Q2 2019 Earnings Call

Company Participants

- Peter Wennink, President and Chief Executive Officer
- Roger Dassen, Executive Vice President and Chief Financial Officer
- Skip Miller, Vice President of Investor Relations

Other Participants

- Amit Harchandani, Analyst
- Andrew Gardiner, Analyst
- C.J. Muse, Analyst
- David Mulholland, Analyst
- Dominik Olszewski, Analyst
- Janardan Menon, Analyst
- Joe Quatrochi, Analyst
- John Pitzer, Analyst
- Krish Sankar, Analyst
- Mehdi Hosseini, Analyst
- Mitch Steves, Analyst
- Sandeep Deshpande, Analyst
- Stephane Houri, Analyst

Presentation

Operator

Ladies and gentlemen, thank you for standing by. Welcome to the ASML 2019 Second Quarter Financial Results Conference Call on July 17, 2019. Throughout today's introduction, all participants will be in a listen-only mode. After ASML's introduction, there will be an opportunity to ask questions. (Operator Instructions)

I would now like to turn the conference call over to Mr. Skip Miller. Go ahead please, sir.

Skip Miller {BIO 20244900 <GO>}

Thank you, operator. Good afternoon, good morning, ladies and gentlemen. This is Skip Miller, Vice President of Investor Relations at ASML. Joining me today from ASML's headquarters in Veldhoven, the Netherlands is ASML's CEO, Peter Wennink; and our CFO, Roger Dassen. Subject of today's call is ASML's 2019 second quarter results. The length of this call will be 60 minutes and questions will be taken in the order they are received. This

call is also being broadcast live over the Internet at asml.com. A transcript of management's opening remarks and a replay of the call will be available on our website shortly following the conclusion of this call.

Before we begin, I'd like to caution listeners that comments made by management during the conference call will include forward-looking statements within the meaning of the Federal Securities laws. These forward-looking statements involve material risks and uncertainties. For a discussion of risk factors, I encourage you to review the Safe Harbor statement contained in today's press release and presentation found on our website at asml.com and in ASML's annual report on Form 20-F and other documents as filed with the Securities and Exchange Commission.

With that, I'd like to turn the call over to Peter Wennink for a brief introduction.

Peter Wennink {BIO 1852674 <GO>}

Thank you, Skip. Good morning and good afternoon, ladies and gentlemen, and thank you for joining us for our Q2 2019 results conference call. And before we begin the question-and-answer session, Roger and I would like to provide an overview and some commentary on the second quarter, as well as provide our view of the coming quarters. And Roger will start with a review of our second quarter financial performance with some added comments and our short-term outlook. And I will complete the introduction with some additional comments on the current business environment and our future business outlook. Roger, if you will?

Roger Dassen {BIO 15064806 <GO>}

Thank you, Peter, and welcome, everyone. I will first highlight some of the second quarter accomplishments and then provide our guidance for the third quarter of 2019.

Q2 net sales came in at EUR2.57 billion, within our guidance. Net system sales of EUR1.85 billion was more weighted towards logic at 61%, with the remaining 39% from memory, representing a similar split as the previous quarter. We reported EUV system revenue of EUR764 million on seven shipments, which was one more than guided. Installed Base Management sales for the quarter came in at EUR717 million, which was a bit higher than guided.

Gross margin for the quarter was 43.0%, which was above guidance due to better EUV manufacturing results and higher field upgrade sales more than compensating the negative mix effect in comparison to Q1. Overall R&D and SG&A expenses came in as guided, with R&D expense at EUR487 million and SG&A expenses at EUR123 million.

Turning to the balance sheet, EUR884 million was paid as dividend and EUR15 million worth of shares were repurchased in Q2. We ended last quarter with cash, cash equivalents and short-term investments at a level of EUR2.34 billion.

Moving to the order book, Q2 system bookings came in at EUR2.83 billion, which is 100% up from Q1 bookings, mainly driven by EUV, where we took 10 new orders in the quarter. Logic order intake was 67% of total value, with the remaining 33% from memory, again reflecting the strong logic demand expected this year.

Net income in Q2 was EUR476 million, representing 18.5% of net sales and an EPS of EUR1.13. This was positively impacted by higher gross margin and a one-time tax benefit.

With that, I would like to turn to our expectations for the third quarter of 2019. We expect Q3 total net sales of around EUR3.0 billion. Our total net sales forecast for Q3 includes around EUR750 million of EUV systems revenue on seven planned shipments. We expect our Q3 Installed Base Management revenue to be around EUR700 million.

Gross margin for Q3 is expected to be between 43% and 44%, which is slightly higher than Q2. The expected improvement in margin due to expected higher volume will be partially offset by customer configuration mix. We continue to expect significant improvements in gross margin in the fourth quarter, driven by higher system sales, improved product mix, increased field upgrades, shipment of higher-margin NXE:3400C systems, as well as contribution of EUV service revenue. This will enable us to achieve a gross margin for Q4 which approaches our 2020 target of over 50%. The expected R&D expenses for Q3 are around EUR495 million and SG&A is expected to come in at around EUR125 million. Our estimated 2019 annualized effective tax rate is around 9% because of a one-time tax benefit in 2019. We still expect our long-term effective tax rate to be 14%.

With that, I'd like to turn the call back over to Peter.

Peter Wennink {BIO 1852674 <GO>}

Thank you, Roger. As Roger has highlighted, although it was another modest but decent quarter, results came in at or above guidance, and we expect further strengthening in the coming quarters.

The macroeconomic environment continues to provide market volatility, which translates to a level of uncertainty in the semiconductor industry. The demand for memory remains soft, while excess inventories are being worked down in the supply chain and some of the second half memory demand risk that we discussed last quarter has meanwhile materialized and resulted in system pushouts of this year into 2020. This memory weakness has been compensated by strengthening of logic demand such that our view of 2019 total sales remains unchanged. As such, we expect 2019 to be a growth year with sales and profitability increasing throughout 2019.

In memory, the market continues to digest the high level of capacity additions that were put in place over the past few years. The digestion started last year was exacerbated [ph] by the decelerating macroeconomic growth. This will likely extend throughout most of this year. Based on lower demands from our memory customers, we now see our memory sales down around 30% year-on-year versus 20% indicated last quarter.

As discussed last quarter, we see two contributing components of memory demand this year. We have characterized one as strategic, which we expect will happen largely independent of market conditions. This includes both early Chinese domestic memory ramp and EUV for DRAM. This component is valued at approximately EUR1 billion, which we believe has low risk of pushouts. The second is the bit supply component, which we previously indicated as having a higher risk. And if you remove the strategic component from our estimated 2019 memory demand, you get a lithography spend for memory bit supply of around EUR2.1 billion, which is around 45% lower than the comparable spend in 2018. And as we have already shipped around EUR1.2 billion to memory bit supply in the first half of the year, this leaves around EUR900 million in the second half of the year, targeted for memory bit supply, which has an inherently higher risk profile than the strategic investments in memory. On the positive side though, our Memory customers continue to indicate they are making significant reductions in wafer output to an extent we haven't seen in previous downturns. This reduction in spend and lower wafer output will help in reaching a more normalized supply-demand balance.

Logic will clearly be our growth driver in 2019, with the majority of the demand linked to new technology transitions and advanced node additions. We are seeing increased demand from our customers, driven by accelerated ramp of 7 nanometer node and beyond, supporting, amongst others, the introduction of 5G technology. With this strengthening, we now expect our logic business to be up around 65% for the year relative to last year, which is 15 percentage points up from the 50% that we communicated last quarter. Along with increased system demand in the second half, we also expect stronger demand for field upgrades, which translates to low-single digit percentage growth of Installed Base Management revenue.

Now, let me turn to the ASML product side and I'll update you on our EUV business. In EUV, we recently demonstrated more than 170 wafers per hour on our first NXE:3400C system. We have also run more than 2,000 wafers per day in the customer memory production conditions. And this is a significant milestone in that it confirms the required capability for memory production, which means that our focus will be on stability and uptime to secure our customers' ramp plans. We plan to ship the first NXE:3400C system in Q3 with a higher number of C systems planned in Q4. As Roger mentioned, we shipped seven systems in Q2, one more than guided, and received 10 orders. As a confirmation of the potential of the NXE:3400C for cost-effective high-volume memory production, we received a number of EUV orders this quarter for systems slated for use in memory. The customers are aggressively bringing new technology to the market, which reflects on the solid demand for 30 systems this year. The demand for NXE:3400C systems has proven to be high. Our 2019 shipment plan is significantly skewed towards the second half of the year and to Q4 specifically.

Next to the back-loaded plan, we're also transitioning to a new scanner model, like I said earlier, the 3400C, for which suppliers need to ramp their production. Taking both of these into account, there is a risk of a few systems planned for Q4 moving into the first weeks of 2020. However, this risk has been taken into account in our comments regarding our full year 2019 sales outlook. In any case, the strong demand for NXE:3400C as well as the continued progress in the ramp of our production capacity is clear.

In summary, despite uncertainty in the current environment, we continue to see a stronger second half with the strengthening of both sales and profitability quarter-on-quarter. Logic will be the primary driver of growth this year, and demand has further strengthened from last quarter, as customers accelerate the ramp of their advanced nodes. Memory demand has more uncertainty and has further weakened since last quarter. However, as mentioned before, the stronger logic demand compensates for the weaker memory demand. And in total, our overall sales outlook for the year, as I mentioned before, remains unchanged, and we expect 2019 be another year of growth.

With that, we'll be happy to take your questions.

Skip Miller {BIO 20244900 <GO>}

Thank you, Roger and Peter. Ladies and gentlemen, the operator will instruct you momentarily on the protocol for the Q&A session. Beforehand, I'd like to ask that you kindly limit yourself to one question with one short follow-up if necessary. This will allow us to get in -- to get to as many callers as possible.

Now, operator, could you have your final instructions and then the first question, please?

Questions And Answers

Operator

Thank you. (Operator Instructions)

First question comes from Mr. Mitch Steves, RBS [ph] Capital Markets. Please state your company name, followed by your question.

Q - Mitch Steves {BIO 19155169 <GO>}

Hey, Mitch Steves from RBC. I just have two quick ones. So the first one is on EUV. You guys talked about 33 to 35 units for 2020. I'm just curious as to how much that is memory-related EUV and is that still on track? And then secondly, on the memory side, I think you guys said that it could be down 30% versus 20%. Was that memory in general? Was that ASML-related revenue? I'm just trying to be clear about that.

A - Peter Wennink {BIO 1852674 <GO>}

Yeah. On the last one, it's 19 -- the 30% down is the total memory sales of ASML into the memory segment as compared to 2018. And so that's what the 30% meant. On EUV 30 to 35, yeah, that's our shipment capacity next year.

Memory-related, interesting question that is. Like I said in earlier calls, memory is clearly giving us kind of a -- as a breakeven point where they want -- where they can move into EUV as it relates to DRAM production and it has to do with the productivity. And we gave a target of 2,000 wafers per day. Now, we have shown in our factory under memory

production conditions that we can get over 2,000 wafers per day. So it's really about the uptime and the availability of the system.

Now, we're shipping the first C system this quarter. We will install it. So by the end of the year, we will be able to see really some -- let's say -- you could say, more marathon evidence of that 2,000 wafer per day. That will drive the demand for EUV next year. Having said that, I strongly believe that 2020 will be dominated by logic in terms of EUV. I mean, the 3400C, and I think currently when we talk to our logic customers, has a very clear road map, a path into 2024, 7 nanometer and beyond. So no matter how you look at it, it's clearly an upside, DRAM, for next year, but the majority will still be driven by the logic demand from our customers.

Q - Mitch Steves {BIO 19155169 <GO>}

Okay. That's [ph] a good quarter. Thank you, guys.

Operator

The next question comes from Mr. David Mulholland. Please state your company name, followed by your question.

Q - David Mulholland {BIO 16819172 <GO>}

Hi, thanks. It's David from UBS. Just two quick ones. Firstly, on the EUV bookings in the quarter and kind of following up from the last question, but can you possibly help us understand how that breaks down between memory and logic and in terms of what you're seeing so far, and is it fair to presume those are all 3400C? And then just secondly, I think last quarter, you commented EUV bookings this year would be quite back-end loaded. So obviously, seeing ten already in Q2 is quite solid. But is it fair to say that we shouldn't expect too much in Q3 that it will take that 3400C to be in the field to then get more bookings in Q4? Or how should we think about the phasing?

A - Peter Wennink {BIO 1852674 <GO>}

So just a clarification question, David, you are really talking about the bookings now? The -- let's say, the booking sequence in Q3 and Q4 going forward, that's what you mean? Is that correct?

Q - David Mulholland {BIO 16819172 <GO>}

Yes.

A - Peter Wennink {BIO 1852674 <GO>}

Okay. Yeah, on the EUV bookings, I think the majority of the bookings that we received in Q2 are for logic, whereas there is a -- there are a few systems which are slated for memory production, which is understandable because you won't -- given the current state of the capability performance, it's logical that you would see some of our systems being shipped to go into a DRAM pilot production, so the majority will be for our logic customers.

We had a good order intake in Q2. It's my expectation that that will continue in Q3 and Q4 because, like I said, we have a production capacity of actually between 30 and 35 units. And I think by the end of the year, we'll be fully booked for those tools because I do believe also that by the end of the year, we'll be able to actually show in longer test -- marathon test that that the DRAM conditions that we were able to show here at ASML were not a unique event that we'll be able to basically replicate that. So I don't think there will be an order low. I think it will be a gradual intake of orders towards the end of the year. Like we saw last year -- last year, we said the same thing. By the end of 2018, we'll have 2019 booked. It's my expectation that we'll see the same thing by the end of this year.

Q - David Mulholland {BIO 16819172 <GO>}

That's right. Thank you.

Operator

The next question comes from Mr. Mehdi Hosseini. Please state your company name, followed by your question.

Q - Mehdi Hosseini {BIO 4362002 <GO>}

Yes. Thanks for taking my question. Just two follow-ups, Peter, regarding your confidence on the Q4. I'm just curious, it seems to me that your confidence comes from the scenarios that you have contemplated. For instance, if the supply chain causes some delay in the shipment of 3400C, I assume that you have immersion tools that you can ship, and therefore, is that what gives you the confidence for Q4 shipment? And I have a follow-up.

A - Peter Wennink {BIO 1852674 <GO>}

Yes. You can ask the follow-up because you're right, You gave me the answer, and it was -- indeed, that's what it is.

Q - Mehdi Hosseini {BIO 4362002 <GO>}

Sure. And then if there is -- if there are a few systems that are pushed to 2020, then is that going to increase the 30 to 35 systems planned to be shipped next year? Or how should we think about the targets for next year?

A - Peter Wennink {BIO 1852674 <GO>}

Yeah, I think we have this -- when we look at the production capacity, 30 to 35, that is basically on a 12-month period. So if we have to shift a few of the systems into January of 2020, they -- naturally, it would come on top of those 30 to 35 under the assumption that we cannot have that same kind of supply chain risk at the end of 2020, which you could argue, there is a lot more learning curve, so we should be able to keep the production schedule or the supply chain schedule better than we could in 2019 because we're introducing a new machine there. So yes, normally, it will be on top, but like I said, 30 to 35 is still a range of five tools, so I would stick to the 30 to 35.

Q - Mehdi Hosseini {BIO 4362002 <GO>}

Okay. Now, in terms of the supply and demand for memory, it has continued to weaken. What if it remains weak into 2020? I remember from the November Analyst Day, you guided to 15%, 20% DRAM bit production growth and NAND bit production growth of 35% to 40%. But what if -- we started 2020 very far from those targets. Would -- is there also a sensitivity to your 2020 revenue target where -- if DRAM -- I'm sorry, if memory were to remain weak, there will be other areas that would help offset that?

A - Peter Wennink {BIO 1852674 <GO>}

Yeah, I think it's a lot of questions in one question, but let me answer this. 2020 -- when we gave you the 2020 number, it was basically a mid-market scenario that we gave you, yeah? And the mid-market scenario, like you said, had a certain percentage growth on memory, as mentioned, 20% and 35%. And that is a muted case. But what we're seeing today is also that logic is a bit stronger than we anticipated, so that could be a compensating factor. But all in all, I think it's too early to make an educated guess on whether 2020 will be a moderate market or will be a low market. I think it's too early. I can only say that where we see memory is today with, indeed, significantly lower growth -- bit growth numbers than the ones that you mentioned and the fact that our customers are cutting 45% of their, at least, litho purchases for bit capacity and they are lowering their wafer starts, I mean, that something will happen. And so this is -- so it's too early, but I think the trends are clearly such that I believe customers are doing everything, try to rebalance the supply and the demand. And whether that will be at the end of the year, early 2020, it's simply too early to say.

Q - Mehdi Hosseini {BIO 4362002 <GO>}

Thank you, Peter.

Operator

Next question comes from Mr. C.J. Muse. Please state your company name followed by your question.

Q - C.J. Muse

Hey, good morning. Evercore ISI. Thank you for taking the question. I guess, Peter, very encouraging to see the DRAM EUV orders in the quarter. Curious if you could speak a little bit about what the total cost of ownership requirements are as we move to 1Z and then 1 Alpha [ph], the timeline of hitting those requirements that -- as you see? And if you're able to hit them, what are you thinking about layer count as we transition to 1 alpha? Thank you.

A - Peter Wennink {BIO 1852674 <GO>}

Yeah, I think it's an interesting question. We're really looking at the introduction time of EUV in DRAM and this is driven by -- I think, it's just the economics. And like I said in previous quarter also, it's not only the economics, I think we also get very clear feedback that the device performance using EUV is also significantly better. So it's a combination of the two. And it will be an introduction time, whether it's 1Z or it's another alphabetical

letter, it doesn't matter. At that moment in time, EUV is there to stay. And as you pointed out, going forward, with those next generations, after the introduction node, there will be more layers added to EUV. And we currently think about we could -- whether it's alpha or it's gamma, whether it's three to four even five could -- is something that could happen.

Q - C.J. Muse

Very helpful. And then if you could speak to the Bluebird [ph] business you're seeing from logic in the second half, how sustainable is that beyond Q4? And then as part of that, considering you're likely building immersion tools from memory and then having to build for logic, are there any negative gross margin implications from that changeover?

A - Peter Wennink {BIO 1852674 <GO>}

Could you elaborate a bit on your last part of the question?

Q - C.J. Muse

Obviously, logic immersion tools, higher SP [ph], better gross margins but--

A - Peter Wennink {BIO 1852674 <GO>}

Okay.

Q - C.J. Muse

Considering -- I presume you were building initially immersion for memory and now retrofitting to logic. Are there any negative implications to gross margins because of that?

A - Peter Wennink {BIO 1852674 <GO>}

No. That question on the -- well, the answer to the question -- to the last question is, indeed, no, there are no real implications. Is logic sustainable in Q4? Well, to be honest, I think the way that we look at it after having discussions with our customers, I think it is -- that demand that we're currently seeing in the second half of the year is incremental. I don't think it's a pull-in. I think there -- the majority of what we're seeing is incremental. These are not borrowing for -- from 2020. So in that sense, I think it's much more sustainable.

Q - C.J. Muse

Very helpful. Thank you.

Operator

The next question comes from Mr. Janardan Menon. Please state your company name, followed by your question.

Q - Janardan Menon {BIO 1718725 <GO>}

Hi, it's Janardan from Liberum. I just want to dive a bit into the gross margins. You said your gross margins in Q3 were affected by some customization work. Would you be able to give us any number as to -- in percentage terms as to what that hit is? And you're also suggesting that your gross margin in Q4 is likely to be quite close to sort of the 50% rate into the high 40s. Would you be shipping any 3400Bs in that quarter? Or would that shipment be entirely 3400Cs? And one small one if I might push through is, if DRAM were to improve -- I mean, DRAM were to start adopting EUV after the first runs of the 3400C and they do come in with orders, would you be able to accommodate more than 35 machines for next year or is that sort of an upper limit of what you can do with your current capacity? Thank you.

A - Roger Dassen {BIO 15064806 <GO>}

A couple of comments on the gross margins. So in terms of composition, Q3 resembles Q2 quite a bit, so in terms of sales mix. So that's why the basic point of departure there is kind of similar. It will be higher, right, so the total volume will be higher and therefore factory loading will be higher, so there's an uptick in gross margin. And then we also said that in the mix, the configuration mix, Q3 is a little less favorable, if you like, than Q2. But that's minimal and just based on the configuration of the specific systems that we provide. And that's the reason why Q3 is a little bit higher than Q2, but not dramatically so.

If we then move to Q4, I think you will see that the Company is really going to run -- is going to fire on all cylinders. So then you really have the impact of a number of structural developments that are going to occur. First, the 3400C. To your point, Q4 will be -- still be a mix of B and C models, but the C model will be dominant in that total mix. But -- so you will have the increased benefit of the 3400C pricing and margin. At that point in time, we will also see that the service revenue on EUV will go up and service margin will go up. For Q4, we also predict better field upgrades, which is a business that has a solid gross margin. We will also see higher factory loading as a result of the significantly higher volume that we have there. And Q4, as a result of all of the things that we just discussed, also has a very significant portion of immersion in there. So at that stage, we have five very significant developments that indeed will position us such that we are going to approach the over 50% guidance or indication that we've given for gross margin in 2020.

Peter, I think there was one question on the --

A - Peter Wennink {BIO 1852674 <GO>}

Yeah, I think on the capacity. I think we'll be very hard stretched to get up more than 35 systems. I think this 30 to 35 is a little bit depending on the speed of the ramp and the issues that we are encountering on the new model, the C. We'll just stick to 30 to 35. I think 35 is the max what we can do next year.

Q - Janardan Menon {BIO 1718725 <GO>}

Got it. Thank you very much.

Operator

The next question comes from Mr. Andrew Gardiner. Please state your company name, followed by your question.

Q - Andrew Gardiner {BIO 7137663 <GO>}

Good afternoon. It's Andrew from Barclays. Thanks for taking the question. Peter, if I could just go back to some of the comments you were making on logic, in particular around fourth quarter and into 2020, I can understand visibility is less so on the memory side, but it seems much greater in terms of logic. If that 4Q increase is indeed incremental rather than pull forward, how are you thinking about logic demand into 2020, given the continued move down the process node laddered by foundry and microprocessors? Any further insight there would be helpful. Thank you.

A - Peter Wennink {BIO 1852674 <GO>}

Yeah, I think answering that question, I also want to go back to last year. We basically said EUV has turned the corner. And I said, I think, on the earlier occasions that I believe 2018 was a very significant year for a simple fact that the confidence that our customers had in EUV as the key enabler for next-generation device innovations, that confidence got to a much higher level. Now, with the 3400C and the results that we're seeing now, I think that has only strengthened. So when you look at the road maps that our customers are now presenting to us, we very clearly see an acceleration. And you can imagine that -- you can imagine that there are -- if you look at the end markets, which is not only high-power computing, the mobile market, but it's much -- it is much wide (technical difficulty) are actually increasing looking at a competitive edge in a growing market, a much wider application space. And I think this is what drives the road maps of our customers. And actually the road maps of our customers are more aggressive because of EUV and because that it works. They see their results today. So this is why I believe that what we're currently seeing is incremental and I think has basically a runway. This is -- and it makes sense. If you look at -- we already [ph] have a production technology that they can apply in terms of the innovation of the next-generation nodes that their customers need. So it is the -- I think it is the more aggressive road maps that our customers are showing us are underpinning why I believe this is more sustainable.

Q - Andrew Gardiner {BIO 7137663 <GO>}

Thanks very much.

Operator

The next question comes from Mr. Joe Quatrochi. Please state your company name, followed by your question.

Q - Joe Quatrochi {BIO 18961101 <GO>}

Thanks. It's Wells Fargo. I was wondering if you could talk a little bit about the demand you're seeing in China? And maybe can you help us understand as part of the -- in the memory side, the $1 billion of strategic revenue that you expect to recognize this year, how much of that has been recognized this year? And then how do we think about the

trade negotiations between the US and China may be impacting the timing of equipment installations there?

A - Peter Wennink {BIO 1852674 <GO>}

Yeah. I'll just make some -- just writing down your questions. Yeah, so I think on the memory side, and especially China, you have to realize that these are greenfield companies creating greenfield fabs, ramping their first nodes, their first device generations, and they need a certain level of output capacity that they need to put in place. That's happening this year, and that's very strategic. That will happen. And of the $1 billion, half is China EUV roughly. And it doesn't matter that much or how it's spread over the year, but that's roughly what it is, and that is just happening. It's -- we're not -- that's not waning. That's not increasing. It's just execution according to plan, like we said last quarter.

And I think the trade negotiations, they are what they are. And currently, there is no limit on what we can ship to China, which is basically DPV, which is 15-year-old technology, and we've been shipping that for a long time, more than 10 years, to China, and that's what we still do. So I don't know where trade negotiations will end up and I think we are in a stage where we know it's going on, but business as usual, the customers want the machines, we are able and capable and we are allowed to ship those system, so we will.

Q - Joe Quatrochi {BIO 18961101 <GO>}

Okay, that's helpful. And then just a quick follow-up. Could you give us your thoughts on how we should think about free cash flow for the remainder of the year?

A - Roger Dassen {BIO 15064806 <GO>}

Free cash flow clearly is very back loaded. If you look at the way sales are composed this year, the sales are back loaded, and therefore, free cash flow is also very much back loaded. That is also the result of the fact that on EUV, we have a payment schedule with our customers which is very back loaded. And as a result of that, you really will see that the second half, and particularly Q4, will be very, very cash rich and there will be a very significant generation of free cash flow. But all of it will be very back loaded in this year.

Q - Joe Quatrochi {BIO 18961101 <GO>}

Thank you.

Operator

The next question comes from Mr. Stephane Houri. Please state your company name, followed by your question.

Q - Stephane Houri {BIO 3899118 <GO>}

Yes, good afternoon. So this is Stephane Houri from ODDO. I have a question about EUV again. I'd like to discuss a bit about your lead times and to understand on EUV specifically and understand what is the limit that you need to receive the orders from your customer

to make sure that you will be in the range of 30 to 35 machines in 2020. And the short follow-up is about the OpEx that keep on rising. Do you think you will continue on that trend going forward for the rest of the year and also for 2020? Thank you.

A - Peter Wennink {BIO 1852674 <GO>}

Yeah, I will answer the question on EUV lead time and Roger will answer the question on the OpEx. On the lead time, there is an order lead time which we give our customers of about 18 months. And now having said that, we are negotiating with our customers from time to time, and they don't always hold to the 18 months. That sometimes depends on some terms and conditions that are not that significant, but we only have a deal when you have a signature. So -- but at -- the lead time is 18 months. It was 24. We're driving it down. We have to because you have to realize that it's pretty difficult also for our customers to guess what they need in terms of capacity ramp and the size of the capacity ramp 18 or 24 months out, nobody knows. So it is essential that we keep reducing the cycle time in the supply chain and the cycle time in our factory, so we make sure that we can deal with that flexibility.

We don't put a limit to it. It's not that if you don't give an 18-month order, you won't get the slot because we have other ways to secure the shipment, and it's basically knowing that we do the installation inspections when the factory is built, when the factory is finished. We work together with suppliers of the equipment that is attached to our tools. We work together with the suppliers and actually making all the facilities and all the piping and everything that goes with a semiconductor fab. So we know that customers are realistic and it's real that they are planning those EUV tools. And that gives us a confidence that while some customers might not adhere to the 18 months for all kinds of commercial reasons and that they sign the orders a bit later, the tool will ship and that's how it works.

A - Roger Dassen {BIO 15064806 <GO>}

On OpEx, as you know, two main components in there: SG&A -- SG&A, as you would have seen, is fairly consistent over the quarters. If you look at 2018, 2019, it's fairly consistent and the guidance that we've given for next quarter, EUR125 million, and that's the number that I'm pretty comfortable with that we're -- that we'll be able to keep at that level for a little while. And as it relates to R&D, you're absolutely right, we've pushed down the accelerator last year on R&D. We've indicated why. So this is on the pulling-in of the Low NA program, really accelerating that program, again, the fact that we're now talking about the EUV, the first EUV, 3400C shipments in this quarter, and the fact that we've been able to, in essence, pull that in with a year, I think, is a result of that effort, and we'll continue to speed up in that process in the Low NA development. High NA is a big-ticket item, obviously, in our R&D, and also the continued development of multi-beam. So those are the three main categories as a result of which we told you last year we're pushing down the accelerator.

What we've guided for next quarter, EUR495 million, I think it's reasonable to assume that that's a number that you will also see in Q4. And then, gradually, you will see with -- and expect a development of our business. I would expect that, let's say, at the second half of

2020 that you will see us get back gradually to the 14% that we've guided at the Capital Markets Day. That's the current plan.

Q - Stephane Houri {BIO 3899118 <GO>}

Okay. Thank you. That's very clear.

Operator

The next question comes from Mr. Sandeep Deshpande. Please state your company name, followed by your question.

Q - Sandeep Deshpande {BIO 3869012 <GO>}

Yeah, hi. My first question is on the EUV tools, Peter. I wanted to slightly look longer term rather than 2020 where everybody is focused on. How do you see -- you've talked about this in your Capital Markets Day, but do you see TSMC and the foundry market coming back in the following year as they begin to add more capacity in 2021? And what do you think is going to be your long-term capacity for EUV tools post this 2020, which is the big initial ramp-up of EUV? And then secondly, when we -- Roger, my question to you on the gross margin, can you just -- in your opening remarks, you said that your gross margin in the fourth quarter is going to be higher than 50% or is it going be close to 50%? I just was trying to clarify on that one. Thank you.

A - Peter Wennink {BIO 1852674 <GO>}

Okay. Let me say, I think, on the longer-term EUV tools, what -- EUV tools will be first used, let's say, at the industry 7 nanometer node, as I said, layers ranging anywhere from within [ph] 7, 8 to 12, it depends on what customers are actually doing it, with a tendency to go up. But then, the next node, which -- industry 5, that's a significant increase. I think you'll see likely more than 20 EUV layers. So yes, that will of course create a demand for more EUV tools. However, we also have a productivity increase road map that should deal with part of it. But it cannot only be taken up by productivity improvements, so we need more EUV tools. This is why we have the capacity of around 45 units in our factory.

If you look at our Capital Markets Day presentation, then with our mid-market scenario that's -- this is probably what we would need, taking into account the higher productivity. Now, if it turns out that the end demand -- when I talk about the customer, customer end demand is even stronger, then there are scenarios where we have to go over 45. We are not planning that yet. I think we have some time in terms of square meters that we need to build then because then we need to just extend the factories. We're not at that point yet, but we will watch that closely. But currently, I would say 45 units for a system with higher productivity capability, that should be sufficient for next couple of years.

Q - Sandeep Deshpande {BIO 3869012 <GO>}

Thank you, Peter.

A - Roger Dassen {BIO 15064806 <GO>}

And Sandeep, on the -- on your question on the gross margin, what I said in the introductory comments was that the Q4 gross margin approaches our 2020 target of greater than 50%, so the 2020 target is greater than 50%. It will approach that in Q4, which you should read as high 40s therefore.

Q - Sandeep Deshpande {BIO 3869012 <GO>}

Thank you.

Operator

The next question comes from Krish Sankar. Please state your company name, followed by your question.

Q - Krish Sankar {BIO 16151788 <GO>}

Hi. It's Krish from Cowen. Thanks for taking my question. I had two of them. First one -- both on 2020. First one for Roger. If you look at next year, it looks like you're going to do EUR4.2 billion to EUR4.4 billion or so in EUV revenue. Is it (inaudible) assume that whole revenue stream should come in at a 40% gross margin or is 40% more the exit run rate for next year? And then a question for -- a follow-up for Peter. If your customer mix and demand is similar in 2020 as in 2019 and you're shipping more EUV units, should we assumed DUV units start coming down in 2020 because of more EUV or you think that transition is still further down the road?

A - Peter Wennink {BIO 1852674 <GO>}

Yeah. So to answer that question, I think it's further down the road. Next year, you will still see a very clear mix. Don't forget -- let's take an example. There are logic makers that have said, we're going to ramp a 7-nanometer product in 2021, which means they need the tools in 2020. But still, they're ramping capacity of the previous nodes, which is real capacity that they need to ship. So there'll be a bit of a mix next year. I -- at 2020 -- I don't think I said that the 2020 EUV mix is going to be similar to 2019 because that is dependent on, I think, the success, you could call it, or the demand for DRAM in the next year, which is a bit still needs to be proven, like I tried to explain earlier.

A - Roger Dassen {BIO 15064806 <GO>}

But the margin that we've given for EUV for 2020 is 40%. That's the margin that we've indicated and we're comfortable that we'll get there in 2020.

Q - Krish Sankar {BIO 16151788 <GO>}

Thanks, folks.

A - Peter Wennink {BIO 1852674 <GO>}

Hello? Next caller?

Operator

The next question comes from Mr. John Pitzer. Please state your company name, followed by your question.

Q - John Pitzer {BIO 1541792 <GO>}

Yeah, it's Credit Suisse. Thanks for letting me ask the question. Peter, as always, appreciate all the detail. I'm just kind of curious -- you talked about in your prepared comments that the non-EUV memory revenue for the back half of the year needs to be about EUR900 million. I'm kind of curious if you could help us understand the profile between Q3 and Q4, i.e., how important is a memory pickup to kind of your Q4 implied outlook? And do you think the current run rate is kind of, for better or worse, a bouncing-along-the-bottom run rate and the risk is timing for an upturn? Or could you actually envision the scenario where memory would actually go lower from these levels?

A - Peter Wennink {BIO 1852674 <GO>}

Yeah, it's a good question. So John, to answer the last one, I need a crystal ball because I don't know whether it can be lower or not. Is it the bottom run rate? Well, EUR900 million, annualized EUR1.8 billion for capacity in an industry that is growing and also looking at where logic is going, it's pretty tough to see that much lower than it is. Now, I think the spread of the EUR900 million, I don't have the exact details here, but I think it's about half-half. I mean, it's not that much different. I'm looking at --

Q - John Pitzer {BIO 1541792 <GO>}

Yeah.

A - Peter Wennink {BIO 1852674 <GO>}

I think it's about half-half. So it's not skewed to one of -- to Q3 or Q4. But by any means, EUR900 million for six months or EUR1.8 billion on an annualized basis for capacity -- for bit capacity in litho is not a very large number, if you annualize it. So that's -- actually, that's a low -- let's say, relatively low number. Now is that a bottom? I don't know. I don't know what is going to happen. But like I said earlier, on the positive side, customers are also changing their wafer output plans to the downside. So all these things will of course help. It's like with every memory cycle, you have to grind through it and lowering CapEx, and in this particular case, which is different than previous cycles, as you know, turning or closing the faucets here basically slowing down on the wafer starts, that is something that we haven't seen before. All these things will help. So I'm not that pessimistic on the length of this downturn, this memory downturn. It will turn, whether it's the end of the year or beginning of next year, I don't think it's going to last hell of a lot longer.

Q - John Pitzer {BIO 1541792 <GO>}

That's helpful, Peter. For my follow-up, I just wanted to go back to the impact of improving productivity on EUV tool shipments. It's pretty obvious that in the memory space, DRAM space, there should be a pretty high correlation as productivity goes up, economics make more sense, and even intra-node insertion of more layers seems like very plausible for DRAM. But I'm kind of curious, on logic foundry side, just given that there is sort of a design cycle time for 5 nanometers and 7 nanometers, if you start to exceed productivity targets, does that actually drive more tool units or fewer tool units? Because my guess is

intra-node insertion would be a much more difficult timely, costly thing for your customer -- customers' customers. And are we still focused on units because if productivity is going up, I'm assuming you're going to get better ASP. So should we be more focused on revenue target for litho instead of unit target -- for EUV instead of unit target?

A - Peter Wennink {BIO 1852674 <GO>}

Yeah, I'll let Roger comment on the last part. Yes, I think when you look at customers and the EUV uncertainty that they have seen over the last couple of years, the fact that they actually have changed layer adoption of EUV as we went. As they gained more confidence and got more information out of the R&D, they actually changed the layer counts. It wasn't stable. It actually changed. And actually, there's a tendency to go up. So that proves that customers do take -- they have alternatives. Not that they're completely developing two separate techs; I think there is some interchangeability there, where they can swap certain layers to EUV if the economics make sense. I think it's taken into account in their design process. That's what we've seen, and although why, as you know, this trend that we've seen by adding more layers could not have happened and we're seeing it. So it means that they're taking account of it and they're designing probably in a manner where they have some flexibility to either -- to do either or.

A - Roger Dassen {BIO 15064806 <GO>}

And John, as it relates to your last comment, that was music to my ears because you're absolutely spot on. I think more and more we need to look at the EUV business not in terms of units but in terms of the euro value that is attributed to that because you're absolutely right, the number of units is meaningless to the extent that you see the very significant uptick that we've been able to demonstrate in productivity and then translates into higher ASPs. So that's why on a go-forward basis, I do believe that we all need to think much more in terms of EUV revenue rather than EUV units.

Q - John Pitzer {BIO 1541792 <GO>}

Thanks guys.

Operator

The next question will come from Mr. Dominik Olszewski. Go ahead please and please state your company name.

Q - Dominik Olszewski {BIO 19825364 <GO>}

Hi, I'm from Morgan Stanley, and good afternoon. Thanks for taking my question. As you mentioned that Q4 will be a larger quarter with key focus on execution along supply chain, I appreciate that obviously building the tools requires a lot of complicated steps, but just curious whether there is any particular color on specific aspects of execution that have greater risk than others in Q4 that we should watch for? And then I have just a quick follow-up.

A - Peter Wennink {BIO 1852674 <GO>}

Yeah, I think we are introducing several new features on the 3400C which includes -- it ranges from optics to laser alignment systems to the module vessel, which we're using to create EUV plasma. It's all of the above and then all needs to come together at the right time, so when you have one of these components a few weeks later than a few weeks behind the shipment schedule. So this is what -- and it is normal when you introduce a new system which has quite a significant number -- a higher number of new parts in it. So this is what it is. It is -- it can be all of the above and we just need to make sure that the suppliers which we know, I just mentioned them, source-related, laser-related, optics, they're all ramping as fast as they can. They are at their maximum capacity. And of course when -- with a new product, things don't go as planned because it takes a little bit longer to ship to us, then we have a delay. And that's pretty normal with this complex technology, but we're pushing them. We're sitting on top, but you have to take into account there is a level of risk there that we will -- might lose as a few systems that we need to push into January 2020.

Q - Dominik Olszewski {BIO 19825364 <GO>}

Okay, understood. This is a nice specific kind of math than just broader kind of (inaudible). Understood.

A - Peter Wennink {BIO 1852674 <GO>}

Yeah.

Q - Dominik Olszewski {BIO 19825364 <GO>}

And then secondly, from your vantage point, I'm curious whether you have thoughts on DRAM? And specifically you've really quantified your perspective on DRAM utilization rates. Whether you've seen anything and have you quantified them?

A - Peter Wennink {BIO 1852674 <GO>}

Well, we're seeing certain things, but we're not in customer fabs although we have some level of information, and I don't think we should mention on this call any utilization rates or our assessment of utilization rates of our customer. That's pretty confidential. But it's been their statements also that is they -- basically they have lowered their wafer starts, which is true. We can -- our data that we see actually confirm this. So that's what it is, and I think that's a good sign. But how much it is, I don't think we should discuss this in this call.

Q - Dominik Olszewski {BIO 19825364 <GO>}

Okay, understood.

A - Skip Miller {BIO 20244900 <GO>}

Ladies and gentlemen, we have time for one last question. If you are unable to get through on this call and still have questions, please feel free to contact the ASML Investor Relations department with your question. Now operator, may we have the last caller, please?

Operator

Of course, sir. Ladies and gentlemen, the last question will come from Mr. Amit Harchandani. Please state your company name, followed by your question.

Q - Amit Harchandani {BIO 16134002 <GO>}

And thanks for letting me on. Two if I may from my side. Firstly, since -- it would be helpful to get an update from your side on how the E-beam side of business is coming along in terms of its trajectory into the second half of the year and into 2020? And then I have another question, please.

A - Peter Wennink {BIO 1852674 <GO>}

Yeah, I think not much different, as we said last quarter. We are on track to ship the first systems to R&D sites of our customers, and I talk about the multi-beam systems, which actually means we should ship multi-beam systems next year in volume to the market. In that sense, it's an update and update is what we said last quarter, there is no change there. The plan is still intact.

Q - Amit Harchandani {BIO 16134002 <GO>}

Okay. And secondly, if I may, we obviously have a macroeconomic backdrop with the trade wars between US and China. You clearly did not design a company to be supplying separately to US and China. But given in terms of the opportunity going forward from China longer term, is there anything strategically or conceptually you need to think of in terms of how you're structured as an organization or as a supply chain to ensure you can keep on supplying both of these key geographies going forward. I guess it's a bit hypothetical but certainly something to consider given what you've seen over the past one year.

A - Peter Wennink {BIO 1852674 <GO>}

I think, I would say, that's a very good question because, one, the answer is, it's too early. We don't know how this is going to pan out. This is -- overall, it is a concern. It's more a strategic concern that we need to start thinking of, just like you said. And I think it's absolutely not the time to take drastic decisions because I don't know how this is going to pan out, but we'll follow it very closely. And you are right, it is our intention to service our customers, and our customers, they are wanting to place orders and we're wanting to -- we are completely willing and wanting to ship those orders. And unless there are legal boundaries that we cannot cross, and we will not, then we will keep doing what we are doing. But you are right, speculating where this might end up is a bit dangerous because it's definitely too early to start thinking of any big strategic organizational moves into another direction to make sure that we can ship to our customers. It's a bit of a wait and see.

Q - Amit Harchandani {BIO 16134002 <GO>}

Thank you, Peter.

A - Skip Miller {BIO 20244900 <GO>}

Now on behalf of ASML, I'd like to thank you all for joining us today. Operator, if you could formally conclude the call, I would appreciate it. Thank you.

Operator

Ladies and gentlemen, this concludes the ASML 2019 second quarter financial results conference call. Thank you for participating. You may now disconnect.