our revenue without significantly scaling our R&D? Well, it's all about platforms. It's being smarter about how we approach the business. So, for example, for our kind of mid-market instruments, we want – we developed that new platform called HetNet platform, and that effectively replaces seven different product lines. So, with the same platform, we can address seven different market segments, it's really all software and interfaces.

So, you start with this platform, and you just – it's the same engine, the same real-time operating system, same user interface, everything looks and feel the same, but it measures different things depending on which interface card you're going to plug in.

In fact, when we look at our acquisition of the Aeroflex, we now see these platforms playing very well into their next-generation of product. Even bigger impact is when we look at our field instrumentation. We've gone from 15 different product lines, point solutions, to three, actually more than 15, I think it was about closer to 20. So same thing by basically developing three different platforms we're able to put what used to be 15 plus different product lines and address all the segments with only this thing.

So all I have to do in next time around is just advance that platform, and continue to evolve, and I'll be faster to market that any of my smaller maybe nimbler competitors, who have to reinvent the same thing over and over. But platform only makes sense if you have a significant operating footprint, which we do. So if you're trying to develop a platform and you are startup or a small operator you're going to die, because developing platform cost you more money upfront, but it saves you a ton of money down the road.

And in case of the field instruments with our ONX product, we effectively took seven different product lines and collapsed it into one, same thing it applies to our AvComm business, it applies to our fiber, cable, DSL, FTTH you name it, it is this. So this is how we're able to bring out completely refresh our portfolio, bring out all new product with actually very little increase or even actually shrinkage in R&D.

It's [ph] not the – the (00:52:47) same thing is for software. Three years ago we had lots of different software solution, each one had its own infrastructure like database the operating system, you name it. And they were not even working with each other, in fact, they were working better with some of the competitor solutions than we are

Copyright © 2001-2019 FactSet CallStreet, LLC

working within VIAVI. This is where we took a big step back, we reduced our R&D significantly, we restructured that business. And we retooled it, and now we're bringing it out. It's all based on one NITRO common infrastructure platform, and within it we just basically run this applications. So we can service multiple assurance opportunities with the same platform. It gives us significant financial leverage in developing solutions and being able to be profitable on the smaller business.

And we took at the same thing to the sales. And Amar will also talk about what we've done in G&A in other areas.

In sales, when I came here, we had a lot of people, and we do not have a big revenue. And frankly a big chunk of the sales force didn't even cover their own salaries. So the first thing we did we have significantly scaled back our sales head count, well you can imagine the conversation, and the team my God the world is going to come to an end if you don't have salespeople, we won't sell anything.

Well guess what, revenue went up. But what's more importantly, we're also measuring not only what is the sales productivity, we are also looking what percentage of our account managers a year-on-year deliver above a 100% of their quota. By the way, we did in a lot of the quotas, we've raised the quota.

So if you look at from 2017, we reduced the head count, that's absolute numbers. The percentage of sales people who deliver above 100% has gone up. That was the first year we implemented. Then we acquired Cobham, so we had some increase in sales, but not as much as you would expect given the revenue we increased. But what's the biggest impact is where a lot of the measures in the way we manage our sales force really kicked in, in 2019, as we have now 46% of our account managers exceeded their 100% quota. And the quotas today are significantly higher than the quotas were in fiscal 2017 and fiscal 2016. That's called sales productivity.

And it's not an easy thing to do, you got to put the right people in place. You have to change over a lot of head count. You also got to decide what profile of sales people you're going to hire. I mean we are predominantly now going for more technical minded, more consultative sale – sales account managers, and to what extent and how effectively are they leveraging our channels and reps. So this – all of these things continue to improve, and it's by [ph] no means (00:55:42) down and we expect to extract more operating leverage by as we get better and better at executing on R&D and sales productivity.

So to summarize, our strategy, our vision remains unchanged to be number one, number two in all markets where we compete. The first most important thing is don't let our base business suffer, continue to maintain healthy profitable base business and continue expanding it, invest and aggressively take share in riding the waves in fiber, 5G and 3D Sensing, continue to practice the same discipline in our M&A and corporate development and continue to optimize our operating engine to drive ever greater operating leverage.

So with that, I'll open to Q&A.

Bill Ong

Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

Yeah, so let's limit the questions to Oleg's presentation. We will have another opportunity to ask further Q&A after the CFO presents. So, we're going to pass around the mic, this is being webcast, so we ask that you state your name and you company. Who wants to be the first question, John?

Copyright © 2001-2019 FactSet CallStreet, LLC

QUESTION AND ANSWER SECTION

John Marchetti
Analyst, Stifel, Nicolaus & Company

Q

Thank you. John Marchetti from Stifel. Just curious – like when you went through some of the field instrumentation stuff and that portfolio that you said would be out by next year. How much of that I guess is your own development? And what you've got already in-house versus maybe what you need to go out, and still add to from an acquisition perspective?

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

So I would say – really it's on the lab, it's clearly came from acquisition of TeraVM and TM500, it is the mainstay of the testing 5G virtual core and 5G protocol and capacity testing. So that came from acquisition from Cobham.

Now that's said, when we acquired it, I sat down with Ian Langley who is general manager for the business, he is in the back, you guys can meet him later. He says listen give me more money and I promise you I'm going to deliver to you significantly more revenue than in my plan. I said okay, Amar and I looked at his plan, it looked very good. So we actually invested significantly something that they never had as an opportunity under the previous company, because they were not as focus of the segment. And within six months we obviously expanded our margins – our market share quite significant. So it started off already with a significant acquisition, but then with the investment that we made in the fall of last year, we have seen a very strong performance in the second half of this year. So it's a combination of that.

On the antenna, we just acquired Antenna Alignment, we acquired 3Z Telecom. So that's the down thing. Aside from that everything else has been developed internally, but a lot of the knowhow what is needed the features [ph] form fit function (00:58:37) that we needed to do came from the acquisition with Aeroflex. They told us what is needed to do, like they told us what you need to test? What are the – how to test? So remember we have all the technologies we need, we have all the Lego blocks, but what's most importantly is what is the products the definition document, what features you need to have. And this is actually the insight we got by being in every major OEM and every major service provider labs, and understanding sitting at the table as they're going through how am I going to test it? how am I going to deploy it? Being very early in the process, this was a goldmine of information that we fed into our engineering and I'd say probably 90% skill set we already have in-house and we went in and hired some additional things to really round it off.

So I would say for field instrumentation portfolio, with the exception of Antenna Alignment, it's almost entirely VIAVI homegrown. And it's a derivative of our fiber and metro instruments, as well as the technician installer instruments, and to the extent that we now have platforms, it was that much easier to execute. We didn't have to redevelop product from scratch. We already had the engine, we had the database, we had user interface, we had to develop some cards and the software. And that's really what we've done. Okay.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

A

Okay. We have question from Alex.

Copyright © 2001-2019 FactSet CallStreet, LLC

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.
A

Alex?

Alex Henderson
Analyst, Needham & Co. LLC
Q

Thank you. Alex Henderson at Needham. On the 3D Sensing side of the business, there's two kind interrelated questions. It looks like Apple has kind of stepped back from driving more advanced functionality in the 3D Sensing this year and their product line. Maybe that's just a temporary step back, I don't know, hard to – hard to judge that. Does that have an impact on the adoption rates of some of your products that you've developed? And second, along the acquisition front, are there other areas within 3D Sensing that you can acquire and it looks like the one that you've done so far is working out great, so...

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.
A

Sure.

Alex Henderson
Analyst, Needham & Co. LLC
Q

...any other opportunities along that front?

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.
A

So look, we don't comment on our customers' roadmaps, but I think the maturity of 3D Sensing is still a long ways off. There's a lot of innovation, a lot of experimentation, I mean whether all of it will make it to the device, remains to be seen, but we know both Apple and all the Android players are very aggressively looking how to make it a more innovative and bigger, better product.

And for us listen, I mean, we work with everybody who needs our help, and as I said, yes, maybe they're not introducing new features at least not as yet as we've seen, but look at that, there's only one – now one handset that no longer has [indiscernible] (01:01:49) announced pretty much every device has now face id. And of course with Apple announcing, they are getting into payments and credit card, you can see where it's going.

I mean clearly the structured light is more expensive, more precise, but if you're using it for payments, you want the maximum security. So I think for them it's more than just a gimmick. It's a core part of their business model and hey, they are very smart company and they know what they're doing. But I think there's a lot of other opportunities and other applications for 3D Sensing that a multitude of other vendors are working on and I'm sure, so do they.

Alex Henderson
Analyst, Needham & Co. LLC
Q

And acquisition?

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.
A

Copyright © 2001-2019 FactSet CallStreet, LLC

So regarding the acquisition, so I think we are looking, I mean, to us, we are now, clearly we feel we're pretty well-positioned in the consumer space. We are thinking ahead, so if we do, do acquisitions in the optical space, it's really going to be looking more at strengthening our footprint and presence in the automotive and industrial applications, kind of ahead of [indiscernible] (01:02:55), if you look at all our acquisitions we try to get them just before a wave comes in. We did it with cable, just ahead of the DOCSIS 3.1. We did it with Aeroflex just before 5G.

So, I think timing is very important, because a lot of things you acquire may not be cash flow positive or very close to it, but the moment that you feel [indiscernible] (01:03:15) just before the wave hits, that's the best thing that can happen, this will happen with RPC. We acquired them, they had already a huge design wind funnel, and it was just a matter of in the next 12 months of the – or even 6 months those vendors turning on their production and not all of them obviously turned down as we expected, but significant amount of them did and that business is now up and running very quickly. So timing it and also planning it appropriately is what we are trying to intersect.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.
A

Next, a question from Meta.

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.
A

Meta?

Meta A. Marshall
Analyst, Morgan Stanley & Co. LLC
Q

Meta Marshall from Morgan Stanley. Just wanted to ask a question on – particularly kind of on as you expand the wireless portfolio, is that the same buyer from organizations, from field instrumentation, the service assurance to kind of lab test or how many different buyers are you dealing with their customers? And then maybe is that a legacy Aeroflex sales person going and selling new solutions? Or is that kind of VIAVI – legacy VIAVI sales person? Thanks.

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.
A

Don't call them legacy, they hate the word legacy, but anyway. Well, it depends, actually the answer here is right. So, now in some cases where we've been selling traditionally our wireless instrument is the same people and many others it's a different organization and we enter it through the testing labs. So, initially 5G goes into the [ph] service provider to (01:04:47) labs and we work very closely with the labs. And then as it gets to the field deployment, they bring in the field organization with whom we also then work as well.

So, we entered field for areas where it's a different; sales, we entered it through the labs. In many other areas, they are saying you know what we have this great techs already there. There is not much they are going to be doing on let's say DSL whatever, let's retrain them, they are all going to become wireless techs. This is why it's so important to have a workforce automation, easy to use, installation equipment, because today you had somebody who was [indiscernible] (01:05:24) a lot of them have unionized work force. So, they have contractors, who are DSL contractors. If with minimum training, I can get them to be also the wireless installers that's much better.

So you see a lot of major service providers are looking to retarget a lot of their field personnel to do both. And if you look at cable operators, a lot of them are licensing spectrum and they want to get into the mobile space, while

Copyright © 2001-2019 FactSet CallStreet, LLC

those are still going to be the same cable techs, except now the fiber is all the way up to the last 100 meters of the of the home, the people who are going to be installing those small – the pizza box base stations are going to be cable techs, and they're going to be connecting them to a fiber networks.

So if you give them an instrument with a basic training that enables them to connect, press green button, it will do or run through all the automated tasks, beam forming, installation, certification, green light comes in, they are done and then they take the screenshot of all the data and it uploads into the network.

So in many ways, I'd say if I were to say [indiscernible] (01:06:30) probably about two thirds, it's pretty much the same group of people doing the installation. They're going to be retrained and adopted. And about a third, it will be traditionally wire, when you had a pure-play wireless operators who are – and to there we are familiarizing them going through the labs. And in terms of the sales force, it's mostly the Aeroflex was very strong with [ph] NEMs (01:06:55) and some of the labs, we are bringing a much broader footprint. And also into the regions where they never used to have salespeople. So, I call Central South America a lot of the Asian operators, that's all coming through the synergy with VIAVI sales footprint.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.
A

Question with Samik. Yeah.

Samik Chatterjee
Analyst, JPMorgan Securities LLC
Q

Oleg, you mentioned about or you hinted at a re-entering the software business in the future. I mean, my impression would be you typically again kind of use the strategy of riding a wave on that. So what are the kind of opportunities you are thinking about that you can...

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.
A

Yeah.

Samik Chatterjee
Analyst, JPMorgan Securities LLC
Q

...leverage that? And just a follow-up on the operational productivity slide that you had, it looks like a lot of the improvements you've done on the platform rationalization you kind of achieved significant reduction in the platforms already. So maybe if you can give some examples of where there's more headroom to go on that front?

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.
A

So effectively you're sneaking in two questions for the price of one, is that it. That's called productivity by the way. That's good. All right. So now your first question was on the – what was your first question? Software. So, first of all we never exited it, right. We've scaled it back and I said listen we're not going to kill it, but let's take a big step back and let's retrench the core and rethink how we entered the market. Because we were playing here and then we tried to enter market over there, no leverage, no connection. There was no connection to our installed base, I mean effectively when you're coming in and you're 1%, 2% market player, who cares.

Copyright © 2001-2019 FactSet CallStreet, LLC

So what we looked at it, [indiscernible] (01:08:33) okay, let's give up this grandiose views of us being the software king of the assurance. Let's think how we are coming in from where we are very strong and how we work our way backup. So our re-entry into software space is really from a different angle.

So for example we were really a pygmy in assurance – core assurance, but we were a giant in RAN like geolocation. Well, in 3G, 4G, 4.5G, LTE, it was all about the core baby, so to say, right? Well, guess what? 5G, it's all about the edge baby. And core is a lot less important now, right. It's all going to be about the edge. And all the decision, all the computation is the edge. Well, this is where we have a natural installed base and advantage. And guess what? At the edge is where we have a very strong linkage between our software and a lot of our instrumentation and monitoring and the instrumentation level software.

So, in that respect, we are leveraging our RAN and later if some of you stick around and see our CTO giving a tutorial on 5G, you'll see where it's playing very critical. And as we go to 5G, 5G core is going to get virtualized. And actually with the acquisition of the TeraVM, we have a distinct advantage in that space as well. So, in many ways, our natural platform we feel is as good, better as any for us to make a meaningful play to reenter that space. But it's not – we are not entering into it by ourselves. We are linking it to everything else and trying to keep it all highly synergistic.

Now [indiscernible] (01:10:18) productivity, I think, yeah, a lot of the advantages have been taken care of. However, remember, productivity is a ratio of R&D cost to revenue. So if I can spin off more new products with the same level of R&D, my productivity continues to improve because my top line is growing, right. So that's one element. I don't think we're going to see significant innate cost reduction because what we're trying to do is just get this R&D engine run faster and generate whatever gains we make, generate new products because really it's all about driving the top line from hereon, okay. And it gives us gunpowder to enter new market segments and carve out space for ourselves, okay.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

A

Questions with Tim?

Tim Savageaux
Analyst, Northland Securities, Inc.

Q

Hi. Good morning. Tim Savageaux at Northland. Oleg, you mentioned kind of catching a wave on the cable side. And what I'd like to try and get a better sense of is how did that wave go and whether we want to talk percent of any revenues, if you want to give me absolute dollars and the size of the cable business, that's fine. Where has it troughed? When you get a sense of the distance between that peak and trough? And do you think with these new initiatives, it can get back there and over what time period?

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

So, if you think about it, at any given time, any one of our product lines is riding the peak and the other one is riding the trough because, remember, service providers, they deploy things sequentially. They don't just go and spend money like drunken sailors, right. So, it's continuous [indiscernible] (01:12:00), but the trend is generally growing, right. Now, in case of cable, as much as you get excited about 5G and we're not really making a big deal about it yet, the whole new Remote PHY architecture, it's really a 5G architecture. If you remove like wireless names and just look at the purely segmentation of the network, it's a 5G network inside a fiber and a cable, right. So, in many ways, the same topology, the same things that you're seeing being deployed with 5G are going to be

Copyright © 2001-2019 FactSet CallStreet, LLC

deployed with cable. It's going to become much more – it's going to look more and more like a wireless network topology, which means a lot of our instrumentation philosophy and testing applies just as well to it, and the fiber is going to be pushed all the way to the home, right.

And I think in the end, it's not too ambitious to postulate that there's going to be some convergence between cable and – cable will enter wireless space and wireless guys are going to enter the wireless local loop to the home. So, they are going to be competing for the same customers. So, in that respect, I think we had a big wave in cable and DOCSIS 3.1. It still continues – I mean, it's now rolling out in Europe and [indiscernible] (01:13:13). But the big one was really about a year, year-and-a-half ago in North America. We continue to see sporadic upgrades here and there, but now they're thinking about the next wave. And that would be the Remote PHY and fully symmetric [indiscernible] (01:13:29) coax, right, architecture and that's maybe, I'd say, the next wave there will be three, four years out. They're still digesting the DOCSIS 3.1. And of course, a lot of them are starting to think, well, now that I'm going to deploy my new architecture, all I need to do is now at the end put up a 5G base station and I can cover maybe a couple hundred homes with one wireless local loop, right.

So, in a way, it's a wireless net. I mean, think about it. If you look at any of the wireless operators, they're really a fiber network with the antenna at the end, right. And the antenna now goes right on the fiber. You look at the cable guys, well, they're a fiber company and now just have to add an antenna. So, in many ways, I'm oversimplifying it, but we see already a lot of synergies and being able to play strength in any one of the segments to grab a share in the emerging applications. And I'm not going to give you numbers by sub segment.

Tim Savageaux
Analyst, Northland Securities, Inc.

Q

[indiscernible] (01:14:30)

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

Well, I don't know if it's doubling cable. I mean, remember, they're going to spend the same amount of money. The question is where they're going to spend it. And I think, if anything, they'll probably – I'll go as far as [indiscernible] (01:14:48) that they're going to increase the investment and they're going to want to play in this whole 5G space. Because it's not only defensive, it's also an offensive strategy for them. It's opportunity to grow revenue because video revenue is declining. I mean, they have that great high speed data that's their main thing. Well, if you have the pipe and you see video streaming that pipe is declining, you want to pick up some other stream. So I would imagine they would look for other revenue growth opportunities. I think probably that question would be better asked of the CEOs of cable companies. But I would imagine purely out of defensive strategy, they're going to have to spend money in that thing. And to the extent they get greedy and go on the offensive, they'll spend more. I mean, to our perspective, we just like when everybody wants to grow because they all spend money.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

A

Any other questions? Okay. Why don't we just take a break right now and then we'll reconvene. We can meet at 10 o'clock. We'll make it a little earlier, okay.

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

Thanks.

Copyright © 2001-2019 FactSet CallStreet, LLC

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

A

Thank you.

[Break] (01:16:42-01:32:12)

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

Okay, great. Now we're back. So I'd like to introduce the second session, our CFO, Amar Maletira.

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

All right. Thanks, Bill. Today, I'm a little bit challenged here from my voice perspective, but I just hope I get through this. All right. So, welcome back and thank you, everyone, for joining here as well as on the web.

What I'm going to do is I'll spend the next half hour on providing you a financial update. My section will essentially build on Oleg's presentation, which covered some of the very compelling market opportunities that VIAVI has, and our strategy to take advantage of those opportunities and also how we'll execute against that strategy. So I'll bring it all together from a financial perspective to provide you the financial outlook for the next three years. I'm sure that's something that you guys will be very interested in. I will also discuss operational efficiency programs, I think there was a question in the earlier session, the strength and flexibility of our balance sheet and how we think about it and more importantly also our capital allocation priorities.

So before I cover these forward-looking topics, I would like to take a step back and do a quick recap on what we committed to the Street three years ago and how we did against that commitment. So please bear with me for a few minutes here. So, again, recapping the three-year outlook, which we provided during the September 2016 Analyst Day is here on your left. Our outlook for fiscal 2019 at that time was between $805 million and $875 million, VIAVI operating margins between 17% and 19% and EPS between $0.45 and $0.55. Now, against these targets in fiscal 2019, we delivered $1.13 billion in revenue, 17.5% operating margin, $0.68 EPS, and these numbers included the acquisition of the businesses from Cobham,. Now even if I exclude those acquisitions from Cobham, we would have still delivered this financial commitment.

So here are some of the key drivers that helped us to get where we are today. First, we restructured the SE business as a part of our strategy that Oleg recapped of a big NE business and a focused SE. Recall that this business was losing a lot of money three, four years ago. And as we restructured, we did a really great job, A, in maintaining the relationship with our customers because the customers that buy software assurance also buy our instruments and, B, retaining the key pieces of technology that have become a source of competitive advantage for us in 5G as edge assurance becomes very critical.

We surgically reduced cost and improved operating efficiencies across the board at VIAVI. I will give more color on this later in my presentation and there's lot more to do. We invested in key areas so that we can catch the technology wave and ride the technology wave and position the business for growth. Oleg touched on that earlier. We did several value-enhancing acquisitions that were accretive and in secular growth areas. And the last point here is we proactively refinanced our old converts that were due in August 2018 at attractive terms. Now this not only helped us to manage EPS dilution as the stock started appreciating, but more importantly, it gives the financial flexibility to actually do those multiple acquisitions.

Copyright © 2001-2019 FactSet CallStreet, LLC

So we had a fair share of headwinds too and some were really hard to predict three years ago. We saw significant reduction in spend by major service providers in North America in fiscal 2017 as it was just after we provided the guidance for three years. We did see some recovery in fiscal 2019, but it still remains highly volatile, but although trending in the right direction. In anti-counterfeiting business, we saw cyclical downturn in fiscal 2018. We saw delays in technology transitions in both our field and lab businesses. In field, as an example, we saw delays in the rollout of G.fast technology in DSL. We still do not see it today and we are not counting on it for a three-year outlook.

Finally, the macro uncertainties, such as Brexit, trade tensions between US and China, et cetera, et cetera, nobody could predict that either. The key point here is despite all these headwinds, we were able to deliver a three-year commitment by sticking to our strategy and also focusing on execution, stuff that we can actually control. So, as we delivered these targets, we also changed the profile of our business. So, if you see here, in fiscal 2015, this is just before the split, because we started the work already in fiscal 2016, there were no clear growth areas in our business. NSE revenue was highly concentrated in the Americas, specifically in the US and in NSE, Americas was roughly a two-thirds of our overall revenue in NSE.

We had several product lines at VIAVI that were non-strategic and unprofitable. And now when you fast forward to fiscal 2019, slightly more than 50% of our revenue in secular growth areas of the market – 3D Sensing, 5G and fiber where we invested and are well-positioned. We successfully diversified our NSE revenue business regionally and reduced the dependency on North America where we continue to have a strong presence. So when it comes back, when the spending comes back, we believe that it will be good for us all overall.

Now, if you look at today in the Americas for NSE, NSE revenue is roughly about 50%. So, it went from two-thirds to roughly about 50% of the overall NSE revenue. Lastly, every business in VIAVI is profitable. We shut down the businesses that were non-strategic and that also included in – segments like OSP. OSP was highly profitable segment, but we looked at every single product line across the company and OSP was also part of that analysis and we did shut down businesses that were non-strategic and fixed businesses that were losing money and improved the overall profitability of the company.

So, when you take a look here, as you can see here, there's significant turnaround in the profitability. We went from $68 million in fiscal 2015 to $198 million in fiscal 2019, which is 190% growth. But more importantly, when you look at the profile of where the profit came from, in fiscal 2015, NSE generated zero operating profit for the company, all the profit came from OSP. And today, NSE and OSP evenly contribute to the operating profit of the company, which is a big point here.

Similar story on operating margins, on non-GAAP EPS as well as on cash flow. So, significant growth across the board. So, how did we manage this turnaround? We essentially used two levers. Growth is an important lever. So, while we're doing lot of operational efficiency, we are focused on growth too, organic as well as inorganic, as well as we continue to drive operational efficiency. So, when you think about this, some of you who were here three years ago, I showed this chart here. So, like our sales leaders in our two businesses, even as a CFO, I have a funnel of opportunities. The opportunities are different here. For me, it's efficiency opportunities.

We continuously focus on filling this funnel with those opportunities and relentlessly converting it, but we actually go about it very strategically and very surgically. We believe that there are good costs and there are unwanted or bad costs and those unwanted and bad cost is what we get rid of.

So, Oleg already talked about couple of them. He talked about sales efficiency. He talked about how we consolidated the R&D platform. I talked about the restructuring of the SE business. Let me just pick one or two

Copyright © 2001-2019 FactSet CallStreet, LLC

and give you additional color. And most of this is still ongoing. I have another chart that will show you what we're going to do going forward, because we will drive operating margin expansion by continuously reducing our operational efficiency – driving operational efficiency, but also through growth, because we have an operating leverage in the model.

So, in G&A for example, now we built an offshore shared services center for both finance and IT. The center has matured now. It's about three years in operation. Today, we do more than three-fourth of our accounting transactions for the company such as accounts payable, receivables, intercompany, et cetera, at less than one-fifth of the cost.

Okay. So, [ph] this work (01:41:37) was done in high-cost location, including the Bay Area. Now – and the quality has also improved, because we have accelerated our close process, et cetera. But we're not really happy of achieving the one-fifth of the cost. That is just labor arbitrage. We are going a step ahead and we're looking at more efficiency programs. We are piloting robotic automation across the board at the centers, so we can look at manual task, mundane task that can be automated.

So, it's in a pilot phase. The point I'm making here is these kinds of centers, it helps you to reduce the cost initially, but more importantly it gives you the leverage. When we go acquire companies, it is very easy for us to go integrate them very quickly from a G&A perspective, from a finance perspective and get the synergies as quickly as possible, something that we started doing with AvComm and Wireless acquisition too.

Talk about legal entities and sites, important stuff. A lot of people ignore this, but this is very important. And we have lot more to be done in these areas. We successfully consolidated and shut down many legal entities in physical sites. For example, in classic VIAVI, outside of the acquisitions, we shut down one-third of the legal entities and 30% of the physical sites. We realized a lot of good savings and that's the good news, but I think the better news is we still have more to go, because, as we acquired companies, we actually reset the bar. And so, there's more work to be done there. So, with all these efficiency initiatives, what does it mean from a P&L perspective?

I'm sure some of you already have run these charts on VIAVI, but I just wanted to highlight a few points here. On the left side, you see the OpEx trend. You can see that the OpEx revenue ratio has improved about 12.4 points going from 56% down to 43.6% by both SG&A and R&D reduction. If you look at SG&A, 37.5% to 27.8%, still more work to be done there. If you look at R&D, 18.5% to 15.8%, the big reduction came in fiscal 2017 as we restructured the NE, SE business, but we kept that steady.

In fact, we reinvested a lot of savings from others part of the company into R&D in fiscal 2019. And Oleg mentioned about one of the examples in our lab wireless group where we actually invested more than what Cobham was investing. And similarly, we are doing that in other parts of our business where there's growth, right. So, R&D is a key focus, but that doesn't mean everybody gets to spend whatever they want to spend. We are very, very, very surgical about where we're spending the money.

And for example, I'll just give another wireless example, we figured out that if we can increase the lab capacity by making some CapEx investment, we can actually increase the throughput of our R&D engineers who are doing testing, sort of test beds, right. So, instead of a engineer spending two days testing stuff, now that engineer can do it in half a day or less than half a day. That's the kind of throughput we're talking about. So, speed to market is also important, how quickly we can get the products and feature to the market.

Copyright © 2001-2019 FactSet CallStreet, LLC

So, that's the kind of stuff we think about. So, if you look at, on the right side, is gross margins. Gross margins 63.8% going to 61.1%, relatively flat. You see in fiscal 2018 and fiscal 2019, we were down, because we were actually ramping 3D Sensing business, right. As you're ramping 3D Sensing business, there's under absorption of manufacturing overheads. And so, we saw a dip in the gross margins.

The point is we compete in a very competitive market, but our manufacturing and operations guys have done a phenomenal job in reducing the manufacturing overhead continuously, consolidating site operations, fighting every single day to reduce the direct material cost, so that we can at least be very competitive in the marketplace and maintain these kind of gross margins. Okay. And I'll give you more color on these gross margins for a three year.

And, of course, operating margin took care of itself, right. So, it went from 7.8% to 17.5%. So, good story on the operational efficiency side. So, the key here is we have more room for margin expansion, given our ongoing efficiency programs, which I will share shortly, and the operating leverage that comes with top line growth.

So, talking about top line growth, same chart that Oleg presented, I'll just say that we continue to remain investing $700 million, as Oleg mentioned, in R&D and CapEx to defend our core business and also position our business for growth in other areas. We spent $630 million on several acquisitions, Trilithic, as Oleg mentioned, to expand our cable portfolio just before the DOCSIS 3.1 Wave, Wireless and AvComm business from Cobham to strengthen the position in 5G and Mil/Aero, RPC Photonics to expand our TAM in 3D Sensing and also more recently 3Z to add to our installer tool kit for 5G deployment as 5G deployment starts in calendar 2020.

So, although we are a big business, roughly a good sized business, we think as if we are a nimble business. What I mean by that is we believe revenue and profit is important. So, there's a saying which says revenue is vanity, profit is sanity and cash flow is reality, means cash is king and that's what we have in our business.

Every General Manager thinks about not just revenue and profit, but even cash. And even our sales guys will get a call from me, if I see if my AR people tell me that some customer is missing a big payment, right. So, cash is king in the company. So, we have driven a lot of discipline around cash flow from operations and this is what you see here. Our cash flow from operation has significantly improved over the last three years, right.

Now, I've shown you two views here, because what you see in a reported view is different than what we actually have from an operating perspective. So, the gray bar is the reported numbers, but the blue bar is an adjusted view, adjusted for non-recurring cash flows from things like restructuring as we were transforming our business, integration-related charges as we were integrating AvComm and Wireless as an example and if you recall, there was a customer-related one payment that we received in fiscal year 2017. That's why you see in fiscal year 2017, the reported number was higher than the adjusted number. We adjusted that down too.

So, once we are done with the system integration of AvComm and Wireless business and our customer recovers the prepayment through future billings, the reported and the adjusted numbers should converge, assuming that we don't do anything else, right, everything else being constant.

The key message here is we will tightly manage our working capital, we continuously look at our cash conversion cycles and I will tell you right now, there's more room for improvement there and we continue to focus on cash flow generation in this company.

Now, let me switch gear and look ahead. I'm sure you guys are waiting for this one here. So, first of all, we're raising our guidance for first quarter. We expect our fiscal first quarter 2020 revenue for VIAVI to be approximately

Copyright © 2001-2019 FactSet CallStreet, LLC

$288 million plus or minus $6 million, largely driven by strength in our Wireless because of 5G and our 3D Sensing business.

We expect now operating margins to be 17% plus or minus 1% to be higher than our previous guidance and we're accordingly raising our EPS from $0.15 to $0.17. We expect fiscal 2020 revenue to be approximately $1.155 billion, which is plus or minus $15 million. This is a low-single-digit growth over fiscal 2019 and I can give more color on that. Our NE business is expected to grow low to mid-single digit driven by good growth in fiber and wireless portfolio across both lab and field, partially offset by declines in our cable and access business. And when you talk about cable and access business, we're talking about this endpoint cable and access, the cable providers are also buying fiber for the fiber plant and those fiber test gears gets reported under fiber. So, it's not that by – when I say cable will decline, it's the cable and access side of the business that will decline. The fiber is still growing.

So, there is a mismatch between what I have here. Okay. So, on the core OSP side, we're expecting 3D Sensing to continue to ramp as adoption of this technology increases at both Android and non-Android customers. Currently, we're modeling core OSP at a base line of $50 million plus or minus per quarter. So, about – we're expecting core OSP to come back to its baseline revenue. This is because we have limited visibility in our pipeline currently, although we believe that we have a very robust pipeline.

Overall, OSP revenue is expected to be flat in fiscal 2020 as the double-digit growth in 3D Sensing will offset the decline in the core OSP due to the cyclical nature of the business. We expect operating margins to be at 18% plus or minus 1% and EPS expected to be $0.70 plus or minus $0.03.

And now, turning to the three-year outlook, so as we look out three years, we expect fiscal 2020 revenue for VIAVI to be in the range of $1.2 billion to $1.3 billion with the three-year CAGR of anywhere between 2% and 5%. We expect operating profit to be in the range of $230 million to $270 million. And this is growing two times faster than the revenue growth rate, due to the high operating leverage in the model and our continued operating efficiency programs. We expect operating margins to be in the range of 19% to 21%, which is roughly 150 basis points to 350 basis points of expansion compared to fiscal 2019. We expect EPS to be in the range of $0.80 to $0.90 with EPS growth outpacing the top line growth and that's the key message here.

One of the key assumptions here is that the macro-environment does not degrade. Our operating model is somewhat resilient to minor downturns and I will cover that in my operating model framework later. We're also assuming that the core OSP business will be at the baseline annual revenue run rate, because it's very hard to predict when the cyclical downturn impacts this business because of the limited visibility of three years out. So, we are just assuming it's roughly $200 million – core OSP business, roughly $200 million plus or minus.

And in the matured business, in NSE, we expect that to decline moderately and we will continue to drive operational efficiency across the board. But in the businesses and I will walk you through some of the – I'll walk you through the [revenue] walk here, so that you can have more appreciation for what are the key drivers of revenue.

Again, non-operational assumptions, I will leave it here. We have assumed 240 million shares. Just to give you a little bit of idea, we exited fiscal year 2019 with 232 million and we basically increased it to 240 million, because we have two converts that are in the money and we are just assuming that if the converts are in the money, that will have an impact on our share count. So, that's already factored in. And I will talk about the share buybacks later, okay.

Copyright © 2001-2019 FactSet CallStreet, LLC

So, here is the revenue walk. The biggest driver for revenue is Wireless and 5G. We expect Wireless and 5G to grow high-single to low-double digits. And within the Wireless, we think about Wireless as expanding from lab to the field to assurance. The lab has already grown very high-double-digit in the last year or so. So, we are expecting that business to be in sort of mid-single-digit, because it's had a very high base. But the field business, which is what Oleg talked about as a net new business for us, will grow very high double digits. And the assurance business, which actually comes towards the tail-end, we're expecting that to start growing, but that's more of fiscal 2022-plus story. So, overall, when we combine the overall portfolio for the Wireless business, it's a high-single-digit to low-double-digits growth.

The second biggest driver is 3D Sensing. We expect 3D Sensing to grow double-digits based on the penetration rate as well as the adoption in both Android and non-Android customer and then fiber to grow sort of low-single digit over the next three years. We do have some mature businesses in our portfolio that will decline low-single digit. Now, these businesses are cable and access as a example on the endpoints. We also assuming OSP business basically reverts back to its normal baseline. It can do better, but those are all factored into those mature business.

So, the business that you're seeing, those three growth drivers, that business is more than 50% of the overall portfolio today, right.

So, here is the chart that shows the EPS walk. We are committing to a base case of $0.85 and as you can see, the biggest driver of the EPS is mainly NSE and this is because the top line growth and the biggest operating leverage we have in the model will create a good margin expansion in the NSE business. We also expect OSP business with the growth in 3D Sensing to drive growth and we will also see margin expansion in the OSP business, mainly driven by improvement in the gross margins.

We are assuming some investments here, because we believe that we'll have to continue investing to drive growth, but more importantly, also position the business for the next wave beyond fiscal 2022. So, we are already factored in, baked in some of the investments.

Now, if 3D Sensing and 5G adoption is faster than what we're assuming in the model, I think that's clearly an upside that will take us to $0.90. We will do buybacks. Any buybacks above what we do in terms of offsetting the dilution from stock-based compensation should create an upside to the stock. For example, in – last three years back, we said we'll be at 238 million [or so] shares when we gave a three-year outlook, we landed at 232 million, right. So, we bought back a lot of shares very opportunistically at a very low price. And I'll give you some color then.

So, if there's any additional share buyback, that is more upside and of course M&A will actually generate additional upside to the model that we're presenting today.

So, moving onto the next slide, here again the same discipline on driving the – driving operating efficiencies and effectiveness we had in the last three years will continue for the next three years. Here is the funnel of opportunities. I've just summarized it for you here. There're lot of details behind this, but what I will do is, just so that you guys appreciate what's going on in the company, give a little bit more color on one or two of this, right. And I'm more than happy to talk about this offline with you guys.

So, what I will do is I will touch the IT system upgrade initiative. We started this initiative about 1.5 years ago and we plan to go live in calendar 2020. Today, we operate on an old Oracle ERP system and an old reporting platform, very stable, no issues, but the problem is it limits the flexibility to respond to the business needs,

Copyright © 2001-2019 FactSet CallStreet, LLC

because you have a business as highly complex, lot of customization and basically we have lost the flexibility and it's very expensive to maintain.

So, we launched this initiative, which will basically take our 1,750-plus key processes, only 50% of those are automated today and move those to about 80% of automation by the time we get done with this. And then, it will create – so with more automation comes more efficiencies, right. And so, those are the stuff that we'll continue to do.

So, as we finish re-implementing this platform for our classic VIAVI, we'll then start initiating the integration of systems on the AvComm and Wireless side. So, if you recall, we mentioned that we have already achieved the synergies that we talked about, $15 million to $20 million, that was by integrating the front-end and all the other processes. The IT system integration is still ahead of us.

So, these are two companies – assets that we acquired, one is on the SAP system, the other one is on [ph] COD (01:59:44). We as parent or the classic VIAVI is on Oracle system. So, we were waiting for Oracle for VIAVI to upgrade. Once we upgrade, we will integrate those two entities too from a system perspective.

And what that does is you save money on software licenses. There is no point of paying for three different ERP system. You save money on how you support it. And more importantly, as you do that, now you can start integrating the legal entities and start driving more efficiencies with the process, right. So, these are stuff that are ahead of us, right. We have baked some of it in the model, some of it we've not baked into the model, because we will plan to reinvest some of it back into the business to go drive growth.

So, again, I talked about most of these. For example, real estate consolidation, we had 56 sites. We actually closed 30% of those. And when we closed, when we started buying companies, we started integrating them too. For example, in Trilithic, we had two sites in Indiana. We consolidated into one and we moved people into the VIAVI site. When it came to say, Bangalore, for example, Aeroflex Cobham had a better site. So, we shut down the VIAVI site and moved them into – ours into the Aeroflex site.

When we acquired 3Z very recently, we moved our guys who were in Florida and VIAVI to the 3Z building, because they had a beautiful building and it was the right location. So, the point I'm making here is there is no Holy Grail here. At the end of the day, we'll do what's right for the business and we'll move quickly on it, but very thoughtfully, okay. So, there's more work to be done in this area.

So, I wanted to also share with you the operating model framework. This is what Oleg was talking about, the operating leverage. Now, in our midpoint of the guide, we have already built in a lot of operating leverage, but our cost structure today has a good mix of fixed and variable cost. If you look at the classic VIAVI, before we acquired these entities, we were – about 75% of our manufacturing was outsourced, okay. Today, it might be 50/50.

So, we have retained some strategic manufacturing sites and we have also outsourced what we believe can be done at CMs at much lower unit cost. So, if you take the midpoint of my revenue guidance for fiscal 2022 and run a sensitivity analysis of plus or minus 10% around that, on the downside scenario, the operating margins can go down about 200 basis points to 300 basis points, while on the upside scenario, it will go up 150 basis points to 200 basis points. And you rather assume why, is it not 200 basis points to 300 basis points on the upside too, because we're assuming we'll make investments to go drive those growth.

Copyright © 2001-2019 FactSet CallStreet, LLC

The point I'm making here is there is flexibility in the model. We have a good mix of variable and fixed costs, roughly about 50/50, and that makes us resilient to any minor downturns, but it's highly leverageable to the upside.

So, here is the balance sheet. I won't go through all the line items here. We have two converts, very attractively priced from a interest coupon perspective, 1.75% and 1%. This is what we did about a-year-and-a half ago refinancing these converts. We pushed the price up to $13.22 and $13.92, so roughly in the $13.45 on a average basis. Both are due. One is due in 2023. The other one is due at 2024. So, it's about four to five years out. Okay.

So, it's no issue about the tenure. We're okay with that. I think what you see right now is both these converts are in the money. And I'll talk about that shortly. So, we have total gross debt of $685 million, very good cash flow generation for the company, $526 million in cash flow, net debt of $159 million. So, we have a gross to debt ratio of about 2.9x. So, A, we have good liquidity. So, this allows us to do some of tuck-ins very quickly. B, we have a gross-to-debt leverage ratio, which is manageable, but 2x to 3x. And so, we are not afraid to lever up if there is a significant M&A that we need to do, but it will be based on the fact that we will lever it down in the next two to three years by paying off the debt, because we want to operate in the 2x to 3x range in the long term. Okay.

Capital allocation priorities remains unchanged. We'll continue reinvesting the core business. We talked about that. Our CapEx will be in the 3% to 5%. And again, the mix of the CapEx will change in the last [ph] year or two (02:04:27) years. We were investing in OSP as we built out the 3D Sensing business. This year, as I said, we are investing some in the Wireless side, in the lab, we're also investing and upgrading our IT system. So, the CapEx mix will continue to change, but it will be in the 3% to 5% range. We'll be very disciplined from an M&A perspective, Oleg went through that, I'll not touch on that and we'll return capital to the shareholders, right.

So, we did about $148.6 million of repurchase since the last $200 million repurchase was announced at $8.89 per share. I did better here than my own personal portfolio, right. But this is how we want to be very opportunistic in the way we buy back our shares too. Because we know if there is a market-related pullback, not [ph] related anything (02:05:15) specific to the company, we typically tend to back up and go and buy back our shares, because we feel that it's an attractive price points, right. But we'll be very, very – and we did some buyback even – not in the current quarter in this Q1, but we did in Q4 too.

We initiated a new repurchase program $200 million, which is valid until September 30, 2021. So, we continue returning capital to our shareholders. NOLs, we get a lot of questions on NOLs, continues to remain a key asset for VIAVI. And we have a lot of NOLs still. Okay. We start with $5.1 billion NOL. Even in fiscal 2022, we have a big run-off in NOL, but $2.8 billion of NOL if you run the math is a lot of NOLs that we can still use for the next probably 5 to 10 years, right.

We have shielded, now the question is how are we using it? So, we have shielded about $150-plus millions of U.S. Federal profits between fiscal 2016 and fiscal 2019 using our NOLs. We have also used a Super Distributor Model and bought hundreds of millions of dollars of profit – overseas profit and cash back since we installed it. And this NOL will be a key synergistic driver for us in M&As. And hence, we look for accretive and profitable M&As. We look at M&As that have profits in the US and also look for ways to get the profit back to US, so that we can actually structure and make use of the NOLs.

There are certain limitations, I know you guys are aware of it, but again, we test this every quarter, so that it doesn't trip. But this is something that we factor in when we do maybe – whenever we do a significant M&A, we'll always factor that in what's the combination of stock and cash that we want to use when we do an M&A, right, because we don't want to trip Section 382. And Section 382 says that if it trips – if the share ownership changes,

Copyright © 2001-2019 FactSet CallStreet, LLC

50 percentage points or so, then it trips the Section 382 and NOL becomes nullified. So, we are very careful on that, but that gives us still a lot of financial capacity if we were to use stock as a currency, okay, still a lot of capacity. Okay.

All right. So, I will summarize here very quickly. We delivered our three-year commitment. So, we have a track record of executing. We have positioned the business for growth. We talked about that. The discipline around execution and driving operational efficiency will be ongoing and when you look at our top line growth of 2% to 5% and think about three years back, three years back, we basically shrunk the business to make it more profitable. So, we were declining 2% to 5% in our core business, right for NSE, because we shut down NSE – SE, we've restructured, not really shut down, but now you look forward, we're actually pivoting to growth about 2% to 5%, but our EPS will grow faster than that growth. And finally, our capital allocation priorities will be focused on organic and inorganic investment and continuous return of capital to our shareholders.

So, with that, I'll turn it over to Oleg.

Oleg Khaykin

President, Chief Executive Officer & Director, Viavi Solutions, Inc.

Thank you, Amar. All right. And conclusion, what I'd like to summarize is the summary, we have investment thesis. The first and foremost, our core business is a viable, profitable and there are still opportunities to continue to optimize and drive operating leverage in there and it's a highly defensible business.

We have major growth opportunities driven by secular trends in our industry, 5G Wireless, fiber proliferation and 3D Sensing. And we have a management team with a track record of execution and delivering on its promises. And the last, but not the least, we are committed to capital allocation discipline in both through smart M&A and corporate development and continuous return of capital to the shareholders.

With that, I'll open it to Q&A.

Copyright © 2001-2019 FactSet CallStreet, LLC

QUESTION AND ANSWER SECTION

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.
A

Okay. So, first is Alex. So, Alex?

Alex Henderson
Analyst, Needham & Co. LLC
Q

Thanks. I wanted to ask a couple of questions on the margin side. So, on OSP, your margins came down from 40%, 41% to a level, [ph] I said (02:09:53) that's all 3D. Can you talk about the assumption, excluding 3D, for the OSP pieces, it's still 40%, 41% operating margin going out through 2022?

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.
A

So, when we posted 40-plus percent operating margin. Oh, yeah, maybe you should repeat it.

Alex Henderson
Analyst, Needham & Co. LLC
Q

Okay. This is Alex Henderson, Needham. I wanted to ask a question on OSP. The margins that you saw over the last three years showed a significant decline in operating margins. I assume that's predominantly if not all associated with the 3D investment. Typically OSP, excluding 3D, has been 40%, 41% operating margin. Is that what you're assuming in the 2022 timeframe? Can you talk to that a little bit?

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.
A

So, let me [explain as to] why the gross margins actually came down, which impacted the operating margins too. So, it was a mix issue, as you pointed out, 3D Sensing; number two also, under-absorption of manufacturing, because we are building capacity in 3D Sensing at that time; and number three, we're also making some targeted investments in R&D to get into the 3D Sensing waves beyond consumer, right. So, those were three things that were actually driving the operating margins down. But mainly...

Alex Henderson
Analyst, Needham & Co. LLC
Q

All on 3D Sensing?

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.
A

All on 3D Sensing, right. And some of the investments we're making on the automotive side is also on 3D Sensing. So, you're right. So, this is all related to 3D Sensing.

Our core OSP business margins were very high, not the 40% in fiscal 2016 and also in fiscal 2017, because we've had very high volumes of the anti-counterfeiting business at that time, right. Because a big reprint and redesigned volumes coming from two huge cash economies and that resulted in over absorption of manufacturing costs and very high operating leverage in the model.

Copyright © 2001-2019 FactSet CallStreet, LLC

So, we believe that business is high 30% margin business, the core OSP. That's what – if you go look back eight, nine years, that's what it was operating on and we had a big jump in fiscal 2016 and fiscal 2017. So, that should revert back to high-30%. We should improve the margins on the 3D Sensing side, now that we are getting volumes and scaling and that should basically deliver the operating margin ranges that I talked about, 35% to 37%.

Alex Henderson
Analyst, Needham & Co. LLC

Q

So, OSP would be high-30s?

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

A

High 30%.

Alex Henderson
Analyst, Needham & Co. LLC

Q

And then, second question I wanted to ask is you clearly had a significant improvement in the GMs associated with NE going from I think it was [ph] 17 to 1 device and 12 to 1 (02:12:30) device as you pointed out in one of the slides. [ph] Here (02:12:35), your gross margins came in a little bit. Can you talk a little bit about whether that's a function of under-absorption or what is it that caused that delta and how do we see that improving as we go forward, will we start to capture all of that benefit as we ramp up these new products?

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

A

And that's a result of mix again, right. So, when you think about mix in the business, some of the fiber business at the edge, I'm not talking about the system business, the ONMSi business, the fiber business at the edge comes in at a little bit lower gross margins than the other portfolio like cable, et cetera. So, that was a mix impact on the portfolio, not anything else. That was – I think the factories are running fine and we are having the right level of absorption in the manufacturing. So, no issues there. It was purely mix as we change the mix of the portfolio, but it's been fairly steady. It's about 64% for a long time. So, it's a very good gross margin business. It's not at the 65-plus percent range that you are used to seeing before fiscal 2016, but it's a very competitive marketplace too.

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

Well, I'd say taking out a lot of the software business, yes, it had a high margin. It's a no-brainer software business. There is really – because there's nothing hard, it's all about revenue and gross margin almost the same, but it's the OpEx, the people will often forget. So, clearly, we are focused on continue to drive our gross margins higher, but we also keep mindful what is our operating expense intensity in any given business, because ultimately, the only margin that matters to be is my operating margin, because, as Amar said, revenue is vanity, operating margin is sanity and cash flow is, what is it?

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

A

Reality.

Copyright © 2001-2019 FactSet CallStreet, LLC

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

Reality, there you go. So, we don't get caught up in the nonsensical things about software is magical. Software is only magical if it provides operating profit.

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

A

In a nutshell, when I look at the gross margin profiles for any business, it's very healthy from a perspective of [indiscernible] (02:14:43). Even fiber is very healthy. I think – but we'll always have this mix impact in any given year, right. So, that's what we saw.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

A

Okay. Meta?

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

Meta?

Meta A. Marshall
Analyst, Morgan Stanley & Co. LLC

Q

Just a question kind of on the OSP business and in the three-year targets, what is 2% -- like what leads 2% growth and what gets you to 5% growth? So, is it bottom-end of the range that time of flight doesn't see as big of adoption and maybe you don't have as many reprints and then top-end of the range is more adoption. Just help us think about what the flex is there on growth rates there?

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

A

So, I think the flex here in the model there, there are two flexes, right. One is the cyclical downturn doesn't happen in OSP and believe we are talking about a point in time of fiscal 2022. If fiscal 2022 is a good year for OSP from a anti-counterfeiting business, this is no-brainer. We can get to the high-end.

But 3D Sensing is that's adoption rate we are talking about, right. We talked about adoption going from 15% to, say, 33% roughly, one-third of the market by fiscal 2022. If that adoption rate is better, if the overall available market is better, if the number of units or sockets [ph] performed (02:16:06) gets better, I think that will take us to the high-end of the guidance, right.

But having said that, we want to plan conservatively and go and execute aggressively. So, this is how we see the market today, this is how we want to – we'll control around it and we are probably one of the only companies in the ecosystem that actually never took down our numbers even when the ecosystem was taking down the numbers in the last couple of quarters, so I think – not couple of quarters, but in the last few quarters ago, right. So, we want to be conservative from that perspective. So, adoption rate is the key.

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

Yeah. Spot on. Question with John.

Copyright © 2001-2019 FactSet CallStreet, LLC

John Marchetti
Analyst, Stifel, Nicolaus & Company

Q

Thank you. Just to follow up on the 3D Sensing side, as you get out to fiscal 2022, I'm curious if within any of that, you start to expect some of the ADAS stuff coming in there or this is really just a handset-focused adoption curve?

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

From a practical perspective, we're talking about handsets. ADAS, if anything in 2022, may be just as [ph] patterning (02:17:07). So, we just assume zero for all practical reasons. So, clearly, that thing starts happening soon rather than later. My experience with automotive things always take later rather than sooner. So, we pretend if it – if it happens, great. It will be an upside, but we take a more conservative assessment and we're basing it solely on the consumer business.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

A

Next question? All right.

[indiscernible] (02:17:39).

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

A

And just state your name and firm for the webcast.

Tim Savageaux
Analyst, Northland Securities, Inc.

Q

Tim Savageaux with Northland. I want to talk about the share buyback and what sort of assumptions you're making around that with your share count forecast. It looks like, at least at current prices, 14 million shares or so and your – kind of have flattish to slightly up share count forecast. So, are you assuming in that further convert-driven dilution that's offset or where [indiscernible] (02:18:10) buyback announced today reflected in your share count forecast for fiscal 2020 and 2022?

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

A

Yeah. So, I just wanted to give you guys some model that is sort of – from an operating perspective makes sense and keep the share count same. So, you can do a good compare from an operating perspective. Having said that, the way to think about this is the average price of those converts are roughly $13.45, right. For every $1 increase in price, it adds about 3 million of shares – 3 million shares to the share count, right.

And so, we are accounted for roughly, if I say, 232 million was the exit, I am giving 240 million, we accounted for [ph] $8 million (02:19:00) of buffer there so to speak. Now, there are two ways to manage this EPS dilution if the share really appreciates, okay. One is generate more profit, okay. So, it's about $0.5 million to about $0.25 million of additional profit per quarter we have to generate to go offset the dilution and so, it will be for every $1 increase in the share price. So, that's one way of doing it.

Number two is we'll use share buyback as another one – as lever, but I'm not going to openly announce my strategy on when I'm going to do that, because there's something, if I start saying that, then it also – it impacts my

Copyright © 2001-2019 FactSet CallStreet, LLC

converts, the pricing and so on and so forth. So, I think we will – 240 million is a good number to run with and we will basically manage within those numbers. If this is different, then we'll come and talk to you guys about it.

Now, we gave a 238 million number last time, last year – three years back. We landed at 232 million, right. So, we did more share buybacks opportunistically when – so, just think about it from that perspective. Yeah.

Tim Savageaux
Analyst, Northland Securities, Inc.

Q

And I just wanted to go back, Tim Savageaux again, on the upside drivers in the quarter, I think you said 5G and 3D Sensing were the primary drivers and can you try and assess kind of relative contribution of those two factors in driving about $5 million, $10 million of upside, something like that?

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

A

All right. So, I gave $5 million of upside to the midpoint of the guidance, $283 million going to $288 million. And I'm not going to dissect it, but I'll give you enough of color for you to understand. We are seeing benefit from both NSE, mainly driven by 5G, and OSP driven by 3DS and I think you can resume roughly 50/50 of that, right. Beyond that, stay tuned. We'll announce in about 45 days or more than that, right.

Tim Savageaux
Analyst, Northland Securities, Inc.

Q

Yeah.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

A

Any other questions?

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

A

So, one of the things I wanted to point out since you talked about the current quarter, see, our SE business we said is roughly going to be – remain flat in fiscal 2020, right, because we will see the matured business sort of declining still, but it will be offset by the growth part of the business. So, if you look at the SE business, it averages about $25.5 million to $26 million per quarter if it has to remain flat and we expect that, at least for Q1, we expect that to be below that average rate, but then starting to pick up in our fiscal Q2 and beyond, okay, and that was as planned. So, there's nothing – no surprise there.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

A

Go ahead. This is a chance. Ask questions.

Q

Sorry. And I want to focus here, you mentioned 50% plus of revenues coming from secular growth drivers. So, I do my financial analysis over here. It seems like that implies about a $200 million piece of the network-enablement business, that's legacy in nature or non-growth oriented. I'd like to get a little more color on – is

Copyright © 2001-2019 FactSet CallStreet, LLC

access to the biggest piece of that? If you look at access and cable, is there another piece we should be thinking about? Kind of frame that that legacy bit for me. Thanks.

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

A

Sure. Well, I think, clearly if you look at the access, DSL, I think, is on its last legs. And it's going to be probably a decline and ultimately it's going to get replaced by PON networks, right. Cable just went through a major upgrade. So, I think things will be kind of lying low for the next two, three years until the next wave. So, that's I would say is the mainstream business, right.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

A

[indiscernible] (02:23:07). Yeah.

Q

Just on the, I guess, drop-through on operating margin, I think you're kind of guiding to 40% incremental margins over the next three years. And I guess if I look back at the last two years, it's been roughly like 25%, 30% drop-through. And I think the biggest [indiscernible] (02:23:23) has been kind of more on the gross margin side. So, I guess just from the base where we are today at [ph] 61.5% (02:23:27), can you just maybe talk about how we should think about that over the next kind of 12 months and just the stability in those gross margins? Yeah.

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

A

Yes. A good question. And that goes back to Alex's previous question. The reason you saw 25%-plus drop rate in the last two years is because of the investments we are making in 3D Sensing and the impact that had on the gross margins. If you just take a look at NSE and look at the drop rate, very high, right.

So, now going forward, we're assuming that as 3D Sensing is ramping, as the volumes are picking up, the gross margins in the OSP business will start improving from where it is today, right. We already – the investments in the OpEx line already baked into the plan and that's the reason we are assuming a 40% drop rate. So, great question.

Also, we will continue to drive cost out, okay. So, you'll always see us, revenue grows X percent, our OpEx will grow much lower than that growth rate of revenue. That's how we think about this business. Yeah.

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

And now, I'll just add, if you think about the 3D Sensing, it started virtually from zero. So, you had to make a first big step function of investment, to facilitize your factory, the equipment, so on. So, it takes in the first model, first generation takes some time for that capacity to get filled up, then you do the next step of investment and with every subsequent thing now it's becoming, it's much smoother and much higher utilized. So, it really comes down to the base investment absorption.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

A

Yeah. And now the question here, [ph] Patrick (02:25:08)?

Copyright © 2001-2019 FactSet CallStreet, LLC

Q

Thank you. Two questions. One, Amar, on the $0.18 of earnings relative to your prior or $0.18 of beat of the midpoint relative to your prior three-year outlook, so $0.68 versus $0.50, can you help us understand what portion was organic versus inorganic?

And then I guess for, Oleg, TeraVM, you alluded to have been pretty core and strategic to what you're doing at 5G. It's an asset that I'd remember from Aeroflex days, but could you update us on level of revenue and give a little bit more strategic insight there?

Amar Maletira
Executive Vice President & Chief Financial Officer, Viavi Solutions, Inc.

A

Okay. So, thanks for the question, [ph] Patrick (02:25:51). I'm now going to open the financials up for you, but I'll give you enough of color to tell you what's organic and inorganic there. So, organic is just AvComm and Wireless. That's what I want to focus on right now, because the other pieces are small, right.

So, if I recall, we said AvComm and Wireless will be about $0.12 to $0.15 of EPS when we acquired those assets. We definitely did better than that, because the revenue was much higher and also we drilled the synergies as we talked about. So, as I mentioned in my prepared remarks, that even if I exclude the AvComm and Wireless business, we would still hit our guidance. So, you can assume that – that's good enough if that makes sense. Yeah.

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

The question here about TeraVM. So, that's a product that came in as kind of the side dish with the acquisition of Aeroflex assets. We didn't really think much more, but our General Manager in that business came in and said, no, no, you don't understand, this is really what's going to drive a lot of growth. And truly we are now seeing with our 5G having a virtualized core and that technology is able to – in many ways, truly it's kind of the next generation of network pressure testing, traffic generation.

And we are using it not only in the core of our 5G network to do emulation, but we're also using it to generate physical traffic in pressure testing the infrastructure products during the development as well as when they get deployed in the field. So, we actually view this product as one of the key growth areas for our wireless business in the next three years. So, it was a side benefit, it was unexpected upside. So it's a gift that keeps on giving. Zach?

Zach Borovik
Analyst, Loomis, Sayles & Company

Q

If I look at classic VIAVI lab versus field is about 75/25. And then if I look at the Cobham assets, about $250 million in revenue, pencil that in, that'd imply about a $1 billion opportunity in the wireless 5G side. How do you think about the TAM for wireless 5G? And is that math reasonable?

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

When you say wireless 5G, excluding the lab, just looking purely at the field?

Copyright © 2001-2019 FactSet CallStreet, LLC

Zach Borovik
Analyst, Loomis, Sayles & Company

Q

Yeah.

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

Okay. So, there is no good market studies or anybody publishing what exactly is the field instrumentation. Through our initial surveying of the industry kind of steady state, we think once 5G is deployed, it'll be about $300 million field equipment. We are targeting to cover anywhere between 25% to a third of the market for ourselves. So I would just kind of go with that, but it's obviously based on a lot of assumption. That's based also on what we see as our addressable market. There's many parts of the wireless market we don't address because that's not our cup of tea. But for what we see, we see the field instrumentation where things are kind of running steady state once it's deployed to be a steady state market about $300 million and we're targeting to have at least a third of it. Annual TAM, yes, annual TAM.

Zach Borovik
Analyst, Loomis, Sayles & Company

Q

[indiscernible] (02:29:11)

Oleg Khaykin
President, Chief Executive Officer & Director, Viavi Solutions, Inc.

A

Yeah.

Bill Ong
Senior Director, Finance & Investor Relations, Viavi Solutions, Inc.

Any other questions? Okay. So, with that, we'll conclude our meeting. Thanks those in the live webcast for attending and we'll end it here. Thank you all.

**Editor's Note: Texts in square brackets are inserted at the request of the company, due to technical difficulty encountered during the call (00:00:40 – 00:01:16).

Copyright © 2001-2019 FactSet CallStreet, LLC

Disclaimer
The information herein is based on sources we believe to be reliable but is not guaranteed by us and does not purport to be a complete or error-free statement or summary of the available data. As such, we do not warrant, endorse or guarantee the completeness, accuracy, integrity, or timeliness of the information. You must evaluate, and bear all risks associated with, the use of any information provided hereunder, including any reliance on the accuracy, completeness, safety or usefulness of such information. This information is not intended to be used as the primary basis of investment decisions. It should not be construed as advice designed to meet the particular investment needs of any investor. This report is published solely for information purposes, and is not to be construed as financial or other advice or as an offer to sell or the solicitation of an offer to buy any security in any state where such an offer or solicitation would be illegal. Any information expressed herein on this date is subject to change without notice. Any opinions or assertions contained in this information do not represent the opinions or beliefs of FactSet CallStreet, LLC. FactSet CallStreet, LLC, or one or more of its employees, including the writer of this report, may have a position in any of the securities discussed herein.

THE INFORMATION PROVIDED TO YOU HEREUNDER IS PROVIDED "AS IS," AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, FactSet CallStreet, LLC AND ITS LICENSORS, BUSINESS ASSOCIATES AND SUPPLIERS DISCLAIM ALL WARRANTIES WITH RESPECT TO THE SAME, EXPRESS, IMPLIED AND STATUTORY, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, ACCURACY, COMPLETENESS, AND NON-INFRINGEMENT. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, NEITHER FACTSET CALLSTREET, LLC NOR ITS OFFICERS, MEMBERS, DIRECTORS, PARTNERS, AFFILIATES, BUSINESS ASSOCIATES, LICENSORS OR SUPPLIERS WILL BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, INCLUDING WITHOUT LIMITATION DAMAGES FOR LOST PROFITS OR REVENUES, GOODWILL, WORK STOPPAGE, SECURITY BREACHES, VIRUSES, COMPUTER FAILURE OR MALFUNCTION, USE, DATA OR OTHER INTANGIBLE LOSSES OR COMMERCIAL DAMAGES, EVEN IF ANY OF SUCH PARTIES IS ADVISED OF THE POSSIBILITY OF SUCH LOSSES, ARISING UNDER OR IN CONNECTION WITH THE INFORMATION PROVIDED HEREIN OR ANY OTHER SUBJECT MATTER HEREOF.

The contents and appearance of this report are Copyrighted FactSet CallStreet, LLC 2019 CallStreet and FactSet CallStreet, LLC are trademarks and service marks of FactSet CallStreet, LLC. All other trademarks mentioned are trademarks of their respective companies. All rights reserved.

Copyright © 2001-2019 FactSet CallStreet, LLC