Company Name: Applied Materials
Company Ticker: AMAT US
Date: 2017-05-18
Event Description: Q2 2017 Earnings Call

Market Cap: 50,045.60
Current PX: 46.57
YTD Change($): +14.30
YTD Change(%): +44.314

Bloomberg Estimates - EPS
Current Quarter: 0.825
Current Year: 3.084
Bloomberg Estimates - Sales
Current Quarter: 3666.529
Current Year: 14173.611

Q2 2017 Earnings Call

Company Participants

- Michael Sullivan
- Gary E. Dickerson
- Robert J. Halliday

Other Participants

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

MANAGEMENT DISCUSSION SECTION

Michael Sullivan

GAAP and Non-GAAP Financial Measures

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

Gary E. Dickerson

Q2 Highlights

Opening Remarks

- I’m very happy to report another record breaking quarter for Applied Materials with the highest revenue and earnings in our history

- We've now set earnings records for four quarters in a row and, as I look across the company, I see tremendous momentum
- Our markets are strong and getting stronger, and we're sustainably growing faster than these markets by expanding our served opportunity and gaining share
- In today's call, I'll provide our perspective on the factors driving the industry and our strategy for sustainable, profitable growth within this environment
- I will then describe the key inflections and investments within our markets, before concluding with updates on our major businesses
- Bob will then provide additional detail about our performance and outlook

Investments

Semiconductor and Display Technology

- Let me start with the big picture
- This is an incredibly exciting period for the electronics industry, with a broader set of drivers and a wider spectrum of companies making very large investments to advance semiconductor and display technology
- In the past, PCs were the dominant factor in semiconductor demand
  - PCs drove the technology roadmap, and enterprise refresh cycles drove industry upturns and downturns

Smartphones and New Demand Drivers

- More recently, global adoption of smartphones, combined with social media, have created a much more pervasive consumer demand, expanding the market and making it substantially less cyclical
- Today, many new demand drivers are emerging that layer on top of traditional computing and mobility; technologies, like the Internet of Things, big data, and artificial intelligence are transforming industries, including transportation, healthcare, entertainment, and manufacturing

Markets and Innovation

- The way these industries create value is increasingly dependent on capturing, transmitting, understanding, and storing data
- In turn, this means they are more and more reliant on advanced semiconductors
- The impact for Applied is twofold
- First, our markets are growing and [Audio Gap] (3:27-3:28) stable
- Second, this is a period of incredible innovation in logic, memory and display, and we are in a great position to provide the critical building blocks needed to move the industry forward

Strategy

- At Applied, our strategy is to be the innovation leader in markets that are evolving faster than ever before

- To do that, we fueled innovation by reallocating resources and significantly increasing our investment in new product development
- Then, to drive repeatable success and accelerate the pace of learning, we've developed a unique operating system, our Product Development Engine, and trained more than 10,000 employees how to use it
  - Across the organization, we're focused on delivering highly differentiated products and services that enable customers to build new devices and structures that were never possible before

Technology and Intellectual Property

- I believe our innovation leadership is sustainable because of the breadth and depth of our capabilities
- Our ability to combine unique competencies, technology and intellectual property, accelerates our innovation process and sets us apart from competitors

Investments

Sales of Memory Chips, DRAM Spending and NAND Investment

- Having provided this context, I'll now describe the major inflections and investments taking place within our markets
- Sales of memory chips were at record levels, fueled by increasing content in smartphones, to support better cameras and VR applications, as well as the need for more and higher performance storage in data centers
- Market fundamentals remain strong and, as a result, we are seeing robust investment from our memory customers
- We believe we will see double-digit growth in DRAM spending this year, and we expect NAND investment to be even stronger

Data Storage

- Our view of 2018 and beyond is also positive for a number of reasons
- The explosion of data storage requirements created by IoT, big data, AI, and streaming video has only just begun
  - Data generation from new categories, such as Industry 4.0 and autonomous vehicles, can potentially dwarf existing applications within a few years

3D NAND Bit Density

- As 3D NAND bit density increases and cost per bit falls, new segments of the storage market are opening up for solid state drives
- And at the same time, the bit density increase from generation to generation is slower for 3D than it was for planar NAND.
  - To compensate, the industry needs more wafer starts and greenfield capacity

Foundry

- In foundry, we're also seeing an acceleration of investment, both at the leading edge and in trailing geometries

- In 2017, we expect investment in new [ph] leading capacity (6:14) to make up about 60% of total foundry spending
  - This is driven by demand for more sophisticated smartphone processors, as well as customers positioning to win the major inflections in high-performance computing and data centers that are needed to start unlocking the potential of AI.

Logic and DRAM

- Within foundry, logic and DRAM, I'm increasingly excited about our opportunities in patterning
  - As these customers move to smaller chip geometries, all the [layers] (6:45) scale
- A limited number of layers will move to EUV, but significantly more will move to multi-patterning
  - This means our patterning opportunity will expand considerably over the coming years
- Applied is making significant investments to enable the patterning roadmap
- We've already increased our patterning revenues more than 60% in the past year, and still have significant room to grow

Wafer Fab Equipment Spending and Display Market

- Taking all these factors into consideration, we now believe that wafer fab equipment spending for the CY could be up about 15% relative to 2016, and our outlook for 2018 and beyond remains positive
- Our expectations for the display market also continue to strengthen as a result of large inflections in both TV and mobile screen technology
- Average TV sizes are expected to reach 44.5 inches in 2017, up 5 inches in the past three years
- One of the key factors driving this growth is demand for large-format TVs, 60 inches and above
  - As customers optimize factories for these bigger screen sizes, they are investing in new Gen 10.5 capacity

Mobile OLED

- In parallel, we see investment in mobile OLED getting stronger as confidence in the adoption rates of OLED technology increases
  - Recent forecasts indicate that two-thirds of new smartphones could have OLED displays by 2021 and screen manufacturers are accelerating their investment plans accordingly

Growth, Spending and Projects

- My final comments about the market environment relate to China, which is an important long-term growth opportunity for Applied
- We believe 2017 spending will be slightly higher than last year
- And based on the projects we're tracking, we expect to see a significant and steady investment ramp in both semiconductor and display beginning in 2018

Wafer Fab Equipment

- I'll now provide updates on the performance and priorities for our major business groups
- Overall, Applied gained 2 points of wafer fab equipment share in 2016 and, based on the strength of our product portfolio, I believe we'll add to those gains over the next several years

Leadership Businesses

PVD and CMP

- In our leadership businesses, such as PVD, epi, implant and thermal processing, where we have strong share and highly differentiated products, we're extending our advantage
- The available market for our leadership products is also growing, specifically in PVD and CMP
- In PVD, we expect our available market to expand by more than 30% in 2017, as foundry customers adopt new interconnect technology for lower power devices
    - And the CMP market grew 40% in 2016 and is on track to grow another 20% this year, primarily driven by increasing steps in 3D NAND.

High-Growth Businesses

- In our high-growth businesses, we are also outperforming our competitors in markets that are growing rapidly
- In 2016, we gained about 5 points of share in conductor etch and 2 points in etch overall
    - This means that since 2012, we won nearly 20 points of conductor share and 10 points of total etch share
- These gains are driven by enabling technologies, like Sym3 and selective etch, and new process steps
- Our CVD business is also outpacing the market, gaining almost 6 points of market share in 2016
    - We have great momentum in these businesses and plenty of headroom to grow

Service

- Service represents a stable and growing revenue stream for the company
- On a year-on-year basis, we've now grown service revenues for 14 consecutive quarters and our compound rate of growth has been around 10% over the past four years
- Our expanding portfolio of service solutions plays an increasingly important role for customers, helping them compress ramp times, improving device performance and yield, and optimize output and operating costs
    - Because of this, I'm confident that we can continue to grow service at a similar pace

Display

Revenues and Orders

- Another exciting growth opportunity for Applied is display
- Since 2012, we've grown display revenues around 20% per year, and we have great momentum
    - This year, we're on track to book more than $2B of orders

- Display technology and manufacturing is becoming increasingly complex, and Applied is in a unique position to enable the roadmap
- By leveraging our semiconductor experience and capabilities, we are delivering the innovative products our customers need to accelerate major technology transitions

Summary

Before I hand the call over to Bob, let me quickly summarize

Q2 was another record-breaking quarter and 2017 is shaping up to be an outstanding year for Applied

Our markets are becoming even more attractive; they are growing sustainably and becoming less volatile

- And Applied is playing a larger and more valuable role advancing the innovation roadmap

We have focused our strategy and investments to ensure that Applied is the innovation leader that consistently delivers highly differentiated products and services

As a result, we're raising the ceiling for our performance and potential

- We're setting the records, growing our available market, and gaining market share

Robert J. Halliday

Financial Highlights

Before going into the details of the quarter, I'll touch on three things that are sustainably better for Applied; one, our markets; two, our improving position in those markets, which is enabling stronger gross margin performance; and three, our profitability and FCF.

Markets

- First, our markets are more attractive
- We believe wafer fab equipment spending will be higher and less volatile for the foreseeable future
- Display equipment spending also looks higher and more attractive, for Applied Materials in particular, because we're greatly increasing our served addressable market
- Many of you have added valuable insights as to why WFE has become larger and less volatile

Semiconductor Market, Equipment and Capital Investment

- I believe it boils down to three things; one, the semiconductor market is growing and becoming more diverse; two, equipment intensity is increasing; and three, capital investment is measured and rational
  - This better industry environment is sustainable
- As Gary mentioned, the semiconductor industry we enable has also become larger, more diverse, and more critical to big innovations in the global economy

New Silicon-Rich Devices

- Today, we're seeing the emergence of new silicon-rich devices needed to enable the Internet of Things, cloud data centers, and artificial intelligence
- Data is becoming more valuable and harnessing the value requires silicon
- For Applied, this translates to higher demand for logic and memory capacity at both the leading edge and [Audio Gap] (13:59) geometries
    - I believe the industry has seen a new wave of sustainable growth, with economic value creation that justifies the cost of investment

Product Development Engine

- Next, Applied's position in the markets is sustainably stronger
- The changes we made since 2013 in strategy, capital allocation, and business systems, like the Product Development Engine, have given us our strongest product pipeline in many years
- I've been invited to an industrials conference this month to explain how our products are enabling big changes in manufacturing, that many people call Industry 4.0
    - Here is how I plan to summarize our contribution without going into all of the technology

Leadership Semi Equipment and Services Business

- Applied has a very strong overall business that can be separated into just two parts
- First, we have our leadership semi equipment and services business, which together generate nearly 60% of our revenue
- Our leadership semi businesses drive technologies that are critical to making transistors for data processing and networking
    - We've maintained steady growth and high share positions averaging about 70%, because we bring unique value to our customers
- Our services business is similar, in that it is highly enabling to our customers and characterized by steady, profitable growth

Logic and Foundry Customers

- We are deeply engaged with our logic and foundry customers to enable their advanced roadmaps with this part of our business
- When you think about the big new chips used for artificial intelligence, think of Applied Materials

High-Growth Businesses

3D NAND and Multi-Patterning

- Second, we have our high-growth businesses, which include etch and deposition used in 3D NAND and multi-patterning, along with inspection and display
- Our high-growth businesses now represent about 40% of our revenue

- We've made outsized investments in new and disruptive products in these areas to capitalize on the inflections we identified in 2013
    - Our high-growth semi businesses have been growing 40% faster than their markets, and Applied's unique display equipment business is growing even faster

Share by Semiconductor Device Type

- Another way to measure Applied's stronger position in the markets is to consider the changes in our share by semiconductor device type
- In 2012, our share in foundry was over 20%, but our share in logic, DRAM, and NAND was under 15%
    - Today, we believe our share is at least 22% in all four
- In fact, we are the number one equipment company by revenue in NAND, DRAM, logic, and foundry
    - So regardless of the spending mix, Applied is well positioned

Products and Gross Margins

- A great measure of the strength of our products, the value they bring to our customers, and our execution as a company is gross margin expansion
- Since 2013, we have increased our gross margins in our semi, services and display segments across virtually every business unit
    - In 2017, I believe we will deliver company non-GAAP gross margin of about 46%, which would be up by about 5 points vs. 2012, and the company's best annual performance in a decade

Profitability and Shareholder Returns

- Now I'll talk about how these changes are flowing through the income statement to enable stronger profitability and shareholder returns
- Over the 2013 to 2016 period, we have grown the revenue line by 44%
- When we compare 2017 to 2013, we could see revenue growth of 90%
    - This revenue growth demonstrates the compounding benefits of our share gains and new product penetrations across semi, services, and display
- For the year, we expect our top line growth, gross margin performance, and disciplined R&D investment and spending to generate the highest non-GAAP operating margin of the past 17 years and FCF of 20% or more
    - The company has returned 100% of the FCF we generated over the past five years and stands committed to returning excess cash to our shareholders

Performance

Orders, Revenues and Profitability

- Next, I'll comment on our performance during Q2

- As a reminder, we no longer report quarterly orders, because we are focused on driving y-over-y growth in revenue and profitability
- Quarter-to-quarter demand patterns can vary across our business
  - However, we've grown our revenue and non-GAAP EPS on a y-over-y basis in 14 of the past 15 quarters
- In Q2, we grew company revenue by 45% y-over-y and increased non-GAAP gross margin by 3.6 points

Operating Expenses and EPS

- Our non-GAAP operating expenses grew by only 14% over this period, and we continue to invest two-thirds of OpEx in R&D to fuel our product development engine
- We set new company records in profitability as we increased non-GAAP operating profit by 110% y-over-y and non-GAAP EPS by 132% y-over-y

Semiconductor Systems Revenues and Operating Margins

- Now I'll compare our Q2 segment performance to the same period last year
- We grew semiconductor systems revenue by 51% to $2.4B and non-GAAP operating margin by 9.7 points
- We grew services revenue by 14% to a record $724mm and non-GAAP operating margin by 80BPS
  - We more than doubled our display revenue to $391mm and increased non-GAAP operating margin by 4.9 points

Balance Sheet Items

- Turning to the balance sheet
- We grew cash from operations by 87% compared to the same period last year
- We ended the quarter with $7.7B of cash and investments, and nearly half was onshore
  - This increase includes proceeds from $2.2B in debt raised in March to increase onshore liquidity
- Soon after the end of the quarter, we used approximately $200mm of the offering to redeem our October 2017 notes
- We returned $390mm to shareholders in the quarter, paying $108mm in dividend and using $282mm to repurchase 7mm shares of stock at an average price of $38.15

Guidance

Revenues, Gross Margins, Operating Expenses and EPS

- Now I'll provide our third quarter guidance
- We expect overall revenue to be in the range of $3.6B to $3.75B.
  - The midpoint would be up by 30% y-over-y
- On a y-over-y basis, our semiconductor systems revenue should increase by about 41%, services revenue should increase by about 13%, and display revenue should increase by about 27%

- Non-GAAP gross margin should be approximately 46.5%
- Non-GAAP operating expenses should be $665mm, +/- $10mm
- Non-GAAP EPS should be in the range of $0.79 to $0.87, the midpoint of which would be up by 66% y-over-y

Interest, Other Expenses, OpEx and R&D

- Finally, to help you with your models, we project revenue in corporate and other to be around $15mm
- We expect non-GAAP interest and other expenses of about $42mm and a non-GAAP tax rate of approximately 10.2%
- And in Q4, we expect non-GAAP OpEx to be around $675mm
- The projected increase is primarily targeted at R&D for new opportunities we are pursuing in emerging inflections

Summary

To summarize; one, our markets are sustainably better than at any other time in the history of the company

Two, our competitive position and execution is sustainably better, giving us a strong pipeline of new and disruptive products and gross margin expansion

Three, this growth, combined with disciplined investment and spending, is generating higher FCF, and we are committed to returning the excess to our shareholders

QUESTION AND ANSWER SECTION

<Q - C.J. Muse>: A question around sustainability. You're guiding WFE 40-plus-billion here for 2017 and curious what gives you the confidence to be so upbeat looking into 2018 and beyond. And I guess as part of that, would love to hear your thoughts in terms of the contributions from areas like AI and public cloud investments versus, I guess, more traditional areas like smartphone and PCs in the past. Thanks.

<A - Robert J. Halliday>: Let me see if I can try to give you context. I think context rather than a point answer is useful, [ph] purely (24:14) context over time and context over breadth. So if you look at context, we thought, back at Analyst Day last September, that 2016 WFE would be about $33.7B and, in fact, it ended up a little over $35B. We thought at Analyst Day last year, this year would be $34.5B and, in fact, it started with a four number this year and it looks very healthy. So it's trending up. So then you say, well, where is it trending up?

We're kind of up across the board. Earlier in the year we thought it was kind of 5% up across the board. Now we think the whole thing is up 15%. We're seeing in DRAM, NAND, foundry, tactically we're seeing high utilization in all the fabs. We see no diminution of ordering patterns. We don't see double bookings or anything people might fear. So we see – when you see strength across virtually every customer and virtually every device type, that goes to some root cause questions. So in my opinion, we are facing what we've been talking about for a while, which is there are more root cause demand drivers for devices.

Now longer-term, those root cause factors are going to be things like cars and AR/VR. What we're seeing now is tactically more content in the phones. We see a lot more content in the phones around NAND, DRAM, and we also see strength within the processor side on both the cutting-edge and the lagging-edge. Lagging-edge, again, this year will be over 40% of device types. But the cutting-edge is pretty strong too. So we're seeing broad scale demand. My belief is that in the intermediate term, there is more content going in phones and more going into the big data centers, which are both driving us, which help us.

So then the question is why is there more going in? We believe that there's what I will call, broadly speaking, more applications for processor technology, more apps on top of it that are driving systemic demand. And I think, frankly, we're in the early innings of it. So if you ask me, okay, is H2 good? Yeah, we're okay. If you ask me, is 2018 good? Yeah, I think it probably starts with a four again, and it's pretty good. If you ask me long-term, which is what I spend a lot of time on, I see more root cause drivers for growth in semiconductor and silicon growth than I've seen in years, and I think it's sustainable.

<A - Gary E. Dickerson>: If you look out over time what drove our business in the past were the enterprise and PC upgrade cycles. Then it moved to mobile, social media; very pervasive and driven by holiday season, new products, where all of the consumer electronics companies had to have those products ready for Christmas or Chinese New Year. And if you go forward, you talked about AI and the importance of capturing, transmitting, understanding, and storing data is really going to disrupt big industries, transportation, healthcare, entertainment, manufacturing. And when you look at AI chips, almost every week somebody's announcing a new AI chip. It's at the – logic devices that are at the physical limits of how big they can build those chips, because there's so much value in these changes that are happening in these major industries.

And of course, that's great for us. If you're building these big logic chips, you need better transistors, you need much better interconnect technology, and you also need more memory, which is materials enabled and another area that's in the sweet spot for Applied Materials. So longer-term, these inflections really create even more sustainability in terms of our markets going forward.

<Q - Harlan Sur>: On the China domestic semiconductor market and the outlook there, especially as we think about looking into 2018, I think conservatively we're tracking three to four domestic foundry programs and about four to five memory programs. Foundry, obviously, is a bit more mature. Memory, we're kind of early innings, like phase one kind of development.

But especially on, sort of, memory in China, and we get this question a lot from investors, which is, is the team starting to get pipeline visibility into some of these programs actually starting to fire the confidence level that these programs are going to contribute to potentially a growth outlook for 2018? Love to get your views here.

<A - Gary E. Dickerson>: China is one of our strongest regions for both semiconductor and display, very deep customer relationships. And what we're looking at for 2017, if we compare to 2015, it's about 2x growth in our semiconductor business, 50% growth in service, 50% in display. And the business is really driven by a couple of different strategic factors.

One is, there is a big gap between supply and demand, and there's this large drive to try to close that gap, and then also building secure supply chain. When we look into 2018, what we're seeing right now is that the overall wafer fab equipment spending could be meaningfully up, more than $1B, maybe $1.5B from 2017 to 2018, and the domestic part of that increase is also up a meaningful amount in 2018.

<A - Robert J. Halliday>: That's pretty accurate. And if you ask us to look longer term, we see the domestic – we see the total going up basically every year, and the domestic part, in particular, going up every year.

<Q - Timothy Arcuri>: Actually I have two questions. Number one, just on the recent debt raise, I know you paid down $200mm of debt with that money. But I'm surprised that there's not kind of a new capital return that was announced with that. So I guess that's my first question.

And then I wanted to also ask about SSG in the back half of the year, because if I run the numbers on calendar H1 the year, you're sort of annualizing to like $42B WFE roughly. And if we're going to be at $40B for the year, then that would – sort of say that the back half has to be down like roughly 10%. So I'm wondering if that math is right. Thank you.

<A - Robert J. Halliday>: Two complicated questions. The first one, we raised money, frankly, from an opportunistic point of view and, frankly, shareholder perspective. So if you look at it, we raised $2.2B, now we had to repay $200mm, so it's about $2B net. And it was about 50% of it was 10-year money; about 50% was 30-year money. And

the 10% money, I think like 3.3% and 4.3%, okay? So the average rate is about 3.8%. So basically what we're bringing into our capital structure is long-term debt at low rates. It's pseudo equity at low cost of capital. So that's pretty attractive.

The second thing we're doing is many people believe that there'll be some type of tax policy change this year or next, which will ease and facilitate the return of cash from overseas locations. Well, we're kind of hedging our bets. We're not sure about the timing and we want to stay committed to shareholder returns and keep our tax structure in place until there are any substantive changes.

So I think this raise, if anything, was to continue to support meaningful returns of capital to investors. And as we said on the call, we've returned over 100% over the last five years. In this past quarter, the total was over $380mm, I think, between dividends and buybacks. So I think we are very committed to shareholder returns. We will hit the model, which is shrinking the share count. And if we get more line of sight to what's going to happen on the tax policy, then we can react more effectively and more efficiently to how to maximize those shareholder returns.

In terms of the how does the year look, we gave in the call a few data points. One, we said that our revenues in 2017 FY vs. 2013 we're going to be up 90%. So you can see we're going to have a good year. So my take on it is the year is a good year. Our take on it is the year is continuing to strengthen throughout the year. Our take on it is that we're going to gain share this year. So it's going to be a really good year for us, and that's just semi. Display we're going to do well too.

We believe those drivers that drive the market and our share continuing for a number of years. So is the number a 40 number or a north of a 40 number? All we want to say, now here in early May, is it starts with a four, it's up significant from last year, and it's strengthened all year.

<A - Michael Sullivan>: And as a reminder, we're going to do just one question per caller at this time so that we can try to get everybody on the call. If you have another one later, please re-queue. Thank you.

<Q - Farhan Ahmad>: My question is you and I have talked about it quite a bit. Gary, I was wondering if you guys have done any sort of analysis if one particular segment would benefit more than the other in terms of logic, NAND, or foundry.

<A - Gary E. Dickerson>: Relative to AI, as I mentioned earlier, you see announcements almost every week of new logic AI chips going to the physical limits of the radical field, so the physical limits of the ability of the semiconductor companies to build those chips. So a tremendous amount of transistors, [ph] disk (34:31), interconnect technology, all of that is in the sweet spot for Applied Materials.

Our transistor and interconnect group, all of those different products, epi, PVD, CMP, thermal processing, implant, are really unique and very strong positions for Applied Materials. So that growth is really exactly aligned with the products that we have in logic and in foundry, and give us really a great growth opportunity.

The other part of it's the materials-enabled memory scaling. More and more you're seeing devices going from two dimensions to three dimensions. And as they're going to three dimensions, really the ability to scale, the performance and also the cost, is all about new materials, new deposition, epi, the new etch technology, selective removal, all of those areas.

And personally, I'm increasingly optimistic that we have very innovative, highly differentiated new technologies that will not only enable further scaling in 3D NAND technology, but also enable new memory technologies. Our position there is very, very strong. The relationships and engagements that we have with customers are broader and deeper than we've ever had in the past.

<Q - Atif Malik>: I have a question on the display products. At the Analyst Day last year, you guys talked about expanding the TAM on the display products from 15% to 30%, 40% over the next three years. Just curious, how are your engagements going with those new display products so far?

<A - Gary E. Dickerson>: We have very broad and deep relationships with all the leading companies in display and also the leading consumer electronics companies that are using those displays. So we're in a really great position to enable these new technologies. And as customers are moving forward with new display technology, it increases our total available market and puts us in a good position to continue to grow that business.

If you look at display overall, you really have two big drivers. One is the strong organic LED for mobile opportunity, and that is broadening out to a large number of customers, and also the increased adoption of larger TV screens. So, both of those are driving our business. As I said earlier, we have very strong and deep relationships with leading customers and we are focused on the biggest technology challenges.

If you look at all of those customers that want to get into the growing mobile OLED market, we're focused on the major technology challenges that enable those customers to build those kinds of devices. We're not ready to announce any specific opportunities at this point in time, but we will later this year.

<Q - Krish Sankar>: The question I had was with WFE running at $40B, 40-plus-billion this year and next year, where do you think 3D NAND WFE is within that? And if the prices for NAND roll over, will the reality of economics kick in and 3D NAND makers scale back their CapEx, or do you think demand is strong enough to continue investing in capacity for the next two to four years? Thank you.

<A - Robert J. Halliday>: The question was, is 3D NAND going to keep spending, is that – yeah. So let me take a shot at that. So 3D NAND spending is up this year. It was up again last year. If you go look at it, there's about 1.6mm wafer starts in the world of NAND in total. By the end of this year, they will have converted 750,000 wafer starts per month. So there's still a fair amount that's going to convert. I think that the vast majority of this is going to convert over time, because 3D performs better than 2D. I think what also helps memory in general, particularly NAND, is that more and more customers is trying to swap out 3D NAND over time for hard disk drives.

So overall, demand for memory is going up. The share of NAND vs. hard disk drive will trend up, and 3D will be the NAND of choice vs. 2D. So they're early in the build out, 750,000. They got to get to 1.6mm. And we think that the installed capacity is going to go up over time because of this demand.

Then if you look at greenfield vs. refresh, we're kind of agnostic frankly. So if you look at the cost of doing a greenfield 3D NAND factory, we do well. In fact, we're gaining share in virtually every product, I believe. As we look at transition one 3D to a higher level of 3D, the revenue opportunity for us is about the same.

<Q - Stephen Chin>: Just a follow-up question on the higher outlook for wafer fab equipment spending, what customer type is driving that big increase in your WFE view? And do you think this $40B number is the new normalized level for WFE and not a peak? Thanks.

<A - Robert J. Halliday>: And we're seeing it across the board. We're seeing in NAND, DRAM and foundry; logic's kind of flattish. We're seeing it at almost every customer, I think, too. So it's very broad. And when you get that broad, it's not, hey, they're timing DRAM, they're putting more DRAM in a PC. The root cause is broader than that, because it's across a wide range of device types and customers.

So then you say, what is the applications driving? We do think it's more and more about more applications for your PC and your data center and stuff like that. So it does start to see the AI stuff deep learning. Can I point exactly how much is AI? No, but it's across the board we're seeing this, right?

So then in terms of the number, those are – called earlier, I think this year begins with a four, but I'm not saying it's $40B, frankly. It's a good number, and I think next year's a good number. So I actually think the new norm is $40B plus. I think what I worry about internally about the company, that we don't plan more for the upside than downside. I think there's more opportunity on the upside than the downside.

<A - Gary E. Dickerson>: One thing I'd add to that is that, I think everybody is seeing a large increase in the amount of data and also the value of the data. If you look at deep learning, the amount of data that you process is going to go up. Right now a lot of data's thrown away. So you've got an increase in the amount of data, and then the amount of data that's processed is also going to increase. So both of those factors make me personally pretty bullish about the

memory business long term, and certainly that's also what we're hearing from our customers.

<Q - Romit Shah>: I did notice that display revenues were a little light in the quarter and that margins were down about 5 points. Can you talk about that, Bob? Is that just short-term noise? And last quarter you gave a target for display. I think it was up – for 2017, up 50%. Do you still feel good about that? Thank you.

<A - Robert J. Halliday>: We do. It's just timing and it's just logistical. Display's going to have a really good year. The underlying market dynamics are very strong for both TVs and mobile, and our position's really good. So I think display's strongly lot of opportunity. And then we have a product cycle that we've discussed coming on board later in the year. So I'm bullish on display, and I think I wouldn't read too much into these quarterly numbers. In terms of the numbers we said last quarter, yeah, we'll hit those. Yeah.

<Q - Toshiya Hari>: I had a question on gross margins. You guys showed nice upside in the quarter, and just wondering what the drivers were here. In the past I think you pointed to outsized growth and things like etch and display that were headwinds to the business. The recent improvement, is that a function of that headwind abating, or is that a combination of mix shift and also fundamental and sustainable improvements across the board? Thanks.

<A - Robert J. Halliday>: If you look at a company like Applied, the gross margin improvement or change is a function primarily of two things, or one – third thing that's a little smaller. One is execution, and second is mix, and the third, which is a little smaller, is absorption with volume, right? So if you look at execution, that's really three things: how you're executing cost reduction; how you're executing on new product development; and how you're executing in terms of field execution. So if you go look at it, this year we're up a lot. We're up over a couple – I don't know – several points.

And if you look at it, I would say that the improvement – we have underlying improved execution, so that this year, we're up about almost – what, 3 points? So if you look at it this year, execution is trending up and that'll continue on for a while. I think every year we'll get better. Now, we are benefiting from pretty good mix shift. It's been a good year for our products in the TIG family, PVD, epi, things like that. And so that's helped a little bit.

And absorption's helped a little bit this year. It's a pretty big year. It's over 40% and we're gaining share. But I would say that the overall gross margin performance of the company will trend up over time, but this year was helped a little bit by volume and by mix. But I would say, I'm still positively upward bound on margins. So if you go – if we have to redo a model in Analyst Day, I'd probably lean in on a higher WFE and higher margins.

<Q - Joseph L. Moore>: I wonder if I can follow-up on some of the questions on the upward revision in WFE, particularly with regards to memory. We look at sort of memory cash flows and make some assumptions that there's just an algorithmic percentage of that peak cash flow that gets spent, which is probably more negative than what you guys are describing that the sort of people are looking at the current situation and deciding that they need more supply.

I mean, I guess, it's more semantics, I guess, but how do you characterize – when you see the upward revision that we've seen in just a six-month window, how much of that is just because prices are better, companies have cash flow, and they use it to improve their competitive position vs. something that's more sort of structural and dynamic? How do you interpret it as the more structural aspect vs. just better pricing?

<A - Robert J. Halliday>: We look at a few things. We dug into this ourselves too. We looked at what's driving this data. We looked at some cosmic data. So we looked at the stuff like how much data is captured out there and we captured it was like 8 zettabytes of data was captured in 2016, I think close to 25 zettabytes of data in 2020, and then it goes to like 45 zettabytes of data.

So, more and more data's been captured. It's gone up a lot, even in your homes, your cars, your industry, your companies. Then we look at the transmission, processing, storage of that data we talked about. So when we start to look at root cause, we're seeing a lot of this stuff, right? So then you go look at what's going on more close to planet Earth. And so we looked at this and we said, well, what's going on with NAND and DRAM? We split them up. DRAM's up, but it's the still not through the roof. It's pretty good, but still kind of restrained because a fair amount of this budget's being spent on NAND. So DRAM price is good, NAND price is good, supply and demand's okay.

So the DRAM, I would say, has probably got a little more upside than downside, frankly, in 2018, because this year it's hasn't been through the roof. It's up from what we thought earlier in the year. And then if you look at NAND, they're selling all the 3D NAND they can build. So it's still pretty good, and I do think it goes to these longer-term trends data in NAND.

So then if you look at – the final thing is just, well, how come you guys were low early in the year? And I think it goes to two root causes, which, frankly, inflict all of us. One is, I think we're a little bit a prisoner of past thinking. And we say, okay, it can only go so high, but it goes to what Gary said earlier. There's different fundamental demand drivers, at a simple level it used to be PCs. Then we agreed, okay, in 2010 mobile's coming in, and then – but now, you've got all this big data stuff and content, which is going up. That's what's really up last year.

So it's content in the phones, content in the data centers, right? And so when you start to look what were we inflicted with, we were saying, oh, we're going to rollover, but maybe there's real demand drivers here, number one. And number two, sometimes we listen too closely to our customers on a tactical basis. They have to give us good demand forecast for kind of six months out, so we could build the tools. Beyond that six months, maybe they're a little conservative of what they say to us for various reasons. So I think there are tactical reasons why we're little to up conservative. And I think the data that shows it's not overbought now and there are longer term reasons to make you think this is very sustainable.

<Q - Patrick Ho>: In terms of the display business for you guys, we do see the longer-term trends of OLED. Can you give a little bit of qualitative commentary on the LCD side of things and how you're benefiting this year as TV sizes do grow larger? Is this also one of those sustainable trends or is this just going to be a one-year or year and a half phenomenon as the industry transitions on that front?

<A - Robert J. Halliday>: If you go look at this year, we're going to be strong in both TVs and mobile. TVs are largely LCD. Mobile is – the spending is largely for OLED, okay? So if you look at the two drivers. In OLED, it's conversion of the phones, which we've talked about. My estimate is that the early in 2018 about 37% to 38% of the phones, there will be capacity to make them OLED, even though the demand is there. We think it will be about 55%, as we said earlier, in kind of 2020 I think it is, 67% in 2021, so really OLED phone displays kind of supply constrained, to be honest with you, so that's very sustainable. I think it will keep going up beyond 67% is my opinion too in 2021, and remember everything we got in backlog ships six to nine months later, so you've got extra length on the revenue.

Then if you go to TVs what's really driving the TVs is the big TVs. So we said at Analyst Day that through 2020, I think it was, we were tracking seven Gen 10.5 fabs. We're now up to nine, and those – that increment is just starting to ship, okay? And those fabs on average spend more than Gen 8.5. I think they spend about $2.2B or it's like $1.2B, I think, on a Gen 8.5. So this big TV stuff has got legs for a while and capital intensity per these bigger fabs is good and our position is real good.

<Q - Weston Twigg>: You mentioned earlier on the call regarding bit density in 3D NAND from generation to generation being slower than the planar NAND conversion. So just wondering could you give us an idea on how much more fab capacity might be needed annually to drive, say, 40% bit growth and what the incremental opportunity could be for AMAT.

<A - Robert J. Halliday>: Some of this goes to what I said earlier. So we see – and I think we're a little bit on the low side sometimes – that NAND bit growth is going to be probably in the high 30s or something like that. Now, last year was much higher, if you look at content in phones, it was up like – the data we got from our outside service provider was 57%. So there are indications, maybe we're on the low side in some of these things, plus we're not sure we've captured all the movement to hard disk drive side.

I'd say, I'm more in the over camp in that number than the under. So then if you go look at it, as I said earlier, the 750,000 wafer starts by the end of this year, we think that they're going to have to continue to spend in dollars WFE content similar to this year for a number of years. Now if they spend on greenfield or they spend on conversions, we're kind of agnostic from a revenue point of view. But we think the total spending is similar this year for a number of years.

<Q - Craig A. Ellis>: I wanted to follow-up on the comments that you had, Bob, that there was some project related R&D spending in the outlook numbers. The question is, to what extent is that more of a near-term micro opportunity that the company is seizing vs. something that maybe more longer term and structural, either because you're viewing the market opportunity differently over the next few years and are chasing some additional existing SAM or as you look at different opportunities chasing some new SAM that's emerged over the last three to six months? Thank you.

<A - Robert J. Halliday>: Increasing the R&D spend was a wise decision, frankly. I think that when we showed you the – if you go back to 2013 when I first got here, we showed the first model, our base case model was kind of $30B base case, and then we did $33.5B, last year was $34.5B, I think. If I had to do a base case model for the industry, it's probably – it's going to be north of that. I don't want to pre-sell Analyst Day in September, but it's obviously north of that.

The second thing is our position is a lot stronger. We used to be 18% of WFE and I think last year we were like 22% or something. We're still going up. Our model is to get to 25.5%, we're comfortable with that. So if you look at Applied – and then display, the magnitude of changes are bigger, bigger. It was an $8B spending environment when we setup and now it's kind of twice that. Our product pipeline's good. So I think the wise decision is to continue to invest the opportunities.

Now, customers are coming to us more and more, because we've become even more innovative than we were. So if you look at the range of products we're doing, the innovation in terms of the pipeline, really good. So we're getting lots of pull from customers to develop new products. They're taking more and more demo tools from us. We're getting more and more applications. So I think it's money well spent. I think it will probably trend up.

If you look at the model, probably a little bit of risk that the OpEx is higher than the model, but OpEx as a percentage of sales is down 10 points from 2013 by the end of this year. If you look at operating margins are up significantly and we'll probably beat the model. The upside is lower than the downside on the revenue, gross margin, and operating margins in the model.

<A - Gary E. Dickerson>: In terms of where we're focused, the strategy for us has been inflection-focused innovation. There are really big inflections that are happening at 10 and 7-nanometer. When you're building these AI chips that are as big as the physical limits, there are lot of technology challenges. We talked about PVD growing this last year to enable the new interconnect technology for lower power devices. You've got high-performance memory chips also, where PVD is growing for us. And the memory area, the ability to scale 3D NAND, is there is big technical challenges there for our customers, and it's really all about etch, deposition.

We've got very innovative new materials. The etch area, we've grown our market share significantly over the last few years. Great products, some of the best products I've ever seen in my life. Sym3 is the fastest growing product in the history of the company; the Selectra product, where we have a thousand to one selectivity. These are enabling customers to build devices that were never possible before, and build them in different ways, scale these new technologies, build the logic devices at the physical limits, and the same thing is true in display. For organic LED mobile displays, there are technology challenges that are facing customers that want to ramp new factories for those new types of devices.

So for me personally, I look at Applied Materials, our competencies, technologies, talent is really unbelievable and sets us apart from any other company, and we're really in the sweet spot of all of these major inflections. So we've certainly moved a lot of money within the company over the last few years. The OpEx as a percentage of revenue has been going down, but we're going to invest to enable these inflections and drive sustainable growth for the company. The opportunities for us have never been better.

<Q - Edwin Mok>: Just want to circle back on China. You guys mentioned you expect a pretty significant pickup in spending in China as well in 2018. Maybe we focus on the memory side. We've seen like some of these customers announced pretty aggressive roadmap for their 3D NAND technology. I was wondering is this bigger spending in 2018 predicated on those customers hitting those targets or rolling out those device and if they have issue of rolling out the devices that delayed spending that you expect in 2018.

<A - Gary E. Dickerson>: We have a range of forecasts for China. So as I said earlier, it's one of our strongest regions in both semiconductor and display. We have very, very deep relationships with many of these customers. Right now, what we believe for 2018 is that the business will be up meaningfully from 2017, but frankly, that's also at the most likely and low risk end of the forecast. There's a higher range there that would be going up at a much faster pace.

We're looking at early indicators for all of those new projects, but I think right now we're pretty confident that the increase in China in 2018 will happen. Maybe it's $1B, $1.5B in terms of total wafer fab equipment. So we have pretty high confidence in terms of the engagement, so the information we're getting from all of those customers. There is upside potential, but that's our current view.

<Q - Sidney Ho>: Going back to the question on capital returns, your FCF as a percentage of revenue has come up quite a bit over the past five years. I think it was averaging like 15% and now it's more like 20% plus. Your dividend yield has come down quite a bit as well, just because your stock has done so well. But with the long term debt you raised recently, I know you explained that earlier on the call, but just curious are there any changes to your philosophy in capital returns. I guess specifically why not raise your dividend and maybe spend a little less on buybacks, given dividend hasn't gone up for a number of years, or are you saving some dry powder for future M&A?

<A - Robert J. Halliday>: We'll continue to return, the total of all cash to investors will be very, very healthy. I think that the mix will probably morph over time through dividends. We haven't made a firm commitment, but I think it will happen. I think the two things that I'm kind of watching is, one, I think I'd like to see tax policy, because dividend's a firm fixed commitment as soon as you make it and you got to hit it every quarter and you really have to lean into where you're going to end up, what's your end state, because people look at the yield, not did you raise it $0.02 a quarter. So we have to commit to a dividend increase over time that gets to effective yield, and when the stock is going up that cash commitment is going up. So I'm willing to do that, but I'd like to see clarity on the tax policy before I make that fixed commitment to an increasing yield.

<Q - Harlan Sur>: You guys talked a lot about some of the trends driving logic and foundry, AI, deep learning, VR, data center. And it's interesting, right, because these drivers have some of the biggest chip sizes in the industry, right? NVIDIA's latest deep learning chip has 18B transistors on a single piece of silicon. Broadcom's latest data center switching chip has like 7B transistors. These are huge chips, right?

And my point is that, each of these units is consuming more silicon, but they're also requiring more leading edge complex manufacturing. So this is great for capital intensity trends. It's great for equipment business. But, frankly, it's a nightmare from a yield perspective. So help us understand the trends you're seeing in your metrology and inspection business and how you guys are helping your customers improve yield. You guys gained share in this segment last year. How do you think this segment grows relative to your overall semi systems business this year?

<A - Gary E. Dickerson>: Again, on the large logic chips that you talked about, we actually had the NVIDIA CEO here just a few months ago and one of the questions was really, what does all of this mean to us? And he talked about physical – the chips as big as they can physically build them, and actually he also said a million times more memory. So, all of those things are obviously positive for Applied Materials.

In inspection share, we're – or inspection business, we're growing a significant amount. We had record revenue in 2016. We're on track for record revenue in 2017. And if you look at our e-beam business, which is our largest part of PDC, which includes e-beam inspection, e-beam review and CD-SEM, we're going to be up in 2017 more than 50% vs. 2015.

We have very, very strong technology position with world-class electron optics and very strong customer pull for our e-beam products, in logic, foundry, and repeat orders for the PROVision and memory with some large customers, so very, very strong position. We have great technology, very strong customer pull, and we believe that we're going to continue the growth that we've seen over the last couple of years in our PDC business.

Robert J. Halliday

Closing Remarks

Fab Equipment Market, Markets and FCF

- One of Gary's favorite expressions around here is innovation is about connecting the dots
- Let me see if I connect a few dots that I – we believe and I hope you heard today
- One, we believe the wafer fab equipment market is sustainably higher and less volatile
- Also, display is higher, and for Applied it's sustainably a better market, because there are more technology inflections and because we're growing our served market
- Second, Applied's position in markets is sustainably stronger and we are executing better and better
- And third, we're generating more FCF and returning the excess to our shareholders
- Speaking of FCF, one of your own interesting note comparing Applied Materials to some of the top names in the industrial sector. Relative to the average of the companies, Applied has higher revenue and profit growth, along with higher ROIC and FCF margins
    - Compared to these companies, I believe we're being discounted for being more cyclical, even as we become demonstrably less cyclical
- I believe that over time we'll be viewed and valued in a new way