Q1 2017 Earnings Call

Company Participants

- Gary E. Dickerson, President, Chief Executive Officer & Director
- Michael Sullivan, Vice President-Investor Relations
- Robert J. Halliday, Chief Financial Officer & Senior Vice President

Other Participants

- Atif Malik, Analyst
- C.J. Muse, Analyst
- Craig A. Ellis, Analyst
- Edwin Mok, Analyst
- Farhan Ahmad, Analyst
- Harlan Sur, Analyst
- Joseph L. Moore, Analyst
- Krish Sankar, Analyst
- Patrick Ho, Analyst
- Romit Shah, Analyst
- Sidney Ho, Analyst
- Stephen Chin, Analyst
- Timothy Arcuri, Analyst
- Weston Twigg, Analyst

MANAGEMENT DISCUSSION SECTION

Michael Sullivan {BIO 16341622 <GO>}

Good afternoon, everyone. I'm Mike Sullivan, Head of investor Relations at Applied Materials. We appreciate you joining us for our first quarter of fiscal 2017 earnings conference call, which is being recorded. Joining me are Gary Dickerson, our President and CEO, and Bob Halliday, our Chief Financial Officer.

Before we begin, let me remind you that today's call contains forward-looking statements, including Applied's current view of its industries, performance, products, share positions, revenue growth, profitability, and business outlook. These statements are subject to risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statements and are not guarantees of future performance. Information concerning these risks and uncertainties is contained in Applied's most recent Form 10-K and 8-K filings with the SEC. All forward-looking statements are based on management's

estimates, projections, and assumptions as of February 15, 2017, and Applied assumes no obligation to update them.

Today's call also includes non-GAAP adjusted financial measures. Reconciliations to GAAP measures are contained in today's earnings press release and in our reconciliation slides, which are available on the Investor Relations page of our website at appliedmaterials.com.

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

Gary E. Dickerson {BIO 2135669 <GO>}

Thanks, Mike. I'm happy to report that Applied Materials delivered another record quarter in Q1. With earnings and orders exceeding all-time highs, 2017 is shaping up to be an outstanding year. As I look ahead, I see broad-based strength in our markets as large multiyear inflections evolve and new emerging demand drivers layer on top of mobility and computing. I'm also increasingly confident that Applied is positioned to sustainably grow faster than our markets, as we realize the benefits of the investments we have been making in our organization and product pipeline.

On today's call, I'll begin with a quick recap of our strategy and provide an update on the key trends and industry inflections that are driving our growth. I'll then translate these into an outlook for Applied's markets before concluding with a brief overview for each of our businesses. After that, Bob will provide additional details about our performance and his perspective on 2017 and beyond.

The significant changes in semiconductor and display technology that are taking place today depend on materials innovation. At Applied, our strategy is to deliver innovative materials engineering technologies to enable these major inflections. Across the company, we are focused on extending our innovation leadership and delivering solutions that enable customers to build new devices and structures that were never possible before.

As I've outlined previously, there are five large multiyear inflections that are underpinning our record performance today and we believe will fuel our growth for years to come. I'm going to take a few minutes to provide an update on each of these drivers as well as describe how our strategy of inflection-focused innovation positions Applied for sustainable profitable growth.

Let me begin with 10-nanometer and 7-nanometer technologies in foundry and logic. We are seeing significant investments by our customers to meet demand for leading-edge silicon to power increasingly capable mobile devices, 4K video, and new compute-intensive applications like artificial intelligence and smart vehicles. This sustained investment in advanced technology plays to the strengths of our leadership businesses, where we have unique capabilities and high market share.

The second driver is 3D NAND, which is a great example of materials-enabled scaling. We believe NAND bit demand grew about 45% in 2016 and that 2017 will be similar. Major memory companies are saying this growth rate is sustainable over the next several years.

Our opportunity in NAND is also expanding. While 3D NAND has significant performance and power advantages, the bit density increase achieved moving from generation to generation is slower than it was for planar NAND. To compensate, more wafer starts are needed.

The third driver for Applied is patterning, a market which is growing rapidly. It's important to recognize that as customers move to smaller chip geometries, all the layers in the device scale. Some layers will move to EUV [Extreme Ultraviolet] and others to multi-patterning. This means that even in the most aggressive EUV adoption case, our patterning opportunity still expands considerably. Patterning is an area where Applied is making significant investments. We increased our patterning revenues more than 60% in 2016, and we have significant room to grow.

Beyond semiconductor, another unique growth driver for Applied is advanced display, where two major market inflections are underway. The first is rapid growth in large-format TVs 60 inches and above, which is driving investment in new Gen 10.5 capacity as customers optimize factories for bigger screen sizes. We are now tracking seven Gen 10.5 projects.

In parallel, there's a battle for leadership in next-generation mobile screens, and demand for our OLED manufacturing equipment is broadening. We see half of this demand coming from new entrants. As a result, in the past few months, our view of display spending has strengthened further. We now see customers increasing their investments by around $3 billion in 2017, $1 billion more than we thought in November. Our early view of 2018 is also positive.

The fifth driver I'll cover is China, which is an important long-term growth opportunity for Applied in both semiconductor and display. While we believe 2017 spending will be similar to last year, based on the new factory projects we are tracking, we expect to see a significant ramp in investment in 2018 and beyond.

Now, I'll translate these major inflections into our market outlook. Due to strong shipments in December, we now believe 2016 wafer fab equipment spending ended the year at around $35 billion. We expect 2017 to be higher still, up 5% or more year on year. Within this spending, we see strength across the board with foundry, NAND, DRAM, and logic investments all growing relative to 2016.

Our early view of 2018 wafer fab equipment is also positive for a number of reasons. We see foundry investment broadening. We believe memory fundamentals will remain strong, fueled by explosive growth in data and investment in new technologies. When we look at customers' total capital spending, we see healthy investment in new factory shells, and we expect spending in China to accelerate in 2018 and beyond.

Looking to the future, we're increasingly excited about trends in virtual and augmented reality, big data, and artificial intelligence and smart vehicles. These new applications require major advances in silicon and display technology and create huge demand for memory. These new drivers layer on top of existing demand for mobility, PCs, and other consumer electronics and have the potential to fuel a new phase of industry growth. All of this reinforces our perspective that our markets are becoming stronger and less cyclical.

I'll now provide a brief update on each of our major businesses. In semiconductor, 2016 was a big share gain year for Applied. While we'll wait for Gartner's final sizing in April before providing all the details, we believe we have gained around 2 points of overall wafer fab equipment share. These gains are broad-based, with especially strong adoption of our new products.

In 2016, about 40% of our revenue came from products that we've launched in the past three years. We have great momentum and fully expect to add to these gains in 2017. In our first quarter, semi equipment revenue and orders were at a 16-year high, with our highest orders ever in etch, CVD, and processed diagnostics and control.

In display, we delivered another strong quarter of revenue and orders. Since 2012, we have grown display revenues around 20% per year, and we believe we'll book $2 billion of orders in 2017. As display technology becomes more complex, we are focused on building out our product portfolio to deliver the solutions our customers need. We have great traction with our new thin film encapsulation and e-beam review products and have more significant new products that we'll announce later this year.

In Service, our strategy is to deliver more value to customers with our advanced service products. We're focused on reducing ramp times, improving device performance and yield, and optimizing output and operating costs for our customers. We're seeing the impact of our investments and are increasing our share of the service opportunity. On a year-on-year basis, we've now grown our service business for 13 consecutive quarters, and our orders in Q1 were also an all-time high.

Before I hand the call over to Bob, let me quickly summarize. Q1 was another record-breaking quarter, and we expect 2017 to be an outstanding year for the company. The large multiyear inflections that are driving our business remain firmly in place, and our markets are growing and becoming less cyclical. We expect wafer fab equipment and display investments to be up in 2017, and our initial view of 2018 is also positive.

Our inflection-focused innovation strategy is delivering results. We are outperforming in semiconductor with strong share gains, sustainably growing our service business, and we are uniquely positioned to drive significant growth in display. Overall, we are increasingly confident that we can maintain our trajectory of sustainable growth and raise the ceiling on our performance.

Now, I'll ask Bob to provide more details about our results and outlook. Bob?

Robert J. Halliday {BIO 3951707 <GO>}

Thanks, Gary. Applied's momentum continues in the new fiscal year, with record orders and earnings both up substantially from a year ago, and we're guiding for new revenue and earnings records in Q2. For investors with a long memory, this kind of performance raises old questions about peaks and sustainability. However, I'm confident that our markets are materially better, and I believe that Applied's ability to deliver value and profitability is increasingly stronger and more sustainable.

Last quarter I gave you numbers showing that the industry is now larger and significantly less volatile. Some of you did the math and saw that this is true. I believe investors will come to recognize that the industry truly is more attractive, owing to three important factors.

First is that our customers have fully absorbed a tremendous amount of productivity. The list includes: the 300-millimeter wafer size transition; cycle time reductions; supplier consolidation, including the IDM [Integrated Device Manufacturer] to foundry transition; the shift to highly productive mega-fabs; better inventory management; reuse strategies; and disciplined profit-minded investment by our customers.

Second is capital intensity. A steadily rising amount of capital equipment is needed to build each type of chip, and customers increasingly need the kind of equipment Applied makes. For example, patterning smaller lines takes more CVD, CMP, and etch steps. Logic and foundry chips need more metal layers and new materials. And 3D NAND memories add bits at a slower rate than 2D shrinks. You can see these factors playing out in the capital intensity curves for the industry.

Third is that we are seeing more demand drivers. In NAND, server farms are early in the transition from hard disks to solid-state drives. In logic and foundry, leading technology and automotive companies are designing custom high-performance chips for artificial intelligence. Manufacturers are adding sensors, intelligence, and communications into all kinds of commercial and consumer products, creating the Internet of Things. The additional data that's being created drives further demand for advanced processors and memory. And we have many engagements with new companies in China who are strategically committed to participating in future waves of growth.

Gary mentioned that we expect WFE spending to be up by over 5% this year, which would give us the highest level of investment seen to date. 2017 investment does not include a wafer size transition as in 2000 or a surge in commodity DRAM investment as in 2007 or an unusually large year of MOCVD spending as in 2011. In fact, I believe our 2017 forecast reflects measured prudent customer spending designed to meet strong demand patterns that we are seeing continue into 2018 and beyond. Our customers will continue to benefit from making big investments in leading-edge capacity to power devices and the cloud.

I believe concerns about the cost/benefit of Moore's Law are anchored on the value of yesterday's applications. Consider the value being created by companies who are using

technology to transform industries like advertising, retailing, transportation, television, and travel. Today, they are making massive investments in new applications that depend on further innovations in processors, memories, and displays, and a lot more capacity. I see a very healthy future in this for Applied Materials.

At Applied, we changed the investment model to deliver higher returns. We aggressively shifted dollars from G&A to R&D and from sustaining R&D to impactful new product R&D. We significantly increased the percentage of winning products, and we accelerated our new product development timelines. These trends have multiplicative effects and are continuing. As a result, we are outperforming our markets and benefiting from delivering more valuable products and services to our customers.

Let's start with revenue growth. As Gary said, we expect WFE spending to grow by around 5% or more in calendar 2017. In fiscal 2017, we anticipate that our Services group will grow at twice that rate. Our Semiconductor Systems business will grow at four times that rate, and our Display business will grow at 10 times that rate. As a result, we are gaining share in our markets.

The best indication of the value that we provide is profit margins. Our non-GAAP gross margin was 45.4% in Q1, the second highest since 2008. Our non-GAAP operating margin was 26%, a 9-year high. And next quarter, we plan to be higher in both.

Our revenue growth and margin expansion are resulting in strong free cash flow, which grew by more than 300% in Q1 from the same period last year. And we are committed to returning excess cash to shareholders.

In addition, we're closely monitoring the policy environment. As a U.S.-based manufacturer with strong exports and a global manufacturing network, we have a great deal of flexibility in adapting to the new policies being considered.

Next, I'll comment on our performance during Q1 as compared to the same period last year. Orders of $4.2 billion were our highest ever and broad-based. We had a 16-year high in semiconductor systems orders, record orders in services, and very strong display orders of $632 million. In Q1, we grew company revenue by 45% and increased non-GAAP gross margin by 300 basis points. Non-GAAP operating expenses grew by 14% to the high end of the guidance range. Our ongoing spending discipline helped us to more than double our non-GAAP operating profit. We've reduced the non-GAAP tax rate by 6.2 points, and we grew non-GAAP earnings per share by 158%.

Next, I'll compare our segment performance during Q1 to the same period last year. We grew Semiconductor Systems revenue by 57% and non-GAAP operating margin by 11.5 points. We grew Services revenue by 12% and non-GAAP operating profit by 1.9 points. We also grew display revenue by 66% and non-GAAP operating profit by 8.4 points.

On the balance sheet, we grew cash and investments by 23% to $5.1 billion, and about 36% remained onshore. We paid cash dividends of $108 million and used $130 million for stock buybacks, reducing the ending share count by 5% year over year to 1.08 billion.

Now I'll provide our guidance for the second quarter. We expect overall revenue to be in the range of $3.45 billion to $3.6 billion. The midpoint would be up by 44% year over year. On a year-over-year basis, our Semiconductor Systems revenue should increase by about 51%. Services revenues should increase by about 9%, and display revenue should increase by about 122%.

In addition, non-GAAP gross margin should be about 45.5%. Non-GAAP operating expenses should be $645 million plus or minus $10 million. And non-GAAP EPS should be in the range of $0.72 to $0.80, the midpoint of which would be up by 124% year over year.

In summary, we are raising the ceiling on our expectations for the industries we serve, and we believe our markets will remain strong. We've fundamentally changed our investment model to deliver greater value to our customers, and we are seeing that value reflected in higher market share and profitability. This stronger performance is sustainable, resulting in greater free cash flow.

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

Michael Sullivan {BIO 16341622 <GO>}

Thanks, Bob. To help us reach as many people as we can, please ask just one question at this time. If you have an additional question later, please poll the operator and we'll do our best to answer it later in the call. Operator, let's please begin.

Q&A

Operator

Yes, sir. Our first question is from Farhan Ahmad of Credit Suisse. Your line is open.

Q - Farhan Ahmad {BIO 18679280 <GO>}

Thanks for taking my question. My first question is in regards to the linearity of the year. Some of your peers have indicated a significant decline in the second half of the year, primarily driven by 3D NAND, and I just wanted to understand. Is that something you are seeing as well?

A - Robert J. Halliday {BIO 3951707 <GO>}

Sure, Farhan. So let me give you some context for how we think about the year and longer term. We are really driving, Farhan, frankly achieving sustainable year-over-year growth in revenue and share of profit. That's how we think about the business and look at it. As for 2017, this will be another good year. We see WFE up 5% or more in the year. And then for our fiscal year, as I said in the call, our semiconductor revenue should grow at 4x that rate. Our services revenue should grow at 2x that rate, and our display revenue would grow at over 10x that rate. So if you look at it, we gave you actuals for Q1 and guide for Q2. Our full year should model just as I said just now. So with that, I think you get a pretty good feel for the second half of the year for us.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, Farhan.

Operator

Thank you. Our next question is from C.J. Muse out of Evercore. Your line is open.

Q - C.J. Muse

Yeah, good afternoon. Thank you for taking my question. I guess a question around display. How should we be thinking about the linearity of spend there first half/second half on a calendar year basis? And then considering I think you said in the prepared remarks you expect to book roughly $2 billion of revenues there here in the calendar year. How should we think about the trajectory of revenues through calendar 2018? And I guess as part of that, I would love to hear your thoughts on new product introductions and when we should think about weaving I guess incremental revenues from there in there as well. Thank you.

A - Robert J. Halliday {BIO 3951707 <GO>}

Sure, I'll start, and Gary can jump in. Display continues to go up for us, frankly. In terms of the market context, when we did the Analyst Day back in September in New York, we thought that 2016 would be WFE numbers of around $14.5 billion, as I remember, and we thought the next year would be about a similar number in calendar 2017. And we're thinking now it's about $17.4 billion in 2017, so the market is up about $3 billion from where we thought. In terms of our own performance, I'll do bookings first. We booked over $2 billion in 2016. We weren't sure we could get that same volume in 2017 because some of those 2016 bookings ship through 2017 and 2018. In fact, we now think the bookings are pretty close in 2017 to what they were in 2016.

What's particularly interesting for me in that bookings mix for 2017 is, if you go back to history, we used to be about 60% or so of our bookings were mobile, 65% some years, and about – 65% for TVs, 35% mobile. It kind of flipped last year. We thought we'd continue that this year. We're strong in both this year. TV has come back strong. We mentioned the Gen 10.5 fab. We see seven more of those we're tracking. So this year we think we'll book about 55% for TV, 45% mobile, so strong in both frankly.

Then if you look at the revenues, which you asked about, this year we think our revenues are going to be pretty strong throughout the year. In terms of the quarterization, it's a little lumpy. Our Q3 might be a little stronger than our Q2, but pretty strong every quarter.

A - Gary E. Dickerson {BIO 2135669 <GO>}

I could add a little bit more also, C.J., on display. So if you put display in perspective, it's a great example of our ability to take materials engineering into an adjacent market. And if you go over a four-year period of time, from 2012 to 2016, our orders have increased from around $400 million to $2 billion, so – over $2 billion, about a 5x increase in four years in display, which is incredible. But again, it shows the ability to take our materials innovation technologies, CVD, PVD, thin film encapsulation, into a new market.

And we've talked about – Bob talked about the TV sizes increasing and the seven Gen 10.5 projects. OLED, mobile is also expanding to new customers. 50% of our demand going forward for this year is new customers for the mobile OLED.

And then we've been focused on inflections and increasing our total available market. We've talked about tripling our served market as we go forward. And certainly as these new technologies like OLED or flexible OLED are adopted, that increases our total available market. We've been driving new technologies like thin film encapsulation and e-beam review, again, reusing technologies that we have within our semiconductor business in display.

You ask about the new products that we've talked about, and what we've said is that we'll announce those sometime during 2017. But what I would say – and we're not going to do that today, but what I would say is that those projects are on track and tremendous customer pull and investment for those new opportunities.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, C.J.

Operator

Thank you. Our next question is from Timothy Arcuri of Cowen & Company. Your line is open.

Q - Timothy Arcuri {BIO 3824613 <GO>}

Thank you. So I just wanted to try to ask the question again, Bob, just on the learnings for the year. So if you look at your run rate based upon what you just booked, and if I assume roughly 25% WFE share, which is in your model, you're run-rating at roughly $44 billion – not you, but the industry. And if the year is going to be $37 billion, the math would say that you have to get to $30 billion sometime during the back half of the year. Now maybe things don't fall off that much. But I'm just wondering if you can take those numbers and tell us if you think shipments are going to fall off during the back half of the year because the math seems to say that either shipments are going to fall off quite a bit or WFE is going to be a lot better than $37 billion this year. Thanks.

A - Robert J. Halliday {BIO 3951707 <GO>}

Sure, yes. So, Tim, I gave you some color on the first half/second half for us a little bit. I'll give you a little more specific to your question. I don't know that the industry is running at quite $44 billion now. And our model was to get 25.5% market share in 2019. We think we're well on track to that. I'm not sure we're at that point right now, so in terms of the mathematics, it's a little bit different.

Further, what I'll say to you is that the stuff I said to you earlier would imply the first half is strong. I don't disagree with that. But what I will also tell you is that we have seen the Q3 and Q4 numbers for us firm up as we go month by month the last few months. So my take on it, 2017 is a strong year. It's going to be a particularly strong year for Applied as we

gain more share and display does well for us. We also think that 2018, 2019 we see growth drivers that are really good for us and the industry the next couple years. Will the second half be as strong as the first half? I'm not sure it is, but the overall trends are positive.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, Tim.

Operator

Thank you. Our next question is from Atif Malik of Citi. Your line is open.

Q - Atif Malik {BIO 15866921 <GO>}

Hi, thanks for taking my question and congratulations on the strong results and guide. Gary, some investors are still skeptical on China spending coming in 2018. Can you just provide a bit more color or details on how your engagements are going with Chinese domestic projects?

A - Gary E. Dickerson {BIO 2135669 <GO>}

Sure, let me give you some color on China. So what we're looking at in 2017 for China for Applied Materials is up versus 2016, maybe something like 10% up overall for us. And if you look at 2017 versus 2015, it's up maybe an additional $1 billion overall. Semi is slightly lower in that mix. Display is higher and service is higher. If you look at 2015 versus 2017, we've had 2x growth or anticipating 2x growth in semi revenue and about 50% growth in service and display. And China is really one of our strongest regions both with the multinational companies and the domestic companies there.

And as we spend a lot of time and we have very deep relationships with the companies that are there, basically what we hear is that there is a big strategic drive in investment in China. There's a big gap in terms of domestic supply versus demand, and then there's also a drive to build a secure supply chain. So I think all of us see announcements and very large investments over the next several years in China.

In talking to those customers, they I believe understand that this is a long-term strategy. They have Phase 1, Phase 2, Phase 3. And in the beginning, those investments aren't going to be as efficient, especially in the more advanced technologies. But what I would say is that very consistently we see strong drive from a strategic perspective for increased investment in China, and really what we're seeing is 2018 and beyond a significant increase. Again, we increased semi revenue 2x from 2015 to 2017. If you ask me, what do I think 2017 to 2019, that's going to be up a significant amount in semiconductor opportunity.

A - Michael Sullivan {BIO 16341622 <GO>}

Great. Thanks, Atif.

Operator

Thank you. Our next question is from Stephen Chin of UBS. Your line is open.

Q - Stephen Chin {BIO 5565507 <GO>}

Thanks. Hi, Gary and Bob, nice quarter and guidance too. I have a follow-up question on the display order guidance. Can you share, Gary, how much of the display orders this year, the $2 billion likely come from the Chinese display customers? Because I know we're all waiting for domestic China's semiconductor spend to happen. But can sales to China's display customers bridge us over until the domestic spend of CapEx happens in China next year?

A - Robert J. Halliday {BIO 3951707 <GO>}

I'll start. We're pulling up some slides to help us. So total bookings this year will be over $2 billion in display. We see a lot of the big orders out of China for TVs in particular and some for mobile. So this is the wrong slide. So the numbers are large numbers for China this year. I'd say the majority of the display stuff is probably China. China revenue, okay, so the majority of the $2 billion, my guess – I'm looking for the slide, frankly, is probably of the display bookings, probably half or more is China.

Q - Stephen Chin {BIO 5565507 <GO>}

Thanks.

Operator

Thank you. Our next question is from Krish Sankar of Bank of America Merrill Lynch. Your line is open.

Q - Krish Sankar {BIO 16151788 <GO>}

Hi, thanks for taking my question. I also had a display question. So, Bob, if you look at last year, you did about $2 billion in bookings and about $1 billion in revenue. Should we expect that gap to close as you roll forward with new products and OLED gets more traction, or do you think the book to revenue is going to still have a lag effect here? And along the same path, what percentage of your bookings or revenue last year was OLED versus traditional displays? Thank you.

A - Robert J. Halliday {BIO 3951707 <GO>}

So your question is the book-to-bill, what's it going to stay for display, and then how much was OLED? I guess that's the question.

Q - Krish Sankar {BIO 16151788 <GO>}

That's right, yes.

A - Robert J. Halliday {BIO 3951707 <GO>}

So last year we booked over $2 billion. And we billed – now remember, we moved the web business in there and the service upgrade business, and we billed about 55% of that.

This year we're going to book over $2 billion, but we'll bill a higher percentage of that. It's still going to be north of one.

In terms of the outlook beyond 2017 – 2018, we're continuing strong book-to-bill – continuing strong bookings, but the book-to-bill narrows. Last year it was 1.6 or 1.7 or something like that. It was a big number, so that's going to trend down over time. But it will stay positive for a while.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, Krish.

A - Robert J. Halliday {BIO 3951707 <GO>}

OLED was – if you look at last year, OLED booking – mobile bookings were 65% of the total. And of the mobile piece, which was 65%, the majority of that was OLED.

Q - Krish Sankar {BIO 16151788 <GO>}

Great, thanks.

Operator

Our next question is from Harlan Sur of JPMorgan. Your line is open.

Q - Harlan Sur {BIO 6539622 <GO>}

Hi, good afternoon and congratulations on the solid execution. I think in the prior question you answered, you talked about 50% roughly of your bookings for flat-panel being China-focused. I'm assuming most of this is large screen. But if we look at the Tier 2 OLED players in China, these guys are trying to play catch-up to the leaders in the market. Our research indicates that China is probably going to account for about 30% of the OLED CapEx spend in 2018, which is up significantly from this year's mix levels. So I'm just wondering if you guys are starting to see this trend and just wondering if this is already starting to show up in the order books or the backlog. Or is that still on the come?

A - Robert J. Halliday {BIO 3951707 <GO>}

Yes, it's true. So you've got a couple questions there. You've got the China question and the OLED proliferation question. So if you look at China, as I said earlier, we sell for TV and mobile. TV is pretty big in China this year. But drilling into your question more around OLED and mobile, as we said on the call last time, I think we repeated it this time, we had orders from 10 different OLED manufacturers in the last year, predominantly in the last couple of quarters. Nine of those are for mobile phones, one was a lighting guy. So if you look at the mobile guys, it's proliferating such that beyond the number one leader in OLED, we think that in 2017 our orders for OLED mobile is going to be probably over half from the followers, not just in China though.

Operator

Thank you. Our next question is from Joe Moore of Morgan Stanley. Your line is open.

Q - Joseph L. Moore {BIO 17644779 <GO>}

Great, thank you. It looked like you made nice progress on the operating margin on the display side. Can you talk about where that can go? And can you remind us where that business stands on gross and operating margins versus the semi business? Thank you.

A - Robert J. Halliday {BIO 3951707 <GO>}

Sure. We did make nice progress on the display business. So if you go look at it, we're up significantly this year on the operating margins for display in the quarter in particular. We think the year is going to be up a fair amount year on year. We're well on track to hit the margins in the model in display FY 2019. Not every quarter is going to be exactly the same in display. My guess is Q2 may not be quite as high as Q1, but the year is going to be up significantly from last year.

Q - Joseph L. Moore {BIO 17644779 <GO>}

Great, thank you.

Operator

Our next question is from Romit Shah of Nomura. Your line is open.

Q - Romit Shah {BIO 16865852 <GO>}

Yes, thank you and congratulations. At the analyst meeting in September, you talked about earnings of $2.80 on I think it was like a $35 billion WFE. This quarter it looks like you're run-rating closer to $3 two years earlier than what we anticipated. So if WFE is coming in at $37 billion this year and you guys think it will hold up again next year, Bob, what's maybe a more reasonable range to think about earnings in fiscal 2019 because the $2.80 does look increasingly conservative?

A - Robert J. Halliday {BIO 3951707 <GO>}

There are a few things. I think we'll do very well against that model. That model had a few assumptions. It assumed a $34.5 billion WFE, and right now we're running a little north of that, frankly. There was a $37 billion model we showed that same day which was $3.17.

And the second thing was the market environment in that model was we assumed that the display equipment spending was going to be north of the historical number of $8 billion but not necessarily up to what we realized last year, $14.5 billion. So I would say in market environment, condition number one in those models, I'm more optimistic that the environment in 2019 is north of the $34.5 billion, and I'm more optimistic that the market environment for display spending is north of what we have in our model. So the market is positively biased towards our base model last year, which was at $2.80.

The second thing is the share position we had in both semi and display, and we said we'd do 25.5 points in semi and we thought we'd be in a strong position in display. We are very

confident of that. We gained 2 points in 2016, up to about 22%, so we've got to get about a point a year the next three years. We'll hit those numbers I think, probably some upside. And then in display, the market, our products look good against the revenue in that plan. So I'd say that the function of share and market result in a revenue opportunity against that model.

I think what pleases me as much as anything, frankly, in the results we announced today and for next quarter is the margin profile. We had in the past iteration of the model, we didn't move much on the margins. We said that the base model would be at 44.6% gross margins, and some people were a little skeptical because we hadn't moved too much. We reported today, what was it, 45.2% I guess it was 45.4% actuals, 45.4%.

And then what we said about gross margins last quarter was that in fiscal 2017 we'd be up to about 44% in the year. That was a gain of 0.8 point. We now think in fiscal 2017 alone, instead of 0.8-point gain versus 2016, we're going to gain 1.5 points. So if you look at that on the model you asked about, we're probably very comfortable that we can hit the 44.6% gross margin, which is at the $34.5 billion. And the 45.1%, which is at $37 billion, we're probably pretty comfortable.

And then we maintain pretty damn tight control on the operating expenses too. So if you back-calculate the guide we give for next quarter, now next quarter is a good quarter, its operating margin is north of 27%. So in the annual models we showed for 2019, we showed operating margins of about 25.1% the $34.5 billion and 26.4% in the $37 billion environment. So at the operating margin we're making progress. And then if you finally go down to the URs, we simply shrink the share count to 1.044 billion. We're confident we'll hit that.

So we're not going to redo the model today. But around the market environment relative to that model, around our share position relative to the model, around our execution on gross margins, OpEx, and share count, we're pretty confident that we'll hit or potentially beat that model.

A - Michael Sullivan {BIO 16341622 <GO>}

Okay. Thanks, Romit.

Operator

Thank you. Our next question is from Patrick Ho of Stifel, Nicolaus. Your line is open.

Q - Patrick Ho {BIO 5499707 <GO>}

Thank you very much and congrats on the quarter and the projected outlook for 2017. Gary, maybe just looking at 3D NAND and the market opportunity still going forward, you guys obviously have made great inroads in terms of etch and deposition, capital intensity, but also your own share gains. As you look at the industry moving to 64 layers and then eventually to 96 layers, one, how do you see the capital intensity trends for the market

overall? And maybe secondly for Applied, how do you see your competitive position increasing as the industry progresses?

A - Gary E. Dickerson {BIO 2135669 <GO>}

So let me take on our position, and Bob can talk about maybe capital intensity. So as we talked about overall, we gained 2 points of share in 2016, and actually our strongest gains are in 3D NAND. And one of the really big drivers for our company is that 3D NAND is materials-enabled scaling versus litho-enabled scaling.

I met three of the top four memory CEOs in the last month. All of them are very bullish. The pull that they have for 3D NAND is really tremendous. And if you look in servers, for instance, and the total cost of ownership and the power consumption, I was in our data center, it's 80% less power consumption, and total cost of ownership is significantly better. So all of the people I'm talking to are very bullish about 3D NAND.

Our position in 3D NAND, as we've talked about, we increase our TAM, our total available market by a factor of three. And when we're talking also about operating margins and our opportunities in display or in semi, our strategy is to focus on inflections. So we're winning share in inflections and we're also delivering new capabilities. And so that comes through in 40% of our revenue being introduced from products that were introduced in the last three years. Just in 2016, our etch revenue was up 30%, CVD 33%, CMP revenue up 33%. Our e-beam products, another area where there's a big inflection, the largest part of our PDC business, up 33%. So we see tremendous pull.

And as you go to these future generations of 3D NAND, it's really all about materials innovation, how you scale to those additional numbers of layers, and we're in a really great position. The pull that we have from our customers is earlier, deeper, and broader than we've ever seen in the past. And Bob can talk maybe about the capital intensity.

A - Robert J. Halliday {BIO 3951707 <GO>}

On 3D NAND?

A - Gary E. Dickerson {BIO 2135669 <GO>}

Yeah.

A - Robert J. Halliday {BIO 3951707 <GO>}

So what was your comparison, again, Patrick, which to which, which layer to which layer? I'll see if I can fill in. So the capital intensity for 3D NAND if you go from planar to, say, 50 layers, the total CapEx is about $3.5 billion on planar, and 48 layers it's about $5 billion for greenfield. Now I think the thing that's interesting is if we go from a planar reuse to a 50-layer or 48-layer, the total CapEx to upgrade is $2.6 billion, $3.2 billion, almost the same as the opportunity in planar at $3.5 billion. Now what's really interesting for a company like us, materials is very etch and deposition-intensive.

Now what's particularly interesting for Applied Materials additionally to that, to be frank, one, we didn't have the products or incumbent positions at the planar position, so the level of reuse for Applied is very low. And you can see in our share gains, which have really been driven in etch, CVD, and some in CMP, is around the share gains we have made within etch, CVD, and CMP around some of these conversions from planar to 3D NAND, and also some on DRAM.

So one, total spend is bigger. Two, it's really etch and deposition-intensive. And three, it's been really good for Applied Materials within those products in the transition.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, Patrick.

Operator

Thank you. Our next question from Edwin Mok of Needham. Your line is open.

A - Michael Sullivan {BIO 16341622 <GO>}

Operator, we're not hearing Edwin.

Q - Edwin Mok {BIO 15222334 <GO>}

Sorry about that. So I want to ask you guys about foundry logic. Just from your last report to this report, have you seen more broadening of demand in 7-nanometer, 5-nanometer or in the tray mesh? It sounds like you guys got a little more in China. (47:15)

And then on IMIS (47:20), specifically on 7-nanometer or 5-nanometer, in terms of optioning or growth in 7-nanometer or 5-nanometer, is it more just complex transistors that allows you to (47:27) demand more of your product because you have such strong around transistor technology, or is it that you expect share gain around patterning at 7-nanometer or 5-nanometer that allows you to grow in that as those nodes go into production?

A - Robert J. Halliday {BIO 3951707 <GO>}

I'll do the first one, and Gary will do more the second one. So on broadening, this has been a year that's interesting in foundry. What might surprise you that of the trailing edge, and I'll define trailing-edge as 20-nanometer, 28-nanometer and above, 45-nanometer. It's 40% in 2017 will be that's those nodes, and you've got 55% we think for 7-nanometer and 10-namometer, and about 5% 14-nanometer, 16-nanometer. So what's the point? 40% of spend this year in the foundries is 20-nanometer and above, so it's really strong. Last year it was about 38%. So in a bigger spend year it's actually a bigger percentage, which is interesting.

Now, so what you have this year is spending by the biggest foundry leader pretty strong and pretty big spending at the trailing nodes. And the opportunity you have to sustain foundry spending, which people are questioning about next year, is that we think that in

2018 we're going to have continued spending at the trailing edge. We think secondly, we're going to have a broadening of foundry spending, particularly next year. You asked about broadening of spending. I think it's a bigger impact next year because if you look at the shells they're putting up and the opportunities in SMIC and GLOBALFOUNDRIES in China and places like that, you're going to see some broadening of that.

In terms of the leading edge on 10-nanometer/7-nanometer, by the end of this year you're going to have 120,000 to 140,000 wafer starts of capacity for 10-nanometer and 7-nanometer. We think that could probably at its peak double. So there's still some chance to broaden out 10-nanometer and 7-nanometer next year. So next year we're not pessimistic on foundry. We think there's obviously: A), the trailing edge is strong, number one. Number two, we see some still significant additions for 10-nanometer/7-nanometer, whether it's conversions or greenfield. And three, we see broadening among some of the customer base.

A - Gary E. Dickerson {BIO 2135669 <GO>}

So on the share gains, we have, as Bob talked about, I think pretty good line of sight on 7-nanometer and very strong pull for our transistor and interconnect products where we have extremely high share, and we're seeing more steps and an increase in our total available market as you go to 7-nanometer.

In addition to the three memory CEOs I met, I also met the head of R&D for our largest logic and foundry customers within the last month. And what I would say is that we have stronger pull for earlier, deeper, and broader collaborations than we've ever had in the history of Applied Materials. And one of the things that we're really focused on, if you go past 7-nanometers, how do we enable our customers to build devices that they could never build before. So certainly we have great pull for new products like Selectra, which again gives designers a capability that they never had before in designing new types of devices. And you will definitely see and we're seeing the ability to grow as fast as we can qualify with this kind of new capability.

We have new films that our customers are adopting for 5-nanometer and beyond that also enable them to design devices in different ways. And certainly the transistor, interconnect patterning is another area we've talked about where we have tremendous pull with Sym3 across the board for logic and foundry customers. The Selectra, Olympia, Precision CVD, PROVision, the LK Prime for CMP, we're in the early innings of adoption of many of those products.

And as you go beyond 7-nanometer, the opportunities for us even become much larger for these products and other products that we have in our pipeline. So for me, those conversations with those people running R&D are incredibly exciting, and the pull is really tremendous for Applied.

A - Michael Sullivan {BIO 16341622 <GO>}

Great. Thanks, Edwin.

Operator

Thank you. Our next question is from Weston Twigg of Pacific Crest Securities. Your line is open.

Q - Weston Twigg {BIO 15419233 <GO>}

Hi, thanks for taking my question. I just wanted to dig into I guess China and NAND a little bit more directly. A company a couple weeks ago, small cap, said that they thought their revenue from NAND memory customers would increase in the second half, partly driven by domestic Chinese memory producers, so some of these new fab projects that have been in the works. I'm just wondering if you're actually seeing any of that kind of demand that you would actually commit to maybe delivering some equipment in the second half, or if you still think those domestic projects might be more of a 2018 event.

A - Gary E. Dickerson {BIO 2135669 <GO>}

We definitely see – we're engaged with all of those different companies. Our share in China is the highest or near the highest that we have for any region, so our engagement with those companies are very strong. We don't really see in 2017 significant revenue growth coming from those companies. Again, our overall revenue in China we anticipate in 2017 is somewhere around $2.6 billion. So for us having something that moves the needle for us has to be fairly sizeable. We are definitely deeply engaged with all of those companies and we look at 2018 and beyond as a much bigger opportunity.

Q - Weston Twigg {BIO 15419233 <GO>}

Thanks, Wes.

A - Michael Sullivan {BIO 16341622 <GO>}

All right, thank you.

Operator

Thank you. Our next question from Craig Ellis of B. Riley. Your line is open.

Q - Craig A. Ellis {BIO 1870408 <GO>}

Thanks for taking the question and congratulations on the good execution. I wanted to return to the comments regarding reduced industry volatility because some of the majors we have for upstream semiconductor industry volatility show about a 75% reduction over the last five years versus the preceding 15 years. So it seems like for a company like Applied Materials, in that environment there should be certain parts of the business that benefit from increased operating efficiency. So the first part of the question would be are you seeing that and to what extent is that realized?

And the second part of the question is there should also be in that environment increased free cash flow predictability. And how does the company think about in a more stable

environment, more seasonal environment, increasing systematic cash return or cash actions to create value? Thank you.

A - Robert J. Halliday {BIO 3951707 <GO>}

So there are probably about three levels to that question: one, the volatility question; two was the benefits to the operating margins from volatility; and three, the benefits to cash returns.

So in terms of volatility, I completely agree with you. The volatility is trending down. Almost every metric we look at indicates that. The long-term metrics or the demand drivers for the industry are much more diverse and sustainable, and then layer on that you've got all these technology conversions. But I was just looking at some data today that the volatility is down, but within Applied it's down too because we are a much broader company. So I'll give you a couple of data points that I hadn't shared before.

So if you just look at our revenue split in semi in 2015, 2016, and 2017, our percent with memory has stayed pretty steady at 48%, 47%, 47%. And then our percent that's been foundry has ranged from 38% to 42%, and logic is 12% or 13%. So within device type, we're much stronger than we used to be. And we project in 2017 that our market share by device type, in NAND, DRAM, foundry, and logic, in all four of the major categories will be 21.5% or above, whereas we used to have a 10 to 15-point spread between some of our low memory ones and our high foundry. We've gotten a lot stronger in memory. So the volatility in the industry is down and the volatility within Applied is down a lot. And then you layer in the strength in the service business, which has grown a lot, and the display business, which has grown a lot, and it's sustainable. So I agree with you on the volatility.

Where will we see the benefits in the operating margin? We're going to see them in a few places. One, we will grow our revenue line and it will be more predictable, so that results in a few things. One, you tend to use factory utilization higher, so cost of goods sold, gross margins tend to trend up. So if you look at the benefits on gross margins, we are just grinding away on material costs and factory utilization, and that's helping us on these gross margins. As I said earlier in the call, we thought our gross margins would be up this year by 0.8 point to 44 points. We now think we're going to be up 1.5 points. And a lot of this is efficiency, grinding away, sustainability more predictable, less volatility, we talked about.

And then I said earlier on the call that we predict our operating margins in Q2 to be north of 27%. So we are seeing it in the numbers. The company is becoming more efficient, more effective with the products we're doing, but also with this less volatility is contributing. We are now, for instance, in our factories looking at being much more aggressive in what we ship in the first four weeks of a quarter to even more level-load our factories. So you're 100% right.

In terms of the benefits to the investors, we are starting to generate more significant cash returns. So if you look at the operating cash flow, it was 20% this quarter, which is very high for us in Q1. Last year Q1 was 9%, so we are doing it. Now the question is getting it back to investors. We are going to do it. We didn't do too much last quarter because of

some – we were looking at foundry conditions around what's going to change in the tax laws, movement of cash between overseas and the U.S. But we see – one, we are committed to do it. Two, I think we'll have the flexibility to do it. And three, some of the changes that are being proposed in Washington may be beneficial to us in multiple ways, long-term tax going to a territorial system, we're on a worldwide system. So I think it's a great opportunity for the investors of Applied on this.

A - Michael Sullivan {BIO 16341622 <GO>}

Great. Thanks, Craig, for the question. And, operator, I think we have time for just one more please.

Operator

Yes, sir. Our last question is from Sidney Ho of Deutsche Bank. Your line is open.

Q - Sidney Ho {BIO 6922415 <GO>}

Great, thanks for taking my question. Your DRAM orders have bounced back to where it was a year ago. Obviously, you're gaining share there as well. But can you talk about what you expect bit growth-wise that that could translate into for DRAM? And do you share the view that DRAM suppliers are remaining disciplined in capital spending during the period where pricing is pretty good? Any color would be helpful. Thanks.

A - Robert J. Halliday {BIO 3951707 <GO>}

I can start and Gary can jump in. I'll tell you what's encouraging for me in some of this stuff. If you look at NAND and DRAM – look at NAND, I'll look at DRAM in a second. We look at NAND bit growth in supply is pretty much in line and growing about 45% a year, and that's 45% over a bigger and bigger install base.

So the end-use demand for NAND is pretty damn strong. And DRAM is pretty similar. We see bit demand in 2016 up about 30%, and then we see server DRAM up about 40% to 45% in 2017. And supply has been a little tighter. We see 2017 supply bit growth is only about 25% to 30%, and then we see a lot of smartphone consumption up for new Android 6GB and Apple third-generation. But what's good for Applied is our market share within DRAM is up about 5 points from 2012 to 2015, and we think we're going to get another point in 2016.

So we think, one, the marketing demand for DRAM and NAND is growing pretty healthily. Two, it's growing pretty disciplined, more frankly. Even with NAND capacity additions, what we see is big demand drivers for more NAND. For instance, another factoid I don't think we gave you is that as solid-state drives become more and more cost-effective, there's probably going to be a need for up to about 500,000 more wafer starts greenfield to add capacity to what they have today. In other words, if you look in the world, there used to be about 1.4 million wafer starts for NAND. Now it might be 1.6 million wafer starts. But that's not even enough. Over the next four years, they probably have to add another 500,000 just for servers. Each 100,000 of NAND is worth about $5 billion. That's about $5 billion that they have to add to reach their growth in their markets.

So what's the point? Good growth drivers for NAND and DRAM, number one. Number two, pretty disciplined even with the capacity to do it on NAND because their market is expanding. Three, our position has gone up where we've gained by the time we're done in 2016 we'll probably have gained about seven points in both NAND and DRAM from 2012.

A - Michael Sullivan {BIO 16341622 <GO>}

Okay, great. So thanks for that question. And then, Bob, if you'd like to, summarize it all before we close the call.

A - Robert J. Halliday {BIO 3951707 <GO>}

We talk about a lot of esoteric stuff here, bit growth and materials engineering. When I step back, even more than a few years ago, I think Applied has a really good business. If you look at the markets in which we compete are doing really well, better than they were years ago. Our position is much better. And as somebody answered on the call, our better execution and less volatility of the market is resulting in significant improvement in operating margin to cash flow. So we have a really good business. And what we're doing here is driving sustainable year-over-year growth in revenue, share, and profitabilities.

So the three things, as I would summarize again, is one, our markets are getting better, bigger, and less volatile. WFE and display are both strong with positive long-term outlook. We have strong share, as I said, in all device types. We were up in memory in particular. In foundry, we've always been strong. And then display is doing very well. And if you look at our service business, which was $2 billion back in 2013, we're going to hit $3.2 billion in 2019, so that's grown a lot, and that's a very strong baseline business.

Second, our execution is better. Our deep pipeline of products enabled by the product development engine, where 40% of our equipment revenue now is generated from products we've introduced in the last three years, we have multiple years of share gains. And what I don't think we mentioned on our call, we have record backlog of $5.5 billion at this point. So that's all around better execution.

And finally, the question I just got asked, billing, your return on cash is better than ever. Revenue is outpacing our markets. Operating margin is growing. As I said, we're going to be over 27% next year, and we have a great deal of flexibility to return more cash to shareholders. So I just think Applied has got a really good business when you cut through it. I feel really good about the business.

A - Michael Sullivan {BIO 16341622 <GO>}

Great, okay. Hey, thanks, Bob. And we'd like to thank everyone for joining us this afternoon. A replay of our call is going to be available on the website beginning at 5:00 PM Pacific. Thank you for your continued interest in Applied Materials.