

Company Name: AMD
Company Ticker: AMD US
Date: 2018-04-25
Event Description: Q1 2018 Earnings Call

Market Cap: 9,410.27
Current PX: 9.71
YTD Change(\$): -.57
YTD Change(%): -5.545

Bloomberg Estimates - EPS
Current Quarter: 0.096
Current Year: 0.387
Bloomberg Estimates - Sales
Current Quarter: 1589.300
Current Year: 6307.522

Q1 2018 Earnings Call

Company Participants

- Laura Graves
- Lisa T. Su
- Devinder Kumar

Other Participants

- Vivek Arya
- Mark Lipacis
- John William Pitzer
- David M. Wong
- Stacy Aaron Rasgon
- Timothy Arcuri
- Harlan Sur
- Srimi Pajjuri
- Charles Long
- Ambrish Srivastava
- Hans Mosesmann
- Blayne Curtis
- Auguste Richard

MANAGEMENT DISCUSSION SECTION

Laura Graves

GAAP and Non-GAAP Financial Measures

We will refer primarily to non-GAAP financial metrics during this call, except for revenue, gross margin and segment operational results, which are on a GAAP basis

The non-GAAP financial measures referenced are reconciled to their most directly comparable GAAP financial measure in the press release posted on our website

Lisa T. Su

Business Highlights

Revenue, Gross Margin and New Products

- We started 2018 with excellent financial results, as we delivered our third straight quarter of double-digit y-over-y revenue growth
- First quarter revenue of \$1.65B grew 40% y-over-y

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- Gross margin improved 4 percentage points and EPS increased significantly based on very strong operating and net income growth
- Our strong first quarter financial results demonstrate that our long-term strategies paying off
- We are executing consistently on our product roadmap
- Our customers are increasingly adopting our new products and we are strengthening the foundation of AMD with the right long-term investments

Computing Segment

Ryzen Processor Shipments

- Looking at our Computing and Graphics segment in the quarter, excellent momentum for our premium product portfolio drove double-digit y-over-y and sequential revenue growth
- Client processor sales were significantly better than seasonality, as Ryzen processor shipments grew y-over-y and sequentially
- Ryzen processors accounted for 60% of our overall client processor revenue, up from the low-40s in Q4, with desktop and notebook client processor ASPs increasing

Product Execution

- Product execution was strong in the quarter, as we expanded our Ryzen processor portfolio with new high-performance products
- We launched the first AMD Ryzen desktop APUs, combining the power of our Zen CPU and Vega GPU on a single chip, delivering the world's most powerful graphics on a desktop processor, with the Ryzen desktop 2400G
- Initial sales were strong in the component channel, which contributed to the significant Ryzen processor sales increase in the quarter

Ryzen Desktop CPUs and Mobile Unit

- Additionally, we began shipments of our second-generation Ryzen desktop CPUs based on a 12-nanometer Zen+ architecture, delivering outstanding gaming performance and best-in-class multiprocessing leadership for gamers, creators and hardware enthusiasts
- Ryzen mobile unit shipments also ramped in the quarter ahead of OEM system launches planned for Q2, driving double-digit increases in our mobile processor unit shipments, both y-over-y and sequentially
- Initial Acer, HP and Lenovo platforms had strong sales in the quarter, and Dell released new notebooks and 2-in-1s in early April that further expanded our Ryzen portfolio

Ryzen PRO Commercial Notebooks

- Additionally, our first Ryzen PRO commercial notebooks are expected to launch in Q2
- Dell, HP and Lenovo are all planning to offer AMD-based commercial notebooks based on the excellent performance and features of this new APU

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- Overall, the number of Ryzen-based systems from OEMs continues to grow
- In Q2 alone, we expect 25 new Ryzen-based consumer and commercial notebooks to launch, and our customers remain on track to bring a total of 60 Ryzen-based systems to market by the end of the year

Graphics

Radeon Vega and 500 Series Channel Sales

- In Graphics, we delivered strong y-over-y revenue growth as ASP and unit shipments increased significantly
- On a sequential basis, revenue increased and we outperformed seasonality with strong Radeon Vega and 500 series channel sales, driven by both gaming and blockchain demand
- Gaming continues to be a top priority for us, with growth being driven by the expanding number of PC gamers and increasing demand for graphics performance to deliver more immersive experiences
- Demand for our Radeon series of graphics products remained strong as new AAA game titles, such as Far Cry 5, were released

Radeon Esports Experience

- We continued our investments in gaming software and released our Radeon esports experience, providing a performance uplift on popular esports games such as Fortnite, PUBG, DOTA 2 and Overwatch
- We continue to see significant demand for Radeon Vega graphics family, as customers accelerate their ramps based on increasing availability of our high-performance GPUs, with more supply coming to market

AMD Radeon Pro Workstation Portfolio Offerings

- In Professional Graphics, HP and Dell both expanded their AMD Radeon Pro workstation portfolio offerings in the quarter, including HP's launch of new ZBook thin and light mobile workstations powered by the AMD Radeon Pro WX 3100
- Our machine learning strategy continues to gain momentum
- Mega data center partners are validating and testing our Radeon Instinct MI25 for deep learning applications, and we introduced our Radeon Open Compute ecosystem, ROCm 1.7, a top to bottom open solution software stack for machine learning
- I'm also happy to report that our next-generation 7-nanometer Radeon Instinct product, optimized for machine learning workloads, is running in our labs and we remain on track to provide samples to customers later this year

Enterprise, Embedded and Semi-Custom Segment

Revenue

- Turning to our Enterprise, Embedded and Semi-Custom segment
- Q1 revenue decreased y-over-y, due to lower semi-custom revenue, as expected, based on maturity of the current game console cycle, and increased sequentially

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- In the quarter, Microsoft announced support for our industry-leading Radeon FreeSync technology in their Xbox One S and Xbox One X consoles, delivering stutter-free gaming experiences
- Server revenue increased double-digit percentage sequentially, across mega data center, OEM and channel customers
- EPYC processor unit shipments nearly doubled from the previous quarter

New Design Wins

- We continued to grow our data center momentum with dozens of new design wins across key workloads, including HPC, storage, virtualization and cloud applications
- Dell EMC launched three of their newest PowerEdge platforms, powering virtualized storage area networks, hybrid cloud applications, dense virtualization and big data analytics with EPYC 7000 series processors
- Recently, supercomputing leader, Cray, announced that it added EPYC processors to its Cray CS500 line of HPC offerings
- The Cray announcement tops off a very active quarter in HPC and big data, building on workload momentum in automotive simulations, university clusters and healthcare

Key Production Milestones

- And multiple mega data center customers pass key production milestones as they look to expand their deployments of EPYC-powered instances this year
- To-date, there are more than 40 EPYC-based platforms in market, and we are actively working with OEMs, system integrators and channel partners to increase deployment to end customers
- We remain focused on achieving mid-single-digit server unit share by the end of 2018
- Our Embedded business delivered increased revenue, unit shipments and ASPs, y-over-y and sequentially, as we introduced two new product families: the EPYC Embedded 3000 and the Ryzen Embedded V1000 processors to enable a new class of thin client, IoT and other embedded solutions

Closing Remarks

In closing, we are extremely pleased with our first quarter financial results and strong product execution

We believe 2018 is shaping up to be an excellent year for AMD, with continued revenue growth and margin expansion driven by significant demand for our high-performance Ryzen, Radeon and EPYC products

Looking forward, we are confident that we have the right long-term strategy to deliver sustained revenue and profitability growth

The market TAM in high-performance computing will grow to over \$75B over the next few years, including high-growth segments like gaming, data center, machine learning and artificial intelligence

We have built a strong execution engine, and we will continue to make significant investments in hardware and software to deliver an even more compelling roadmap for our customers in 2019 and beyond

Devinder Kumar

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Financial Highlights

Revenue and Gross Margin

- Q1 was a strong quarter for AMD
- Y-over-y, we grew revenue 40%, expended gross margin by more than 400BPS, significantly improved net income and EPS and achieved GAAP and non-GAAP net profitability
- Total revenue of \$1.65B was driven by strong demand for our new products, with Ryzen and Radeon products growing double-digit percentage year-on-year, Ryzen sales coming in higher-than-expected and EPYC server processors ramping
- Gross margin was 36%, up 420BPS year-on-year, driven by a higher proportion of revenue from new products

Operating Expenses, Income and Adjusted EBITDA

- Operating expenses were \$446mm compared to \$371mm a year ago
- Operating expenses were 27% of revenue, lower than our prior guidance of 28%, and down 4 percentage points from 31% a year ago, as we continue to make strategic R&D investments, launch new products and invest in our multi-generation product roadmaps
- Operating income was \$152mm, up sharply from \$34mm a year ago, and operating margin was 9%, up from 3% a year ago
- Net income was \$121mm or diluted earnings of \$0.11 per share as compared to a net income of \$2mm a year ago
- Adjusted EBITDA was \$196mm compared to \$68mm a year ago and on a trailing 12-month basis adjusted EBITDA was \$496mm

Q1 Business Segment Results

Computing and Graphics Segment

- Now, turning to Q1 business segment results
- Computing and Graphics segment revenue was \$1.12B, up 95% y-over-y due to strong sales of both Radeon and Ryzen products
- Our Ryzen offerings outperformed our expectations in Q1, accounting for approximately 60% of client processor revenue and contributed to strong sequential double-digit percentage growth in client revenue
- The strength in Radeon products was driven by both gaming and blockchain demand
- We believe blockchain was approximately 10% of AMD revenue in Q1 2018
- Computing and Graphics segment operating income was \$138mm compared to a loss of \$21mm a year ago
 - This significant turnaround was due to strong revenue growth and improved operating expense leverage

Enterprise, Embedded and Semi-Custom

- Enterprise, Embedded and Semi-Custom revenue was \$532mm, down 12% y-over-y, with lower semi-custom revenue partially offset by higher server and embedded revenue

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- As a reminder, revenue in both Q1 2018 and Q1 2017 include semi-custom revenue related to quarter-end inventory, associated with non-cancelable purchase orders as required under the ASC 606 revenue accounting standard
- EESC operating income was \$14mm, down from \$55mm a year ago, primarily due to a licensing gain in Q1 2017, as well as increased operating expense investments in our data center business

Balance Sheet

Cash, Cash Equivalents and Marketable Securities

- Turning to the balance sheet
- Our cash, cash equivalents and marketable securities totaled \$1.04B at the end of the quarter, down from \$1.18B in Q4, and up from \$943mm in the year ago quarter
- FCF was negative \$132mm in Q1
- Inventory was \$715mm, up slightly from the prior quarter
- Total principal debt, including our secured revolving line of credit, was \$1.7B
- We deployed cash to repurchase \$14mm of debt in Q1, as we continue to reduce term debt and interest expense

Financial Outlook

Revenue

- Now, turning to our financial outlook: For Q2 2018, AMD expects revenue to be approximately \$1.725B, +/- \$50mm
- This is an increase of 50% y-over-y, driven by the growth of Ryzen, Radeon, EPYC and semi-custom revenue
- On a sequential basis, we expect Q2 revenue to benefit from continued strength in our Ryzen and EPYC product families and a seasonal increase in semi-custom revenue, partially offset by a modest decline in graphics due to blockchain
- As a reminder, for comparative purposes, Q2 2017 revenue was \$1.15B under the ASC 606 revenue accounting standard

Gross Margin and Operating Expenses

- In addition, for Q2 2018, we expect non-GAAP gross margin to be approximately 37%, non-GAAP operating expenses to be approximately \$460mm or 27% of revenue, non-GAAP interest expense, taxes and other, to be approximately \$35mm and inventory to be up slightly on a sequential basis in support of higher revenue
- Our financial progress in Q1 is attributable to the ongoing strength of Radeon and Ryzen products, as well as continued early contributions from our EPYC products
- Our business is strong, and we look forward to continued revenue growth, margin expansion and increased profitability y-over-y
- Based on the strength of our business momentum, for the full year 2018, we now expect revenue to increase by mid-20s percent over 2017, driven by the ramp of our new products

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- Blockchain revenue to be mid to high-single-digit percentage of revenue for 2018
- Non-GAAP gross margin to be greater than 37%

Summary

In summary, Q1 was excellent

We are pleased with the momentum in our business execution and strong financial results, which we believe lay the foundation for a strong 2018

We are focused on delivering our long-term target financial model, as we execute our multi-generational roadmaps and introduce and ramp high-performance computing products

QUESTION AND ANSWER SECTION

<Q - Vivek Arya>: Congratulations on the strong results, especially on getting to the double-digit op margins in your Computing and Graphics segment. it's been awhile since we saw that.

For my first question, Lisa, on EPYC server sales, you mentioned they doubled sequentially. If you could give us some sense of what the magnitude is, so we at least have some ballpark sense of where you are right now. But importantly, what are the remaining pushbacks from customers, in terms of what they would like to see before they adopt EPYC in a more meaningful way, is it just a matter of time? Is it a performance or a pricing gap, or what else do you need to deliver on to get EPYC to a more meaningful level?

<A - Lisa T. Su>: Yeah, absolutely, Vivek. Thanks for the question. So look, on EPYC, we did make a very nice progress in the quarter. I think when you look at it from a revenue standpoint, it's strong double-digit percentage. There's – we certainly view that the units increasing is also a very positive thing. The traction actually is across all areas. So we saw traction in Enterprise sort of end user deployments. We saw some channel and system integrator deployments as well as hyperscale deployments.

And our goal is to get to mid-single-digit share by the end of this year. I think we are making good progress towards that. What we're working with customers now is just going through their various stages of qualifications. So they go from proof-of-concept to initial deployment then to large volume deployment. And we're in that initial deployment phase.

And so, I think we're making good progress, and it is – there are no real pushbacks other than just time going through the qualification process and working with them in their environments to make sure that we get fully qualified.

<Q - Vivek Arya>: Got it. And as a follow-up, if I look at your server ASPs in the past, they were sort of in the \$300 to \$400 range, well below what your competitor had. As you look at a lot of these engagements that you're participating in now, how should we think about pricing trends that you're seeing in that market? Are you able to sell in a higher value segment than you were able to do in the past?

<A - Lisa T. Su>: Yes. So Vivek, I think the very strong part of our roadmap right now is we're really playing across the entire portfolio. So from, let's call it, the low-end of the server market, the entry-level, all the way through the high-end 2P SKUs. So the pricing that we're seeing in the market is very reasonable. From our standpoint, they are – we are providing value to the customer, but they're also very accretive to the margins of our overall business. So the pricing environment is good.

<Q - Mark Lipacis>: First question on the Ryzen notebook effort, it sounds like it's really starting to hit its stride. And I was hoping you could give us a little bit more color, which segments does it seem to resonate with, to what extent, is it a commercial vs. a consumer product? And do you think that the Ryzen notebook opportunity, is it bigger than the desktop opportunity ultimately in your minds? Thank you.

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<A - Lisa T. Su>: Yes, Mark. So look, we're making very good progress on Ryzen. I think we're very pleased with Q1 results, and then, what we see going into Q2 in H2. It is true that up until this quarter, much of our progress has been in the channel and in the desktop portion of the business. We saw a nice increase this quarter in notebooks and what it is is many of the OEMs are actually launching systems in Q2. And with that, we had – they're basically building up their production for Q2 launches.

What you're going to see in second quarter is a number of impressive premium consumer designs, thin and light designs that I think are representative of the strength of the product. And we will also see the first launch of the commercial systems from the top OEMs and the expectation is that the commercial notebooks will kick in in H2. Q2 is more of a consumer cycle.

But overall, I think we're seeing that the notebook OEM opportunity is a good one. We have strong design wins. The customers are working closely with us. We're doing a lot of work with retailers and the overall go-to-market to ensure that the notebook opportunity is important and notebook is larger than desktop overall.

<Q - Mark Lipacis>: Okay, great. That's helpful. And a follow-up, if I may. On EPYC, the product has been in the market for a while. I understand that you have to go through the testing phase, and then, pilot programs and initial deployments, and then, hopefully, larger scale deployments. How do you think or how should we think about the cadence of updates on this product? Is this a similar cadence that you would see on the desktop or notebook side? Thank you.

<A - Lisa T. Su>: Sure, Mark. So on the server side, the cadence of deployments does tend to be longer. I think we're well into the cadence. And so, I think the EPYC work with the OEMs, you saw the combination of that with HPE announcing in December, and then, Dell announcing in Q1, that will now move over into Enterprise customers who are then taking their systems into their labs and doing their initial deployments. So I think the cadence is over a number of quarters.

I will say for the first-generation EPYC, we're seeing really nice customer interest, and it's quite broad. And so, it is across Enterprise as well as the hyperscale customers. And we view this as a multi-generational play. So we're very excited about what EPYC can do over the next couple of quarters. But we also believe that this is the right investment to make with the customer set, as we bring out the second-generation of EPYC and the third generation of EPYC, obviously, it would go a little bit faster, because the customer set is familiar with our system.

<Q - John William Pitzer>: Devinder, impressive y-over-y gross margin growth in the March quarter of 400BPS. I'm just kind of curious, clearly, Ryzen has had a positive impact. Can you help break down the 400BPS year-on-year growth between kind of new products and the fact that semi-custom sort of declined as a percent of the mix pretty significantly from 2017 to 2018? And then, how do we think about the incremental margin leverage as EPYC comes in and perhaps Ryzen too?

<A - Devinder Kumar>: Yes, good question, John. Actually, if you look at it from a margin standpoint y-over-y, the semi-custom revenue was actually down, so that was helpful. But beyond that, if you look at the new products, fundamentally, the new products is what's driving the margin. Ryzen, EPYC, GPU Compute, which are all higher than corporate average, those are all driving the increase in the margin.

And as we get to the rest of the year as you observed, the momentum in the products is there for the new products. They're going to go ahead and contribute to the margin increase and that's why, from prior guidance, we just updated our margin to, say, maybe you said greater than 36% the last time, we updated to, say, greater than 37% this time for the year and that's fundamentally all with the momentum that we have for the new products.

<Q - John William Pitzer>: That's helpful, Devinder. And then, Lisa, as my follow-up, I appreciate kind of quantifying blockchain for both Q1 and for last year and also your commentary about it being it looks like down sequentially at least in embedded in your June guidance. I'm just kind of curious, just given how hard it is to track where these GPUs are really going, how do you get a sense of what's a blockchain application vs. something else, one?

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And two, do you see this as a viable long-term market or do you believe that as this market develops, it's going to have to move from proof of work to proof of stake which might just negate mining altogether? And if that scenario were to play out, how worried are you about sort of secondary cards coming back into the market and kind of hurting pricing either in H2 this year or into 2019?

<A - Lisa T. Su>: Sure, John. So look, on the blockchain there is a lot of discussion about this. From our standpoint, we stay very, very close to the customer set in the graphics space. And so, we spend time with the commercial miners as well as spending time with our partners.

And the way we look at this, our first priority when we look at allocation of graphics cards is to gamers. And so that's through OEMs, that's through system integrators, that's also working with key e-tailers to make sure that they are prioritizing the gamers segment and we're going to continue to do that. And so, that's one piece that we know well.

We also work directly with the commercial miners, and so, we see kind of what their forecasts are and they work with us and so that we have good visibility on. There is a piece that go through retail that is hard to tell whether that's gaming or mining, but we believe we have a good sense of what that is. So it is an approximation, but we think it's a good approximation of where we are.

And then, to your longer-term question, I do think the blockchain infrastructure is here to stay. I think there are numerous currencies. There are numerous applications that are using the blockchain technology. We don't see a significant risk of secondhand GPUs coming into the market. I think what you find is that, one, there are number of different currencies, and, two, a lot of these users that are buying GPUs these days are actually buying them for multiple use cases, both commercial and consumer. So they're not necessarily buying just for mining.

And I think for that reason, we do think this is a different cycle. That being the case, we do see a bit of volatility and that's why we are putting into our forecast for Q2 and H2 a little bit lower blockchain demand, but that's more than made up for by the other new products and the way the new products are ramping in the business.

<Q - David M. Wong>: Could you give us some idea of what your June guidance assumes in terms of sequential microprocessor sales growth compared to discrete graphics growth?

<A - Lisa T. Su>: Sure, David. So in our second quarter guidance, we're actually assuming that Ryzen and EPYC are up, and semi-custom is also up seasonally, and we expect graphics to be down modestly based on some of the blockchain demand.

<Q - David M. Wong>: Excellent. Could you give us an update on what new products you plan to launch through the rest of this year and next year? And when these are scheduled to come out?

<A - Lisa T. Su>: Sure. That's a lot, David, but let me say a couple things. I think, relative to our CPU business, I mean we are launching additional Ryzen-based products in H2. We just launched the second-generation Ryzen desktop in 12-nanometer and that launch has gone really well. I mean, we're very happy with the positioning and how customers are reacting to that. In H2, we'll have some commercial systems and some other updates to our Ryzen lineup that we will launch.

We have a 7-nanometer GPU based on Vega that we'll sample later this year. We have a 7-nanometer server CPU that we'll sample later this year. And then, obviously, we have a number of products that are planned for 2019 as well. So it's a very, very busy product season for us. But we're pleased with the sort of the execution on the product roadmap.

<Q - Stacy Aaron Rasgon>: Firstly, on OpEx, are you still looking for a 28% of revenue for the full year on a higher revenue base? And given that – if that's so, what areas are kind of key for investment on this as we go through the rest of the year and going forward?

<A - Devinder Kumar>: Yeah. Let me take that, and then, Lisa can add. So yes, we are targeting 28%. As you've seen, Stacy, we had a long-term target model of 26%, 30%. The year has started out well. We came in at 27% in Q1 and targeting around the same for Q2. But we are still in investment mode, and obviously, investing in R&D and the product roadmap. And Lisa can maybe add some of the details in terms of where we are investing in terms of OpEx.

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<A - Lisa T. Su>: Yeah. Sure, Stacy. So I think from the investment side, certainly, we're investing in R&D on the CPU and the GPU side, but a key focus for us is in software, and particularly, machine learning software. I think there's a high demand of people wanting to use our GPUs in the compute space. And so, we're increasing our investments in software around machine learning.

<Q - Stacy Aaron Rasgon>: Got it. Thank you. For my follow-up, I had a question on the ASC 606. I know last quarter you kind of gave some historicals for how that was a headwind vs. a tailwind vs. what would have been normal seasonality, particularly in semi-custom. Is the ASC 606 in Q2 – is that a headwind or tailwind on the guide? And how should we think about that as we go through H2 as well vs. what we would have seen without the accounting change?

<A - Devinder Kumar>: Yeah. Fundamentally, ASC 606, from a revenue standpoint, what happens is the seasonality and the profile of the semi-custom revenue changes. Some of the revenue that we used to get in H2 moved to H1, so I would say, it's a little bit more balanced between H1 and H2, as opposed to the peak revenue we used to see in Q3. So that is the primary effect on the profile of the revenue, not necessarily the annual revenue.

ASC 606 has not had any significant impact on our annual revenue. It's more of the profile of the revenue within the quarters. As far as impact is concerned, if you're comparing y-over-y, for example, in Q1 of 2018, semi-custom was down, because we had more revenue in Q1 of 2017, and in Q2, it is slightly up, but very balanced from where we see it from an overall standpoint.

<Q - Stacy Aaron Rasgon>: So last year in Q2, it was like – I forget how much, like \$75mm headwind vs. what would have been otherwise? Is it a similar amount of headwind this time in Q2 or is it less? Or is it a tailwind?

<A - Devinder Kumar>: I would say that it was a headwind last year. This year, from an overall standpoint, if I compare y-over-y, it is up slightly from where we were in Q2 of 2018. So if you're comparing Q2 2017 to Q2 2018, it's a benefit to the revenue in Q2 of 2018 in our guidance.

<Q - Timothy Arcuri>: I had two. I'm curious about your comments just now on blockchain, and I'm a little surprised to hear as you think that there would be limited risk that that product would come back into the market. Can you again go over why you think that is, because you're selling more of a general SKU, right? And then, I guess, also, how you handicap the potential for there to be some ASP effect on that too? I know you've captured some of the rising ASPs in the channel, so how do you handicap that looking out throughout the rest of the year? Thanks.

<A - Lisa T. Su>: Yeah. Absolutely, Tim. Look, so when you look at, I think, most people are comparing sort of this blockchain time period to the last one which was a couple of years ago and I think there are a couple of important differences. I think the first one is that there are multiple currencies and multiple applications that are being used. And what we've seen is that people who are mining do go from one currency to another depending on what's happening.

We're also seeing that many users, on both the commercial and consumer side, are actually buying GPUs for multiple use cases. And from that standpoint, again, we see that there is good demand for, not just blockchain, but for gaming, for the cloud and for those things as well. So I think it's a balanced assessment of where we are. I think the breadth of the blockchain applications and also the breadth of the customer base give us that belief.

Now, as you go forward, there's also a – when we look at the Graphics business go forward minus blockchain, we actually see a very good environment. We see a good environment for gaming growing, we see a good environment for GPU Compute growing, and frankly, on the gaming side, some of those users have not been able to get access to GPUs, and so, again, that's – those are all positives as we go forward.

And then, you had a second question, Tim?

<Q - Timothy Arcuri>: I did, yeah. I think you said that the 7-nanometer product is in the lab, and it's going to launch later this year. That's the product at TSMC, correct? And I guess, I'm just wondering on that front do you feel comfortable that you can get capacity from that vendor. Thanks.

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 Company Ticker: AMD US
 Date: 2018-04-25
 Event Description: Q1 2018 Earnings Call

Market Cap: 9,410.27
 Current PX: 9.71
 YTD Change(\$): -.57
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Bloomberg Estimates - EPS
 Current Quarter: 0.096
 Current Year: 0.387
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<A - Lisa T. Su>: So our foundry strategy is to use both TSMC and GLOBALFOUNDRIES on the first 7-nanometer product. We are using TSMC for that product and we have a very strong relationship with them. And so, we do see a good momentum on it from what we see, and I'm not concerned about capacity.

<Q - Harlan Sur>: And solid job on the quarterly execution. Just a follow-up on the semi-custom business, on the June quarter guide, you mentioned sequential growth in semi-custom. But if I look at your ASC 606 reconciliations for last year, it looks like the semi-custom business was actually down double-digits percentage points sequentially going from Q1 to Q2. So like-for-like on the 606, why the different shipment profile this year, Q1 to Q2?

<A - Devinder Kumar>: Yeah, I can explain that. So in Q1 of 2017, there was a strategic buy of wafers that we did in Q1 2017. So it had a bigger impact in Q1 2017. And then, the effect caught up in Q2. So the impact Q1 to Q2 was significant. This year, it's more balanced, and from that standpoint, when you compare y-over-y, Q1 to Q1, it's down, but Q2 to Q2, it's up. So there was a different profile in Q1 2017 just based on the way the wafers are purchased in 2017 as opposed to 2018 where it's a little bit more balanced.

<Q - Harlan Sur>: Great. Thanks for the insights there. Question for Lisa. Embedded solutions contributed to the y-over-y and q-over-q growth in EESC. I think that this is kind of an often overlooked part of the business, because embedded is nice, because it gives you guys exposure to kind of a diverse set of the market applications. Can you just help us understand where the team is seeing good demand traction in embedded and maybe give us a rough idea on kind of overall revenue contribution to EESC?

<A - Lisa T. Su>: Yes, Harlan. So yeah, embedded is a nice segment. You're absolutely right. I think it's a margin accretive segment to us. The end markets that we ship into there are thin clients, they are places where you need graphics for displays, so there's some embedded displays that we ship into there.

It's still a small business for us, but we actually believe, in addition to the goodness around Ryzen and EPYC, when we launch those products, Ryzen and EPYC embedded, we actually saw very strong interest from customers. And so, we think as the products strength in our PC and in our server business increase, they will also help that embedded solutions business overall.

So I would say it's still a small piece of the business, but we believe it will be a nice growing margin accretive portion of the business over the next couple of years.

<Q - Srini Pajjuri>: Lisa, a question on the ASPs. I think you said the ASPs went up because of the Ryzen mix improving. Could you give us some more color as to where Ryzen is in terms of mix? And then, with the Ryzen 2, do you expect that to be accretive to ASPs and margins?

<A - Lisa T. Su>: Yeah. So in terms of the client business, we saw units up overall. We saw ASPs up overall and they were up in both desktop and mobile. And when you look underneath that, I think what the main thing is we're seeing a larger mix of the business become Ryzen. So in Q4, we had stated that the Ryzen mix of the client business was kind of in the low-40s. And so, we had notebook, a lot of legacy product that we're still shipping and in desktop, we had some legacy product that we're still shipping.

As we move over to Q1, the notebook mix has mixed nicely into Ryzen, and the desktop is now mixed very nicely into Ryzen as well. So overall, that's what led to the ASP increase.

I think the second generation Ryzen is a very, very good product. I think it's – it actually – when you look at the first-generation Ryzen, we were very good on multi-threaded performance, but there were some detractors around single-threaded and gaming performance. I think the second-generation Ryzen is actually much more competitive on gaming performance. So we do see an opportunity for that to help us increase share in the desktop business, and certainly, that would be accretive to margin.

<Q - Srini Pajjuri>: Great. And then, one question on the server business, I guess, your target is to get to mid-single-digit share by end of this year, which is fairly gradual ramp. Just curious as to when you expect the 7-nanometer part to be available in the market and when that happens, do you see an inflection to your share gains or do you continue to expect gradual share gains? Thank you.

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<A - Lisa T. Su>: Yeah. So all of the sales this year will be around the current generation of Ryzen, and so, that gets us to the mid-single-digit share. 7-nanometer Zen 2 based product we'll sample later this year to customers and that will be in production in 2019, and we do believe that the adoption rate of the second-generation could potentially be higher than the adoption rate of the first-generation, mostly because customers will be more familiar with our systems and our products. And so, we'll see how it goes, but we certainly – our overall goals are ambitious in the server space. And so, this year, it's first-generation Ryzen; next year, we'll mix in the 7-nanometer second-generation – I'm sorry, first-generation EPYC, and next year, we'll mix in the second-generation of the EPYC products.

<Q - Charles Long>: I had a – my first question is on the competitive landscape in the AI space. So just wondering how you're thinking about your positioning, relative to not only your biggest competitor there in NVIDIA, but also new entrants that could potentially be working on custom solutions. And then, I have a follow-up.

<A - Lisa T. Su>: Sure. So the AI market is certainly growing very, very fast relative to the competitive landscape, we are a new entrant. I think our GPU Compute hardware is very good. I think we have a strong roadmap that we are putting in place for that. I think on the software side, we have more work to do, and we are making significant investments in some of the machine learning frameworks, such as TensorFlow and Caffe, and some of these key frameworks to ensure that we make it easier to adopt our solutions.

But we see this as a multi-year, really, opportunity for us. So GPU Compute will continue to be a focus area for us. We think we can be very competitive and we're going to continue to invest in this area.

As it relates to, let's call it, non-GPU solutions, I think there will – the landscape says there will be some ASIC solutions in the marketplace, but I view that as complementary to the GPU solutions. And from that standpoint, I think we have CPUs, we have GPUs, and then, we have the ability to connect heterogeneously to these other elements. So from our standpoint again, we see this as a market that very much fits our capability and we will continue to invest in it.

<Q - Charles Long>: Got it. Thank you. And then, my follow-up's on the upcoming shareholder meeting. I know one of the proposals is to increase the authorized share authorization by about 700mm shares. Obviously, my understanding is that that wouldn't be dilutive initially. But just wondering how you're thinking about potential uses of that share is.

<A - Lisa T. Su>: Yes. So you're correct. There is a proposal at the shareholder meeting. It is not going to be dilutive to begin with, and it's really good housekeeping. We don't have any particular plans at this point.

<Q - Ambrish Srivastava>: I had two questions. One was just a follow-up to what Lisa you were talking about on the machine learning side. When do we see – so just give us an update of where you are in traction and should we expect any meaningful revenues on that front from AMD in this year?

<A - Lisa T. Su>: Yes. So I think last year, we announced a partnership with Baidu to do software optimizations for machine learning. And we have several other partnerships with others in this area. So there's a lot of interest. I think the time for meaningful revenue – we will see some revenue in H2 that's part of the growth in the margin expansion story. And I think into 2019 and 2020, this will continue to be an area of growth for us.

<Q - Ambrish Srivastava>: Okay. And then, for my follow-up, just getting back to the discrete graphics in the quarter reported, the channel was really dry heading into Q1. So where are we on the channel inventory? And is there any way for you to help us understand how much of the growth was driven by the buildup in the channel in the March quarter? Thank you.

<A - Lisa T. Su>: Yes. So the channel inventory was at very, very low levels going into the quarter, and frankly, it was hard to get the GPU. It was hard to get GPUs. I think if you look now on typical retailer and e-tailer sites, the channel inventory is good. And I think there was an element of channel replenishment, but from what we see at the inventory levels today, they're, I would say, normal.

<Q - Ambrish Srivastava>: And what is the normal level, Lisa, in terms of weeks?

<A - Lisa T. Su>: Maybe somewhere between four and five weeks.

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<Q - Hans Mosesmann>: Lisa, a couple of questions. Can you comment qualitatively about the competitive dynamic that you're seeing in microprocessors? And as a second question, can you give us an update on Spectre, in terms of the impact it's had on the business going forward? Thanks.

<A - Lisa T. Su>: Sure, Hans. So on the microprocessor side, I think the competitive landscape, as we see it, Ryzen and EPYC are very competitive. And we've seen that in head-to-head design opportunities. I think from a CPU standpoint, we're very pleased with that. I think second-generation Ryzen in 12-nanometer actually improves the overall performance, and so, we like how that positions us on the PC side.

I think as we look forward, and I think this is important, we believe that the 7-nanometer capability of the foundry ecosystem is very good, and that puts us in a good competitive spot from a manufacturing standpoint. And then, on the design side, obviously, we have things that we're planning. And so, I see the competitive environment as one that is as good and we're going to work very hard to make sure that it gets better over time. Obviously, we take the competition very seriously.

Oh, yes, and the second question, sorry about that, Hans, on Spectre. We have spent a good amount of time with our customer set to make sure that they're fully protected on Spectre. We've actually released a number of software mitigations already to our OEM customers and to our partners. They're in their process of deploying. So I think it took a lot of energy. Certainly, we spent a lot of time on it and our customers had to spend time on it. But we don't see any long-term effects. It's more that we want to make sure to get the work done quickly, and that's been our focus.

<Q - Blayne Curtis>: I wanted to ask you, I think you mentioned double-digit sequential growth in the CPU business. I was just kind of curious what stage you're on in terms of channel fill for the Ryzen mobile business? And then, I've one more follow-up.

<A - Lisa T. Su>: Yes. So we did, as I mentioned, have some mobile product shipped ahead of OEM system launches in Q2. But we see this really as the beginning of the Ryzen ramp. So my expectation is that the client or the Ryzen portion of our business will be up in Q2, and it will be up in H2. And so, it's the beginning of the notebook ramp.

<Q - Blayne Curtis>: And then, I wanted to ask some of the OpEx side, Devinder, just in terms of licensing gains that have been in OpEx offset, do you expect any of those gains this year?

<A - Devinder Kumar>: I think there could be, but it's hard to tell, because it's kind of dependent upon the milestones that come into play. That was the OpEx offset last year that got reversed, but we'll see when it happens from a milestone standpoint.

<A - Lisa T. Su>: I think, Blayne, just as a point of clarification on this point, from an IP standpoint, we're not forecasting IP either here in Q2 or into H2. I think, as Devinder said, we do have some IP arrangements that we're working on, and depending on when those milestones complete, we will then sort of forecast it into the business.

<Q - Auguste Richard>: Real, real quickly, can you just tell me if the 12-nanometer is a dye shrink or just performance improvement?

<A - Lisa T. Su>: Yes, Gus, it is primarily performance improvement, and it is some design improvements. So you see some of the latency improvements and so on. It is not a dye shrink

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