Q3 2020 Earnings Call

Company Participants

- Dan Durn, Senior Vice President Chief Financial Officer
- Gary Dickerson, President and Chief Executive Officer
- Michael Sullivan, Vice President of Investor Relations

Other Participants

- C.J. Muse, Analyst
- Harlan Sur, Analyst
- Joe Quatrochi, Analyst
- John Pitzer, Analyst
- Krish Sankar, Analyst
- Patrick Ho, Analyst
- Quinn Bolton, Analyst
- Timothy Arcuri, Analyst
- Toshiya Hari, Analyst
- Vivek Arya, Analyst

Presentation

Operator

Welcome to the Applied Materials Earnings Conference Call. During the presentation, all participant lines will be in a listen-only mode. Afterwards, you will be invited to participate in a question-and-answer session.

I would now like to turn the conference over to Michael Sullivan, Corporate Vice President. Please go ahead, sir.

Michael Sullivan {BIO 16341622 <GO>}

Good afternoon, and thank you for joining Applied's third quarter of fiscal 2020 earnings call. Joining me today are Gary Dickerson, our President and CEO; and Dan Durn, our Chief Financial Officer.

Before we begin, I'd like to remind you that today's call contains forward-looking statements, which are subject to risks and uncertainties that could cause our actual results to differ. Information concerning the risks and uncertainties is contained in Applied's most recent Form 10-Q and 8-K filings with the SEC.

Today's call also includes non-GAAP financial measures, reconciliations to GAAP measures are found in today's earnings press release and in our quarterly earnings presentation materials which are all available on the IR page of our website at appliedmaterials.com.

And now, I'd like to turn the call over to Gary Dickerson.

Gary Dickerson {BIO 2135669 <GO>}

Thanks, Mike. This time last quarter, I started the Call by outlining the steps we were taking inside Applied Materials to navigate the COVID-19 pandemic. Our actions have been guided by two key principles. First, maintaining the trust of our employees, customers, suppliers and partners. And second, focusing on strategic initiatives that will allow us to emerge stronger over the longer-term. Today, I am pleased to report that both our manufacturing operations and R&D labs are running smoothly at pre-COVID levels of productivity.

I would like to acknowledge the exceptional contributions, resilience and creativity of our employees and suppliers who have rapidly adapted to new ways of working to deliver this quarter's outstanding results. A few weeks ago, at SEMICON West, I outlined Applied's vision for the next decade. I talked about the critical role semiconductors will play in shaping a better future for everyone, the advances in technology needed to unlock the potential of Artificial Intelligence, and how materials engineering will enable the industry's new PPAC playbook to advance Power, Performance, Area-Cost and Time-to-market. I also announced Applied's new 10-year goals and roadmap for environmental sustainability which is part of our commitment to grow our business responsibly and make possible a better future. Having covered our long-term perspective in detail at that event, today I am going to focus my comments on current market dynamics and provide additional insights into our product portfolio and business momentum.

Starting with the market environment, we remain mindful of global economic concerns and that consumer spending is a potential headwind for many sectors including the electronics industry. With that said, demand for semiconductors has strengthened over recent months. As the world adapts to the challenges created by the pandemic, several major technology inflections are being accelerated. Work-from-home, home schooling and on-line retail are driving investments in cloud data centers and communications infrastructure, many organizations are building stronger business continuity plans and increasing the use of automation and IoT technologies, and because AI has the potential to transform entire industries, its adoption remains non-discretionary for many companies.

In wafer fab equipment, we expect overall foundry-logic spending to grow this year even with soft demand in specialty nodes that serve automotive and industrial markets. At the leading-edge, we see a strong commitment from customers to build out their fabs and aggressively drive their R&D roadmaps. This give us confidence these levels of spending are sustainable in 2021 and beyond. As I have described before, with the slowing of traditional 2D Moore's Law scaling, there will be a transition from general purpose computing to customized solutions tailored for specific applications or workloads. Recent announcements by leading systems companies illustrate this inflection very well. Custom-

designed silicon and diversification of architectures play to the strengths of the foundries and underpin their ongoing investments. In memory, we see investments for the year growing slightly faster than in foundry-logic as customers push forward with their technology roadmaps. We also see the growth rate in DRAM being very similar to NAND. Against this backdrop of a strengthening demand, our semiconductor systems revenues are up 18% on a trailing 12-month basis, and at the mid-point of our fourth quarter guidance will be up 25% for our fiscal year.

Next, I'll explain what's driving our outperformance today and how, by focusing on our customers' highest value problems, we are positioned to grow faster than our markets over the next several years. The process complexity required to produce leading-edge transistors and interconnects continues to grow and new innovations in materials and structures are fundamental to driving higher performance and lower power consumption. This plays directly to the strengths of Applied's traditional leadership areas, namely creating and modifying materials and structures. For example, our deposition businesses, CVD, PVD and Epi, generated more than $5.2 billion of revenue in calendar 2019 and, according to VLSI's data, gained 8 points of market share.

In our growth businesses that focus on shaping and analyzing materials and structures, we have strong momentum. We are the fastest growing company in etch, even though we do not currently serve the dielectric market segment. At the mid-point of our guidance, our etch revenues will be up nearly 30% this fiscal year. Since we launched our Sym3 system in 2015, we have shipped more than 5,000 chambers and we recently introduced Sym3 Y which is the most advanced etch system we've ever built. This system provides extremely high materials selectivity as well as precise depth and profile control needed to form the densely packed, high-aspect-ratio structures in next generation 3D NAND, DRAM and logic devices.

We are also the fastest growing company in the metrology and inspection market. At the mid-point of our guidance, revenue for our Process Diagnostics and Control business will be up more than 40% in fiscal 2020. We are winning share in optical wafer inspection and E-beam with new products that are in early stages of adoption and have significant traction with leading customers. Applied has by far the broadest product portfolio in the industry spanning materials creation, modification, shaping, analysis and packaging.

This allows us to see inflections early and develop more complete solutions for customers from co-optimizing deposition and removal processes, all the way to our integrated materials solutions that combine multiple process and metrology technologies within a single system to address our customers' most complex challenges.

In addition, our business is very well balanced across device segments. In foundry, where we are traditionally very strong, we are seeing our available market grow node-over-node and we are positioned to outperform the market as these new technologies ramp in high volume manufacturing. In DRAM, our share is even higher than in foundry-logic. Over the past five years, we have gained 25 points of DRAM patterning share and still have significant potential to grow. We have recently won multiple process tool of record positions for future node transitions including multi-patterning, hard-mask, and hard-mask open applications. In addition, the industry's upcoming transition to high-speed DDR5 is

enabled by advanced logic-like features including high-k metal gate. This grows the available market in areas where Applied has clear technology leadership.

Another area where we are delivering more value to customers and have strong growth momentum is our aftermarket businesses. If we look at Applied Global Services plus 300 millimeter upgrades, revenues are up 21% compared to the same period in 2019. Within AGS, 60% of our service and spare parts business comes from predictable, recurring revenue streams in the form of long-term service agreements. This year, the renewal rate for these long-term agreements is in excess of 90% which is clear validation of the value customers see in our advanced service products.

In Display, our revenue outlook for fiscal 2020 is unchanged at $1.6 billion and we expect 2021 to be similar. However, we are seeing some encouraging signs in the high-end of the market specifically robust demand for 8K screens and the adoption of OLED in TVs. We remain optimistic about the long-term opportunities for Applied in the display market as we focus on addressing future technology inflections and expanding our available market.

Finally, I'll highlight how we're working differently inside the company, as well as with our customers and suppliers. COVID-19 restrictions have stimulated many changes in the way companies in the industry are operating. For example, since March we have provided thousands of digital support sessions using AR and video, held more than 900 training sessions with field support engineers using VR and Live Distance Learning, and, fully restored R&D lab productivity while bringing only a fraction of our engineering staff on-site.

I strongly believe that innovate anywhere provides substantial long-term benefits by eliminating waste, saving time and money, and reducing the industry's carbon footprint. Over the past several years, Applied has been making significant investments in state-of the-art digital infrastructure, sensors and metrology, data science, machine learning and simulation. The combination of these technologies enables us to accelerate product development cycles, speed up transfer of new technologies from lab to fab, and optimize cost, output and yield for our customers in high-volume production.

Before I hand over the call to Dan, I will quickly summarize. First, thanks to the extraordinary hard work of our employees and suppliers, we are operating the company at pre-COVID levels of productivity, while maintaining stringent protocols to keep our workplaces safe and healthy. Second, while we are mindful of potential macro-economic headwinds, semiconductor equipment demand is strengthening, and the longer-term industry growth drivers remain firmly in place. Based on what we hear from our customers, we believe current spending levels will be sustained or even higher in 2021. Third, our strategy to accelerate the PPACt playbook is yielding results for our customers and Applied. Today, we are outperforming the market overall and especially in key growth areas, including etch and inspection. Looking ahead, I am very excited about the innovative new products and integrated solutions we will bring to market this year and beyond.

Now, I will turn the call over to Dan.

Dan Durn {BIO 17483115 <GO>}

Thanks Gary. Today, I'll summarize our Q3 results, give you more insights into the performance trends Gary outlined, and share our business outlook for Q4. I'm pleased that despite challenges related to COVID-19, our teams delivered double-digit year-over-year revenue growth across Semiconductor Systems, AGS and Display.

Our installed base business, which includes AGS plus 300-millimeter upgrades, grew by 11% sequentially and 21% year over year, and now represents about a third of our company's total revenue. For the company as a whole, we grew revenue by 23% year-over-year and generated non-GAAP earnings of $1.06, up 43% year-on-year. We anticipate continued momentum in our fiscal Q4 and Q1. During the third quarter, we shipped a significant proportion of the backlog that we couldn't satisfy in Q2 due to COVID-related supply chain disruptions. Our demand has remained strong, and our Q3 ending backlog was nearly unchanged from the prior quarter. The industry's supply chain performance continues to improve and despite ongoing logistical challenges in Q3, we increased our non-GAAP gross margin by 40 basis points sequentially and 100 basis points year on year.

We also delivered sequential operating margin gains in both Semiconductor Systems and AGS. Non-GAAP OpEx was in line with our targets, and we allocated 69% to research and development. We increased non-GAAP operating profit to $1.16 billion, up 41% year-over-year. In May, we successfully issued $1.5 billion of senior notes at historically low rates and later redeemed $1.35 billion of maturities that were due in October 2020 and June 2021. These transactions extended our weighted average maturities by about 5 years and reduced the average coupon of our notes outstanding.

During the quarter, we returned $402 million to shareholders in dividends and buybacks. We remain strongly committed to our shareholder distribution program and to closing the Kokusai Electric transaction. We're having constructive discussions to close the final regulatory approval we need. We continue to expect the transaction to be immediately accretive to our non-GAAP financial results and we look forward to providing you with a new financial model soon after we close the proposed transaction.

Next, I'll expand on the performance trends Gary highlighted in his remarks. We've discussed our conviction in the attractiveness of our markets and the opportunity we have to generate strong returns by consistently investing for growth. The investments we've made in recent years are resulting in momentum that's already visible today and will accelerate as new nodes ramp over the next several years.

Let's examine how Applied's revenue is profiling in the first half of the calendar year, which is our fiscal Q2 plus fiscal Q3. Compared to the same period last year, our semiconductor systems revenue is up 23%. This compares very favorably with our closest peers. In foundry, we're significantly outperforming in the market. We're winning critical new applications in advanced patterning and we're working closely with customers to develop next-generation transistors and interconnects using innovative approaches like

our Integrated Materials Solutions. This is strengthening our leadership in foundry-logic, and also giving us new application wins in memory, where we're outperforming in the market as well. In fact, we believe we'll be the number one company in DRAM conductor etch this year, winning greater than 50% of the available market. We look forward to demonstrating more growth as DRAM spending improves and demonstrate Applied's unique ability to perform well in a variety of spending environments.

Based on discussions with our customers, we expect our momentum to continue throughout the calendar year. Specifically, we believe our revenue in both foundry-logic and memory will be second-half weighted, leading to another year of growth and outperformance for Applied. This strength in our systems business is fuel for growth in our installed base business which is also on track to be up in the second half and into the future. As new systems go off warranty, we have opportunities to win subscription-like, long-term service agreements, which are a significant growth multiplier for our parts and service revenue.

Now I'll share our fiscal Q4 business outlook. We expect company revenue to be approximately $4.6 billion, plus or minus $200 million. The midpoint of the range would be up by around 23% year over year. We expect non-GAAP EPS to be about $1.17, plus or minus $0.06. Within this outlook, we expect Semiconductor Systems revenue to be approximately $3.025 billion, which would be up about 31% year over year. Applied Global Services revenue should be about $1.07 billion, or up about 10% year over year and Display revenue should be around $475 million. Non-GAAP gross margin should be about 45.7%, or up nearly 2 points year-on-year and non-GAAP OpEx should be around $820 million.

In summary, Applied delivered double-digit revenue growth across all of our segments in Q3, with strong operating leverage. We're pleased to see how the investments we've made are translating to growth and relative outperformance, both in foundry-logic, and also in memory where we've made significant investments in recent years. The company is also positioned to weather cycles better than ever, with our installed base now driving a third of our revenue, and 60% of our parts and service business coming through subscriptions. And I'm incredibly proud of our teams for driving our innovation and increasing our shipments and customer support all while driving strong shareholder returns in a very challenging environment.

Now Mike, let's begin the Q&A.

Michael Sullivan {BIO 16341622 <GO>}

Thanks, Dan. And to help us reach as many of you as we can, I'm going to ask you to please ask just one question and not more than one brief follow-up. Operator, let's please begin.

Questions And Answers

Operator

Thank you. (Operator Instructions) Our first question comes from the line of C.J. Muse with Evercore. Your line is now open.

Q - C.J. Muse

Yeah, good afternoon. Thank you for taking the question. I guess, first question on the gross margins really great performance year-on-year both for the actual and the guide. And just curious, firstly, how should we think about any room for upside just based on lower expenses related to reduced cost associated with Covid logistics et cetera? And then as you think about the portfolio that you kind of discussed, you see in the next year or two. Can we get back to that 36.6%, we saw in 2018 for silicon?

A - Dan Durn {BIO 17483115 <GO>}

Yeah, thanks C.J. On gross margin, the company's performed really well in the current environment. You talk about the year-over-year performance. If you take a look at our guide, we're going to be up almost 200 basis points into the fiscal Q4, so the company is performing really well. I would like to underscore the hard work that our operations and supply chain and logistics team are doing to mitigate the impact of the current pandemic environment we're in. They've done an absolutely superb job. And so the company is doing well on that front. As we take a step back and think about the longer-term trajectory around gross margins, there's clearly a lot of activity going on inside of the company. This is something we spend a lot of time focused on and we're hopeful that over time, we've got an opportunity to raise those gross margins even off of these levels as we deliver the new innovation to market that Gary talked about in his prepared comments.

Ultimately I don't think we'll ever be satisfied, no matter where the gross margins are. But clearly, the company is performing well in the current environment that we're in. And then when we take a step back and look at our Semiconductor Systems operating margin, again, the company is performing well. I think what you'll see into the coming quarter, while we don't guide operating margin by segment, I think you'll see some strength on that front as well. And so I do think that we've got an opportunity over time to get back to that prior benchmark for the segment. So again, a lot of hard work and I think the company is doing well in a difficult environment.

Q - C.J. Muse

Very helpful. And as a quick follow-up, it sounds like within your prepared remarks that your view on memory CapEx is actually better than perhaps where we were three months ago. And I think as we listen to Micron today and others in the storage arena, concern that perhaps things might be getting softer. So can you provide some color on how exactly you're seeing memory CapEx trends in the second half of the year and then through 2021? Thank you.

A - Dan Durn {BIO 17483115 <GO>}

Yeah, sure C.J. Let me paint a little bit of a bigger picture for you that puts the memory, what we're seeing in the memory market in context. And so if we look at WFE this year, our best estimate at this point given everything we see from the market and our customers, we're going to be up about 10% to 15% year-over-year. That's off of a 2019

baseline, that's about $51.5 billion, we think it's a good number. It's a third-party validated number by VLSI. And so we think we're up 10% to 15%.

And as you take a look at our prepared comments, we think that there's going to be strength in both memory and foundry-logic. We think both of those segments for us from a revenue standpoint, are both going to be second-half weighted throughout the year. And we think the proportion of spend within WFE is weighted towards foundry-logic, more than 55% of the spend is in foundry-logic. We think that strength continues into next year, both the overall market as well as our position against that opportunity we see strength into 2021. And we feel like the proportion of spend in 2021 is going to be very similar to what we're seeing this year.

So as we look at the back half of calendar 2020, we're not expecting a spike in memory spending and we're not expecting a precipitous fall. The company is performing well in this environment. You see how well we've performed in the first half of the calendar year versus the first half of calendar '19 and we're just going to keep competing, delivering innovation for customers and driving our business. So we feel good about how we're doing.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks C.J.

Operator

Thank you. Our next question comes from the line of John Pitzer with Credit Suisse. Your line is now open.

Q - John Pitzer {BIO 1541792 <GO>}

Yeah, hi, good afternoon guys. Thanks for let me ask the question. Dan, maybe just to follow up on that, it sounds like in your answer to C.J.'s question that foundry actually gets stronger half on half in the second half of the year. I'm just kind of curious given the largest foundry guy spend more than half of his CapEx budget this year. Can you help me understand better sort of the business outside of that large guy and especially coming from China. How much more growth do you see in kind of hit the call, second or third tier of foundries, but let's just use that for lack of a better term and/or from China, as you look into your fiscal fourth quarter guidance.

A - Dan Durn {BIO 17483115 <GO>}

Yeah, hi, John. Let me try to help you with what we're seeing in the market. So as we look at our foundry-logic business, couple of things I would say. We've been saying for several quarters now that we are going to see strength in foundry-logic throughout the year. Nothing has changed on that front. We see a diversification of spend underway in the market, we see multiple customers ramping multiple nodes with a strong pull for the technology and innovation that we're bringing to market. We see our business significantly outperforming the overall foundry-logic market.

And about a quarter ago, about three months ago, we reported our fiscal Q2 revenues, which is the equivalent of calendar Q1 in 2020. And as I look at the profile of foundry-logic spend this year and our revenue against that opportunity, it looks like our fiscal Q2 is going to be the low point for calendar 2020 in terms of foundry-logic business.

And then as I think about strength into the back half of the calendar year, which is our fiscal Q4, fiscal Q1 based on everything we see today, things look good. So it's just a fundamental underlying diversification of spend, multiple customers, multiple nodes and very consistent with what we've been saying now for several quarters.

Q - John Pitzer {BIO 1541792 <GO>}

That's helpful guys. And then maybe as my follow-up for Gary. Clearly one of the things that COVID has shown a spotlight on is kind of the strategic importance of semiconductor manufacturing capacity. We've got the CHIPS Act moving its way through Washington, Prime Minister Abe in Japan has talked about building more fabs in Japan. And I think even the EU has set up a commission. I'm just kind of curious from your perspective, how you see kind of this regionalization of capacity potentially playing out over the next several years and what incremental opportunities it might afford Applied Materials.

A - Gary Dickerson {BIO 2135669 <GO>}

Yeah, thanks John for the question. So first I'd echo what Dan said. I was on a call with one of our major foundry-logic customers two nights ago. And not only strengthened 2020 but also into 2021. And I think if you take a step back and you look at what's driving this and it gets back to your question also about the strategic nature of semiconductors. And what we're seeing with COVID-19 is an acceleration of technology, transforming every industry. Certainly my 10-year-old twins are doing learning from home, you have remote working from different locations, e-commerce, all of those things that we've been talking about are accelerating and we're all living that right now.

And you also see kind of a -- from a multi-year secular transition, many leading companies developing custom workload specific silicon that's going to the foundry. So again, you see that happening even some recent announcements. And I think also when you look at really what is the foundation for the trillion connected devices in the future, it's really all of the semiconductor chips and you need to keep driving the PPAC, we talk about power performance, area cost, road map to get to the performance per watt that you need to have the right infrastructure for the data economy. So I think that driving power and performance, lower power, higher performance at the right cost, it's just fundamental to competitiveness going forward and way more important from a economic perspective.

And you absolutely see it like you talked about with TSMC coming to United States and I said before that we were certainly encouraging that to happen. I think it's a great thing for the United States. You talked about Abe in Japan and also what's going on in other geographic regions. I think that everyone recognizes the strategic importance of these technologies. I think it will become even more clear to everyone on power performance area cost, what's driving that future technology road map, and that's again where Applied is in a super good position. So, absolutely, I see that playing out in the way that you've described it, it's certainly good for Applied as customers move into different geographic

regions. What we've seen as really a boost in our service business and certainly it strengthens the strategic relationships we have with a number of different customers.

A - Michael Sullivan {BIO 16341622 <GO>}

Hey, thanks, John.

Operator

Thank you. Our next question comes from the line of Toshiya Hari with Goldman Sachs. Your line is now open.

Q - Toshiya Hari {BIO 6770302 <GO>}

Hi, good afternoon and thank you very much for taking the question. Gary, I was hoping you could provide a little bit of an update on the Kokusai acquisition. You guys talked about a little bit in your prepared remarks, but what are some of the last standing items. And if you can remind us on the industrial logic of the deal and help us a little bit with the accretion there, that would be helpful. Thank you.

A - Dan Durn {BIO 17483115 <GO>}

Yeah, hi, Toshiya. Let me talk about the deal and then I'll pass it back to Gary to talk about the industrial logic that underpins that transaction. So we've made a lot of good progress on the regulatory front. We've closed out five of the six regulatory approvals that we need in this transaction as you know. So we feel good about that progress. We're having constructive discussions to close the final regulatory approval that we have in the process. We hope to close soon, optimistic about our progress. So we feel good about progress to date. And then just as a reminder, we continue to expect, transaction is going to be immediately accretive to non-GAAP financial results upon close. So we feel we're making good progress.

A - Gary Dickerson {BIO 2135669 <GO>}

Yeah, Toshiya, we've talked about the power performance area cost road map, really being fundamental to how all of our customers compete and really people also talk about the limitations with 2D scaling, Moore's Law slowing down, classic Moore's Law slowing down. And I just deeply believe I'm on calls with leading customers, CEOs, R&D leaders on a regular basis, and I just really strongly believe that new architectures, you'll see emerge over the next two or three years are going to be a big driver of the PPAC roadmap, new structures, new materials, new ways to connect chips together. All of those things, I'm just incredibly optimistic that we're going to be able to drive power performance and cost going forward.

But it's not going to be what's been happening in the past.

So then if you look at Kokusai, Kokusai certainly in memory is very strong. And when we look at what some of those future structures look like, what some of those future architectures or materials look like, Kokusai has some unique technologies where they can

go to much higher temperatures, they can process many, many wafer simultaneously. And it gives you another technology that we can combine with all of the other technologies that we have to create, shape, modify, analyze and connect structures and devices. So we haven't really communicated a lot on the strategic value, we will be doing that as soon as the transaction closes, but there are really some tremendous opportunities and combining these different capabilities together. And certainly, we've made tremendous progress relative to our memory market share over the last few years and Kokusai will definitely be additive to that.

Q - Toshiya Hari {BIO 6770302 <GO>}

And Gary, you talked about your level of outperformance relative to the market in fiscal year '20. I think you talked about your Etch business at the pin point of your guidance, growing 30%. I think you talked about your Process Control business being up 40% in the year as well. Based on your customer conversations, based on some of the PTR wins that you're aware of when you think about 2021 and if you can compare and contrast those two potential level of outperforming since the next year relative to what you achieved this year, that would be super helpful. Thank you.

A - Gary Dickerson {BIO 2135669 <GO>}

Yeah, Toshiya. So again, one of the things that's very interesting about the current environment that we're working in. I certainly miss having dinners with R&D leaders and some of our key customers. But I'm actually probably and more frequent connections with many of those different customers and I'm just really optimistic if you look at what is driving the roadmap going forward, as I talked about power performance area and cost. We have deep visibility, and the reason we have deep visibility into what's happening at 3-nanometer and 2-nanometer is because we're co-developing the next generation transistor structures with customers and the wiring speed is also incredibly important for customers and driving the next nodes from a memory perspective. All of those areas, we have very, very, very deep engagements and deep insight into what those architectures will look like.

And we've never been in a better position, when we look at all of the N-plus nodes, I would say, and certainly in foundry and logic, we will continue to grow our etch business, we're in a great position with the Sym3 Y, we're delivering higher yield with that technology on the most critical steps for those customers. So we're in a great position to continue to outperform there. And inspection and measurement, we have two new platforms that we've launched that we're really in the early innings relative to that particular adoption.

And then also, we have the synergy with our inspection measurement, not only in driving our PDC business but accelerating our technology inside Applied's labs and also with customers with new materials and new structures. But when you really look at those next nodes and the materials, the integrated processes that we're delivering with customers, we've just never been in a better position. And I'm very, very optimistic, we have high visibility in terms of what those architectures will look like and also very high visibility in terms of our position.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, Toshiya.

Operator

Thank you. Our next question comes from the line of Harlan Sur with JPMorgan. Your line is now open.

Q - Harlan Sur {BIO 6539622 <GO>}

Good afternoon. Good job on the quarterly execution. As a follow-up to the last question, it's good to see the strong traction in process control, especially in optical and e-beam inspection. I think that's about a $1.6 billion, $1.8 billion market opportunity and it's actually a pretty sticky part of the market. So what are the differentiators that are enabling the team to win here? And then on the metrology side, again another -- about another $1 billion market opportunity for discrete platforms. Any plans for the Applied team to try and intersect this market opportunity, longer term as well?

A - Gary Dickerson {BIO 2135669 <GO>}

Yeah, thanks for the question. So if you look at our PDC business, this year -- this fiscal year will be significantly over $1 billion. If you look at our systems and service business in PDC and as I said in the prepared remarks, a greater than 40% growth rate. And there really are two things I think that are really important with PDC. One is the PDC growth and I'll talk about that here in just a minute, but also our ability to accelerate the PPAC roadmap within Applied on our technologies and also with customers. So if you look at the PDC growth, there are really two major drivers this year. One is a new optical inspection system and we've already generated several hundred million dollars of revenue with that new optical inspection system and it's ramping at multiple leading customers.

So that -- and we're certainly still in the very early innings with the adoption of that new system. And it's really targeted towards line monitoring where you have multiple inspection points in a fab and some of the leading customers driving the PPAC road map we have pretty extensive adoption already of that new optical inspection system. And then the other technology that we've introduced this year is a new e-beam technology that has the highest resolution electron optics in the market today. It's about 60% higher resolution from an e-beam perspective and also has very fast imaging. So that particular technology, when you think about driving the PPAC roadmap with gate all around or one customer, I had dinner with in March was talking about nano sheets and the ability to have a very, very high correlation with this higher resolution imaging capability and developing those future transistor technologies.

And the same thing is true in the memory devices or new interconnects like Selective Tungsten. All of those areas, having this unique capability is really important relative to driving the technology road map going forward. And that particular technology, we have thousands of e-beam products and columns in the field today. But that higher resolution, you can almost think about it EUV versus previous products with a wavelength reduction, it is an enabling foundation for our e-beam leadership for the next decade. So that will

proliferate across all of our different platforms. So really, those are the two things that are driving our business this year, but also the synergy with our process business has also never been better inside our labs and also with customers. So those are the two areas we're driving. And I think really in the early innings of continuing to drive value in both of those different areas.

Q - Harlan Sur {BIO 6539622 <GO>}

Yeah, thank you for the insights there. And of the $650 million of backlog that the team wasn't able to ship in the first half of this year. I think Dan based on your commentary, it looks like you were able to make much of that up in Q3, but how much more do you have to make up? And would you true everything up exiting Q4, would there still be some spillover into fiscal Q1?

A - Dan Durn {BIO 17483115 <GO>}

Yeah, hi, Harlan. So a little color on the $650 million. We talked about $650 million of unmet demand in our fiscal Q2, that was across all device types, spread out between foundry- logic, NAND, DRAM. And in the most recent quarter, our fiscal Q3 as you heard in one of the previous answers, our operations team, supply chain team, logistics team and our supply chain partners have just done an amazing job in a difficult environment, making much better progress than we originally thought three months ago. And so we've got a significant chunk of that $650 million that was satisfied in fiscal Q3. We've got more to go. Our expectation is, is all of that will be in the rear view mirror exiting our fiscal Q4. And our fiscal Q1 which is calendar Q4 is going to be a first look through of true end market demand across our markets.

And what has me encouraged is, as I look at that true look through and end market demand and seeing the strength we are across our businesses, just gives me confidence that we're continuing to see a strong environment by our customers and strong demand in pull for the innovation we're bringing to market to enable their technology road maps. And I guess the last point I'd make on this is, we made comments on our call three months ago, about the strong backlog that we are carrying into Q3. Not only did we satisfy a significant chunk of that end market demand in our fiscal Q3, we're entering our fiscal Q4 with the company's backlog virtually unchanged. And so it's a strong endorsement of the strong environment we continue to find ourselves in.

A - Michael Sullivan {BIO 16341622 <GO>}

Hey, thanks Harlan.

Operator

Thank you. Our next question comes from the line of Krish Sankar with Cowen and Company. Your line is now open.

Q - Krish Sankar {BIO 16151788 <GO>}

You spoke about your strength in DRAM, conductor etch, and overall DRAM vertical. How much of the strength is coming from the side, the DRAM is more getting logic like in

terms of process. All I'm trying to figure out is can this DRAM success be transferred into NAND or is NAND, a whole different beast?

A - Gary Dickerson {BIO 2135669 <GO>}

Yeah, this is Gary. So certainly high speed memory is a big focus for a number of different customers. So the -- like you said on the High-k/Metal Gate technologies, those are areas where we have significant leadership and that's helping to drive our DRAM business. And also in etch, we've grown our etch business, a significant amount in DRAM. If you look at the conductor etch, we gained almost 30 points of conductor etch share in DRAM since 2016 with the Sym3 platform. So really good drivers there. And as these new high speed memories are adopted and ramp up in the next technology node, it puts us in a really good position to continue to outperform from a DRAM perspective.

And NAND, you have different drivers. But it really still is about scaling the number of layers going vertical and we have a number of very innovative films, different compounds that are being adopted in the next generation NAND devices. So the combination of those very, very high selectivity films with our etch products, position us to perform well also in NAND. And the other thing I would say really -- the other thing I would say and I talked about this a little bit earlier is Kokusai will be definitely additive to Applied overall from a memory perspective. If you think back over the last several years, we've grown our memory business share of total spend for both NAND and DRAM from the mid-teens to 20% or more in those different segments. So we think, we believe we're very well positioned in both NAND and DRAM going forward and certainly Kokusai will add to that overall performance.

Q - Krish Sankar {BIO 16151788 <GO>}

Yeah, that makes sense, Gary. And then as a follow-up, your semiconductor business is getting less cyclical these days, but display is still very deeply cyclical. So I'm kind of curious how important is display to the long-term strategic rationale of the company?

A - Dan Durn {BIO 17483115 <GO>}

Yes. Thanks a lot for the question. As we think about the display business, Krish, we see display as a great opportunity to take core technology into adjacent markets, drive enhanced revenue and cash flow for the company. And as we sit here today, we know we're at a cyclical bottom, the market continues to bounce along the bottom. We do think there is opportunities going forward for this market to go structurally larger off the levels that we're at now. What we're seeing in the current environment is strengthening post the initial stages of COVID, that gives us some confidence as we look into 2021. But -- and then, as we take a look at the technology inflections on the horizon, OLED coming to TV, foldable, flexible displays coming to the handset, both of those technology inflections being more capital intensive than the current generation of technologies. We think there is some growth on the horizon in this market. So it's a great way to take core technology and monetize it in an adjacent market to drive enhanced revenue and cash flow for the company.

A - Michael Sullivan {BIO 16341622 <GO>}

Hey, thanks, Krish. And we still have a lot of people in the queue. So, operator, I'd like to ask that we please do one question at this time, and no follow-ups. Okay? So, please give us our next question.

Operator

Our next question comes from the line of Patrick Ho with Stifel. Your line is now open.

Q - Patrick Ho {BIO 5499707 <GO>}

Gary, maybe as a follow-up to some of the technology questions that have been asked already. Can you give a little bit of color of how Applied can continue to outperform. You mentioned process control, conductor etch, you have new technologies like you mentioned gate all around, nanowires and others. Can you I guess maybe provide a little more color in terms of some of the opportunities. So maybe a little more on the conductor etch side, but also in your core deposition businesses as well.

A - Gary Dickerson {BIO 2135669 <GO>}

Okay, thanks for the question, Patrick. Well, that's a very broad one. But let me say this, I deeply believe and I love the technology, I love interacting with R&D leaders for our customers. And I would just say and you see this dynamic in the marketplace, driving power performance area cost faster than others, low power higher performance at a better cost is really the key focus for all of our customers. And I talked a lot about what drives the road map going forward. It really is about new architectures, new structures, interconnect structures. Certainly, that includes gate all around, but there are other technologies we're working on that are really, really, really important for customers, new interconnect technologies, so that you reduce the resistance in the wiring. That's also a key, key driver for all of our customers, new ways to connect chips together from a packaging standpoint, all of the new materials that we're bringing to market.

So there are a number of those different areas that are super important relative to driving the PPAC roadmap going forward. And I would say that one thing that I'm just so encouraged with. Our portfolio, when you look at creating, shaping, modifying, analyzing, connecting devices and structures, there's no one that can do all of those different things. And even if you look at FinFET today, I talked about our technology where we integrate together multiple products or multiple different chambers on a single platform under vacuum to manage interfaces where we can improve leakage current far beyond what exists today. So you think about improving the leakage current or a 10% improvement in drive current, that is incredibly, incredibly, important. And that particular technology again is an integrated material solution, it works in FinFET, and I think there is a high probability, you'll see that coming to market sometime in the next year for some of our customers.

You have that technology can also work in gate all around or nano sheets. Again there just a number of different areas where we're driving innovation. We announced recently Selective Tungsten, which is kind of like atomic layer 3D printing, to increase the diameter of the wire to reduce the resistance. That is a really big technology development for our customers driving the PPAC road map forward. And the other thing I talked about combining these things together with the highest resolution electron beam imaging

capability in the industry and proprietary algorithms, where you can -- and very high speed imaging. So you can image thousands of points on a wafer, look at the key technologies that are being developed, look at the special distributions and dial in your process windows for all of those new technologies, lightening fast with a combination of massive unique actionable insight and data analytics and machine learning that we have developed within Applied.

Those are really game changer technology. So it's really a combination of a many of those enabling creating materials and films, shaping, modifying. We have many unique technologies, we're analyzing many unique technologies. The combination of those things together also means that we're strategically connected to customers in a very unique way. We have unique insights into their future technology nodes, their future architectures, the critical challenges that customers are facing. And the pull, Patrick, that we have from our customers has never been stronger.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, Patrick.

Operator

Thank you. Our next question comes from the line of Timothy Arcuri with UBS. Your line is now open.

Q - Timothy Arcuri {BIO 3824613 <GO>}

Thanks a lot. Gary, I guess I had a bigger picture question on the indigenous China market. And it seems like more than half of the growth and overall WFE this year is coming from indigenous China. And I guess my question is, can you update us on the $9.5 billion that you were sort of implying last call. And really like bigger picture here, it sounds like there really wasn't any impact from the recent military end use stuff. And my question really is, can you talk about the discussions you've had with commerce. I mean, the expanded regulation that it had zero impact. So sort of what are the tone of the discussions tells you that this is it for a while or whether there could be a further effort to additionally and truly restrict access. Thanks.

A - Gary Dickerson {BIO 2135669 <GO>}

Yeah. Tim, thanks for the question. I'll start off and then Dan can answer the -- this market size question. So relative to the geopolitical question, I'm not going to speculate on any future actions that can take place. But really what we've seen today is similar to what and consistent with what we previously discussed. We've assessed the rules and as we had discussed in our last call, we continue to see no meaningful impact on our business. And so I'll also let Dan answer the overall market question.

A - Dan Durn {BIO 17483115 <GO>}

Yeah, thanks, Gary. Hi, Tim. So as we think about the market in China, domestic China market, off of a baseline of about $6.5 billion in 2019. We've been saying for several quarters now that we see $2 billion to $3 billion of incremental spend. And a couple of

quarters ago I think are, last quarter we said we're going to be at the high end of that range. And so we're at about $9.5 billion of spend, it's pretty consistent with how we view that market for several quarters now. And as I think about the profile of spend in China, we do see slow steady development of ecosystems investment in technology road maps, you see modest capacity additions, behind that, you probably see a little more capacity this year. But it's not a lot more, it's a little more.

And we see spend across 200 millimeter, 300 millimeter geometries. You see from a device type standpoint investment in foundry-logic, DRAM, NAND. So it's really a balanced profile of spend and slow steady development of their ecosystem, but no real change in the profile as we viewed the market for several quarters now.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, Tim.

Operator

Thank you. Our next question comes from the line of Joe Quatrochi with Wells Fargo. Your line is now open.

Q - Joe Quatrochi {BIO 18961101 <GO>}

Yeah, thanks for taking the question. I was wondering if you could kind of talk a little bit about the demand that you're seeing in memory. How do we think about that being driven for technology transitions versus wafer additions and how do we think about that into 2021 as we kind of see more normalized fab utilization rates this year?

A - Dan Durn {BIO 17483115 <GO>}

Yeah. Hi, Joe. So that's the great thing about what we see today is we still see investments in technology transitions of our customers. We still don't see nor do we see in the back half of the year, a big spike from a capacity standpoint. And one of the things that we're really encouraged about given the performance of our business relative to the market opportunity, we're growing stronger than the overall market. It just shows us that we're well positioned from an innovation standpoint to deliver key enabling technologies for our customers in the roadmap. So we really don't see a lot of capacity, wafer starts going into the industry. We see continued investment from a technology roadmap standpoint.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, Joe. And operator, we have time for two more questions, please.

Operator

Our next question comes from the line of Quinn Bolton with Needham & Co. Your line is now open.

Q - Quinn Bolton {BIO 3192909 <GO>}

Hey guys, just wanted to follow up on that last question. If I heard your prepared comments, I think you said that you didn't see a big shift in the mix between foundry-logic and memory as we head into 2021. I just wanted to confirm that too. I guess I'm surprised by that comment because I think we've all been looking forward probably a better capacity addition next year in memory. And if the mix stays the same, it feels like maybe we're not going to get it. So I was hoping you could expand on your thoughts on memory, particularly from a capacity perspective, looking into calendar '21.

A - Dan Durn {BIO 17483115 <GO>}

Yeah, hi, Quinn. So what we're seeing in the market is continued investment. From a technology road map standpoint, we see strength in the market from a proportion of spend this year, we see more of the spend going to foundry-logic over 55% of the aggregate spend is going to be foundry-logic related. We see memory growing a little more than foundry-logic this year. And as we window into 2021 from a proportion of spend, feels very similar to what we're seeing this year, it's continued strength on our foundry-logic customers. We see it being more than 55% of the spend next year in 2021.

And what I would say about the industry is if we go back to 2017, 2018 technology transition in the industry, investment and concurrent investment in planar in 3D technologies, new architectures, I would say there was an inefficient level of spend, as it relates to bit addition to the industry. I think you're seeing a much more efficient spend profile. Over time we see capital intensity rising, but you're seeing a much more efficient bit production out of CapEx that's going into the industry. The other thing I'd say is we've got a very balanced portfolio from a share standpoint, across all device types. So we're very balanced company and we're fairly agnostic to where customers want to spend, whether it's foundry-logic, NAND, DRAM, I think we're set up to perform well in all of those environments, given our broad portfolio. So we'll watch the market and we'll continue to update every quarter on what we're seeing.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, Quinn.

Operator

Thank you. Our last question comes from the line of Vivek Arya with Bank of America. Your line is now open.

Q - Vivek Arya {BIO 6781604 <GO>}

Thank you for taking my question. I know it's hard to reconcile on a real-time basis, but I'm curious how do we reconcile your encouraging words on memory demand, with somewhat mixed picture and views from some of your memory customers who are mentioning some deceleration in data center demand or some declines in China smartphones, as an example. So completely understand and appreciate that -- your demand and their demand doesn't have to correlate on a real-time basis. But how are you ensuring that your memory customers are shipping to their end demand?

A - Dan Durn {BIO 17483115 <GO>}

Yeah, again what we -- our comments reflect continued pursuit of technology road maps. And all we're doing is reflecting the strength of our business and we talked about the first half of the calendar year, calendar year 2020 over the first half of calendar year '19. Our DRAM business is up 20%, our NAND business is up 14% over the last couple of quarters sequentially, two quarters ago, memory was up for us 24%, most recent quarter, up almost 17%. We're seeing sequential performance in both NAND and DRAM. And so it's more of a comment of what we're seeing and the demand for our business as our customers roll out their technology road maps. And in an environment where technology road maps to find the cost structure of our customers, it's cost per bit. We see continued investment on road maps and with modest additions from a capacity standpoint to drive the bit demand growth that the markets requiring.

A - Michael Sullivan {BIO 16341622 <GO>}

Great, thanks for that -- for your question. And Dan any closing thoughts for today.

A - Dan Durn {BIO 17483115 <GO>}

Yes, sure, Mike. So what stands out for me, especially in this quarter is how investments in our strategy translating to growth and outperformance in the market. I like the balance share we now have as a company and that's across all device types. I like that we're generating a third of our total business from our installed base and that's going to give us more predictable revenue and cash flow over time. I really want to thank our employees and partners for aggressively ramping up to meet our customers' needs in a really difficult environment and doing it safely. We look forward to seeing many of you at the Citi Conference and a whole bunch of virtual events sprinkled throughout the quarter. Till then, keep safe. Mike, let's close the call.

A - Michael Sullivan {BIO 16341622 <GO>}

Okay, great. Thanks, Dan. And we'd like to thank everybody for joining us today. A replay of the call is going to be available on our website by 5 o'clock Pacific Time. And we'd like to thank you for your continued interest in Applied Materials.

Operator

Ladies and gentlemen, this concludes today's conference call. Thank you for your participation. You may now disconnect.
