Credit Suisse Technology Conference

Company Participants

- Colette M. Kress, Chief Financial Officer

Other Participants

- Unidentified Participant

Presentation

Operator

Good morning. Let me welcome everyone. It's my pleasure you to introduce Colette Kress, who is the Chief Financial Officer of NVIDIA. We've got a fireside chat for about the next 30 minutes. It's a pretty informal setting. We do have a mic that's traveling around the room, so if you do have a question, don't be shy, please raise your hand, and we'll get a mic to you.

And with that, Colette, first and foremost, thank you. I appreciate you coming down to the conference this year and supporting our effort. I always find it kind of helpful in a fireside chat to make the first question a little bit more of an open question to allow you to kind of position NVIDIA to the room, kind of what's the core IP, but more importantly, what's the strategy to leverage that core IP into end-markets and drive the investment thesis for everyone in the audience?

Colette M. Kress {BIO 18297352 <GO>}

Sure. So let me start with reminding everyone that we're a company focused on accelerated computing and accelerated computing hits each and every single one of our market platforms from gaming, to ProViz, to data center, to automotive. Each one of those market platforms is very diverse and really has a big and expanding overall market, each at different stages, though. We just finished our Q3 results just about a month ago, where we are focused on continuing a great quarter and sequential growth. Our growth rate sequentially was about 17%, slightly down year-over-year and we set the stage for overall gaming business for great growth into Q3 in preparation of the holiday.

Our overall ray tracing technology is doing quite well. The adoption is broad and wide. And then, our data center business, we took this opportunity to return to growth in our hyperscale business. Our hyperscalers are now growing sequentially as well as year-over-year. We are pleased with our results for Q3, both in our gross margins as well as our overall operating margins that we have done. Our gross margins had sequential growth and year-over-year growth, pushing in upwards of

64%, largely influenced by mix, our growth in terms of sequentially gaming and our overall data center.

Unidentified Participant

That's a helpful start. I'd like to kind of structure the conversation by just kind of walking through all of your major end-markets by size. So maybe we can start on the gaming front. And as you pointed out, your October quarter was an exceptionally strong quarter. I think the two things that you really highlighted as driving demand were may be mobile, on the notebook side and also the console side. Maybe talk a little bit about the notebook side and I think that's kind of a really strong story for NVIDIA. With the Max-Q technology, you've significantly increased the number of SKUs. How do we think about where we are in that mobile -- in the notebook cycle and how do we think about longer-term growth for notebooks?

Colette M. Kress {BIO 18297352 <GO>}

Sure. So our gaming business continues to be a growth driver for us. We've been in the business for many years, continuing to impress our overall gaming with new technology, new innovation to bring to market. Just about a year ago, it was a time that we brought forth overall ray tracing. Ray tracing is what we look at to be the next generation of overall gaming and what has traditionally been done just with the use of overall GPUs and inferring the overall ray tracing we can now do it in overall real-time.

The overall graphic improvement that you see from ray tracing is extremely strong. We have the entire market, now, an ecosystem focused on in terms of ray tracing. And then, just in years' time, we have announced NAV [ph], brought to market probably more than couple dozen games for this market, including overall Minecraft, one of the top selling games in the market, will be coming with ray tracing, but also Cyberpunk and a whole host of other ones.

But this has not only influenced our overall desktop business, but it has also influenced what we see in terms of our overall notebook business. The ability for us to be mobile in terms of gaming and have that exact same experience in terms of performance of what you have in the desktop is really important to our overall gamers. They use this as an opportunity to not only use the overall desktop, but have an equally performing overall notebook or people just entering the market that don't want to have a self-built overall desktop. Our overall ability to bring to market a 130 different laptops that not only have high-end gaming but allow you to carry with it the overall thin and light capabilities. That's the underpinnings of the overall Max-Q technology. What this is, as people weren't willing to go back and say, I want a heavy or I want a very large overall laptop, I wanted the overall mobility, but they also wanted the overall strong performance.

So we're set-up right now for the holiday season with a great lineup of overall laptops across the industry and across every single industry and we're really excited to bring this to market.

Unidentified Participant

Colette, this might seem like an odd question, given some of the skepticism you've heard from investors about the adoption of ray tracing, especially in the first half of the year, but correct me if I'm wrong, the RTX product is already two-thirds of your desktop sort of GPU business. Where are we in that cycle and how much more legs does this have on the RTX side?

Colette M. Kress {BIO 18297352 <GO>}

Yeah, it's correct that overall, our ray-traced overall boards that we sell in desktop two-thirds of it is now with overall ray tracing. So we're really pleased with the market adoption of it and of course there is absolutely more room to grow. We have cards that fit every single type of price point as well as every single type of overall gamer. So you can overall buy a card in the $100 and well, it's all the way up to $1,000 to participate in overall ray tracing. The way we see it in the future ray tracing will be the underpinnings of gaming and PC gaming. So I think we're just in the initial stages and the amount of ray tracing that we'll see in the future, not only for PC gaming, consoles and others, we'll continue to fuel the overall gaming market.

Unidentified Participant

Well, good. Seasonality is always a tricky word, especially when you've got businesses that have such strong secular drivers like gaming, but you did sort of guide the January quarter on gaming at least qualitatively to have some seasonality in it. When I go back and look at the last five years, four out of those five years, actually gaming was up sequentially in the January quarter. The only year it was down was '19 and I would argue you were going through a fairly severe inventory correction around crypto. So how should we think about seasonality in this business and it's become more seasonal as notebook and console becomes a bigger part of that revenue?

Colette M. Kress {BIO 18297352 <GO>}

Yeah, exactly. When you think about our overall gaming business, there is several different parts. There is our desktop, there is our notebook, there is our overall consoles. From our overall console picture, we've articulated that generally the stronger quarters will build ahead of the overall holiday take place in Q2 and Q3. In the case of overall notebooks, same, you'll see in terms of larger-build particularly in Q2 and Q3 as they gear up for the overall holiday season. Now, given our great growth rate that we're seeing in the overall notebooks, we're now having a larger seasonal expectation influenced by the overall notebooks. Our notebooks are approaching close to one-third of our overall gaming business. Now, when we look at our Q3 to Q4, yes, we'll have the same type of seasonality that we've seen in history for desktop. We expect our desktop to grow sequentially between Q3 and Q4.

Unidentified Participant

That's helpful. And then some idiosyncratic issues in the near-term, one, in terms of having some supply issues, help us understand how that may or may not be affecting your business, and two, just China-US trade, do you see any impact with the gaming because of that dynamic?

Colette M. Kress {BIO 18297352 <GO>}

Yeah. In the case of the overall CPU shortages, we're probably going on about a year of talks of CPU shortage pieces. I'm going to remind in terms of where we are in both desktop and our notebook, we tend to be in more high-end types of systems. We find that our OEMs generally target more about high-end as well. So we haven't seen any real impact this last quarter from overall CPU shortages. Going into Q4, we've taken into account what we know and is incorporated in our guidance as well.

Unidentified Participant

And then, the other dynamic kind of in the near term is exiting the October quarter. You just started shipping some new product within this segment, name the GTX 1660 and GTX 1665 [ph], you've also got the SHIELD TV and the SHIELD TV Pro. How does that influence kind of your view of seasonality going into the January quarter?

Colette M. Kress {BIO 18297352 <GO>}

Yeah. So our new products in terms of the GTX 1600 SUPER are definitely incorporated into our outlook and we'll look in terms of those being built to be available into the market for both the holiday season and holiday season extension, because remember the holiday season probably starts at this time in November and extends in terms of the first couple of months of next year as we move into the Asia-Pac area as well.

Our SHIELD products, we're excited they have gotten some tremendous reviews as probably the best streaming product that you can buy for the holiday season, so we're excited about that market and to see what it will show in terms of the end of the quarter.

Unidentified Participant

This year, you saw more investor interest in cloud gaming probably mostly around the Google Stadia announcement, which actually you're not involved in, but -- can you talk a little bit about sort of your view of cloud gaming? Is this something that's here now ready to go? Is it complementary to this business? Is it accretive to the business? Is it dilutive and kind of what's your strategy, because you seem to pairing up more with the service providers. And that's -- you've got, I think, projects in Taiwan, Russia, Japan with SoftBank and then Korea. So what is your strategy to attack this market?

Colette M. Kress {BIO 18297352 <GO>}

Yeah, so the gaming market is certainly not new to us and we look at the overall streaming opportunity as absolutely something that will be here in the future, but we wanted to make sure we did this right based on the so many years of working together with the overall ecosystem, whether that'd be game engine or whether that'd be the overall game developers and the building of the overall software. We have the ability to be that underlying infrastructure, whether that's going to be in a desktop, whether that's going to be in a notebook or if it's going to be back in terms of data center to where people want to stream that.

Our approach has been, bring your own game with it, we can play with any infrastructure that has been enabled using our overall streaming service that we have put together. It allows us to keep our great collaboration and partnership with the overall ecosystem and to be open to all the different types of games out there. Many of the others that are approaching the overall streaming market maybe have just a couple of games ready to go to market. We have hundreds and we'll continue to have more and more games approach and more actually approaching this market.

We are looking at the streaming as an opportunity to address a market that has not been addressed yet. Are you willing to have a full desktop that you have created, are you willing to go and buy an overall notebook? Probably, but maybe you also want the social aspects of gaming that no matter where you are, you have the ability to overall stream. That is what our GeForce NOW overall streaming service allows us. Working with the overall telcos, there's many areas where the broadband will be the next key place for a killer app, such as overall gaming for them to overall host. So we're excited about our relationships in terms of creating new telco opportunities, but also keeping the great connection that we have with our existing gaming ecosystem.

Unidentified Participant

A year ago, there was a lot of sort of noise around crypto and I think even for you on the inside looking in, it was difficult to kind of quantify the full impact of crypto as it was happening. You've seen tremendous growth in gaming off the bottom, but you're still about $150 million below kind of your peak quarter from last year. How do we think about the long-term growth rate in gaming and how do we think about the mix between units and ASPs, because this is really been a really strong and powerfully ASP story for the Company over the last five, six, seven years?

Colette M. Kress {BIO 18297352 <GO>}

Yeah. So, the overall gaming industry is a very strong entertainment market. It has advanced tremendously over the last five to be more of a social tool that allows people to stay connected and enjoy the games that they want. We see this for the long-term being as innovative as we have with the introduction of ray tracing, we'll continue to be able to overall grow that market. ASPs are important, but remember, we also keep a portfolio of a card for any type of gamer. It doesn't -- this isn't an industry that we want only the high end. We want to be able to bring anyone who is interested in gaming into this market. What we have seen is the gamers are starting in their teens and are staying well past the age of 40. What that means is, there's

different types of discretionary income across our portfolio that they may choose to get the best of the best. And choosing NVIDIA, we've continued to hold that high-end part of the market, which is so important because those are the ones that are helping us design what we believe, is the future of gaming as well.

Unidentified Participant

Switching gears to the data center business, sitting at about 25% of revenue, as you pointed out, you had a very strong October quarter above your expectations, you grew about 11% sequentially. I wonder if you could talk a little bit about where you think we are and what's been sort of a digestion of capacity from the end of last year and why we're starting to see this uptick now, and as you address the question, I think it's important to discuss maybe the impact of conversational AI and natural language processing on this business currently, and going forward?

Colette M. Kress {BIO 18297352 <GO>}

Absolutely. So, our data center business, yet another tool to bring accelerated computing to the workloads in the overall data center as well as on the Edge, we've seen tremendous wave of overall acceleration as well as AI over the last five years. We are now approaching a new wave that is focused on conversational AI. Conversational AI is just a new way, new technique to actually deal with the natural language processing.

Much of our overall search queries, most of our speech is looking for ways to understand word-by-word as well as the words that are connected together on what do they mean and interpret it and try and interpret in terms of what you are looking for in a question-and-answer type of period. This is a new wave of conversational AI. With natural language processing, it is an expansion of the market tremendously. The overall size of the data sets, the size of the neural nets are much more complex, much more bigger and is fueling a new wave of both training as well as influencing in terms of both of these. We're pleased to see both the V100 as well as the T4 to take place on this. This is expanding farther than just the overall hyperscales. We see that the overall consumer internet companies, we see startup AIs using these types of techniques on natural language processing. Rendering engines are also very, very important now. They tell us what to potentially read, potentially where to shop, what to shop for. These are also new techniques in AI that are very focused on right now. We've seen a surge of interest in this area and I think we're just in the early stages of this to take place for the future as well.

In our Q3 results, although we didn't have year-over-year growth, we returned to year-over-year growth in terms of overall hyperscales. When we gave our guidance for Q4 in terms of data center as well, we also believe we'll have a strong growth and probably accelerated growth, faster than what we had with Q3.

Unidentified Participant

That's an important point, because you were asked this question on the call and the answer wasn't quite clear. You're being much more specific because when you

guided for the October quarter, you were positive on data center, but somewhat subdued positive and you came in better than I think the qualitative guidance. So you're actually saying that the 11% sequential growth you saw in Q3 -- sorry, in your October quarter, could actually accelerate into the January quarter.

Colette M. Kress {BIO 18297352 <GO>}

That is correct. We're expecting an accelerated growth between Q3 and Q4 in our data center business.

Unidentified Participant

And you also brought up a really -- another really interesting point, because I think that everybody understands you're dominant position in training. There's always been a question mark as to whether or not a GPU is a good device to use in inference. And as you pointed out, I think T4 volumes in the October quarter were actually higher than the V100, even though V100 was at record levels. Is your view of your participation in inference changing and can you help us put some numbers around it?

Colette M. Kress {BIO 18297352 <GO>}

Sure. So, our T4 is one of our key products that influences overall inferencing workload out there. Yes, so V100 and our T4 hit record levels in Q3 and our T4 volumes were higher than our V100, just a tremendous fit for us as we now see inferencing clearly in our double-digit percent of our overall data center revenue.

Now, given that it does have a different overall ASP price point that is solidly landed, and you're right, an area where people said, would you need an overall GPU for inferencing. Conversational AI is just one overall workload case, a very complex one that requires multiple stages as well as a response time that's in the hundreds of milliseconds in terms of response. Not only the overall programmability of a T4 is necessary, but also the performance. You've even seen us participant in MLPerf 0.5, which allowed us to enter into the overall benchmarking of overall inferencing. We were the only participant that actually chose to enter into every single overall category and we won every single category. Many of our overall competitors didn't even file to overall compete in the overall competition. So not only is T4 able to do overall inferencing, it is being used for inferencing and I think we're just in the early stages of a very big market going forward.

Unidentified Participant

So should we expect that at the next Analyst Day that your market opportunity set for inference goes up year-over-year?

Colette M. Kress {BIO 18297352 <GO>}

We're going to continue to work on our overall TAM projections and we'll save that great discussion for Analyst Day.

Unidentified Participant

And you've also had a busy sort of last few months of new product introductions in this area and I'll reference, Mobile World LA, where you came out with I think two kind of interesting products. First was GPU acceleration for 5G wireless RAN. The second was sort of your NVIDIA EGX product for the Intelligent Edge. Can you talk a little bit about the market opportunity for both? And, on the EGX product, is this again your way to try to get as more as dominant position on inference in the marketplace?

Colette M. Kress {BIO 18297352 <GO>}

Our position in terms of Edge Computing is yet another important market for us to consider. We've talked about the overall cloud instances that have been available not only for both the hyperscalers use, but many of our overall startups, the high-performance computing market. Additionally, when we think about individually the industries that may leverage the overall cloud or leverage an overall hybrid experience, an important new area is overall edge computing. This can be anything from what you will see in terms of an Edge device, such as a drone, such as a robot, that must be autonomous as well as one of our most favorite type of -- Edge type of computing, which will be AV cars. But, additionally, the amount that will partake outside of the overall data center with an overall Edge server that either can consolidate many of those devices that are together and draw overall inference from those is a very big market, probably in a good size with the overall inferencing market as well.

So, we announced both our partnership with Microsoft in terms of an Edge server, but you're correct, we also announced with overall 5G RAN, again, focused in terms of on the Edge data center consolidating that back into it and in place to do a software-defined 5G versus the older traditional methods. We believe this is an important area to think about acceleration, not just with the GPU, but all of the different areas of the overall server or the overall infrastructure as a whole.

Unidentified Participant

Switching from applications in the data center to kind of customers, you guys have always done well in hyperscale both in the cloud and in their own needs. Enterprise is a growing new market for you, what you call your vertical markets, but it's not necessarily a traditional market that NVIDIA has been involved with and I'm kind of curious as you're really trying to exploit the opportunity in enterprise, how much channel work needs to be done? How much OpEx does that imply and as you think about all the different verticals within that segment of the enterprise, are they fairly discrete manufacturing, versus retail, versus finance or is there a leveragable kind of R&D and OpEx that you can use to go after all of them?

Colette M. Kress {BIO 18297352 <GO>}

Yeah, this is a good question to help understand our vertical industries and our play into this market. Over this last year as we have seen the focus of some of the digestion in the data center, we've been busy at work focused on many of these vertical industries. Our overall channel is still the same, whether it'd be the hyperscalers or whether it'd be the enterprisers, whether they buy directly to -- from us or buy in any of the overall OEM or ODM server overall offerings. So that go-to market is still the same, but our focus has been on the verticals and focus in terms of both the applications that the vertical use, accelerating those applications and working in terms of with CUDA and with an overall platform on top of CUDA that enables those specific industry applications to be accelerated one by one, where we see very large market or very large use. You've seen us focus in terms of an area of retail and e-tail. You can extend that to manufacturing our supply chain, where folks are interested in the data analytics to how to better run both their supply chain, better the overall inventory management, their overall demand and supply overall planning.

Walmart has been a very key overall customer in there. You can look at a customers such as the US Postal Service as well. How can I better sort through the overall amount? We have that focus in terms of the financial industry, we have that focus in terms of high-performance computing, you've seen us in terms of in design and creative apps as well, focus. So industry-by-industry, the focus is not just on the performance of the chip, which is a table stake that we need to have that performance, but our programmability, our ability to stitch together with the applications that they use, allow us to reach this market.

Unidentified Participant

And if you look at the traditional server market, it's still mostly an enterprise market, the hyperscale space, while growing faster, is still a smaller portion. As you think about AI over time, help us kind of quantify the enterprise opportunity versus the hyperscale opportunity?

Colette M. Kress {BIO 18297352 <GO>}

I believe the overall industry, the overall inference and the overall -- it will likely be larger opportunities in total over the long term. Now, when do we reach that point that they are that much larger? We'll just have to say. We've seen waves of our overall AI. Are we on our second to third wave as we're focusing now on this natural language processing section? Probably. Will there be more waves in the future? Absolutely.

Unidentified Participant

You've been emphasizing kind of the software IP you bring to the table. Maybe de-emphasizing a little bit the silicon IP, but I'm a semiconductor analyst and there was Supercomputer 2019 recently and I think there was some expectations/ hope that

maybe we'd get a better understanding of your silicon roadmap to 7-nanometer, which we didn't do. When can we expect that and I guess, more importantly, how important is process technology to the overall solution that you bring to your customers?

Colette M. Kress {BIO 18297352 <GO>}

We are always busy at work, building our overall architectures, whether that'd be our architectures as a whole and it tends to serve many of our different markets, whether that'd be gaming, or ProViz, or overall data center. So fear not, we're working on our technology. Our innovations and our process technology has been exceptional over those last years. So, stay tuned. We will always have something for you in the future, but we'd like to surprise everybody with our overall roadmaps and when things come out.

Now, the focus in terms of what is more important, the overall processing and the overall development in software. We see a lot of people focused on in PowerPoint is trying to compete with our overall performance that we see in our overall processors. Our processors not only have been top notch, no matter what industry that they've been, there is still continuous improvement that we can do, both at the current node or in terms of their future.

For every single one of our architectures, we continue to, in the development cycle, choose the existing node or also look in terms of a future node to play out, which would be better for us to go to market. It's just the way we operate in terms of how we bring architectures to market. So that's a very important piece, a node change or not a node change on improving the overall processing power, but the overall development of the software on top of this has allowed us both the ecosystem and the broad reach that we have both with the industries and the hyperscales. At the speed that we see AI advancing and acceleration advancing, they need that ability to change that overall development along the way, they need the ability to program, otherwise their investment is very, very hard for them to get a return on. The return on investment that you see from buying the overall GPUs with that full end-to-end platform is extremely helpful to them.

Unidentified Participant

Do you have any questions from the audience? One in the back.

Just a couple of big picture questions in terms of -- it feels to me like automated driving is not as much in the news, as it used to be. I just wanted to see if you feel that area is losing momentum or how you feel about that. And secondly, another area that used to be very popular at least in ordinary people kind of way which is cyber currency, just wondered how you see trends there for you in the future?

Colette M. Kress {BIO 18297352 <GO>}

Sure, let me focus on the autonomous vehicle area, still a very important part of the industry as they see forward. A lot of that has been branched in terms of our focus, what do they want to concentrate on for the overall passenger cars over the next couple of years in terms of the Level 2+, Level 3 and incorporating overall hardware that allows them to continue to advance the software. But what you find is the focus in terms of Level 4, Level 5, a harder overall piece of work has been changed to two different areas. One, focused on key metropolises in terms of square miles, to focus in terms of a captured area and focus. And then, number two, focused on long-haul such as transportation, trucks, last-mile delivery, in terms of the work that there is. So, still very, very important piece of work, probably being pushed about a couple of years for overall passenger types of cars to get up to that speed, but still very important to the automotive transportation industry.

Now, in terms of crypto-currency, right now, I'd say, I don't see any of it, which is great so far, so we can concentrate on our core strategic businesses. So, right now, we don't see anything particular in the market.

Unidentified Participant

Okay, with that we've ended our time here, but I want to thank everyone for joining us and especially, Colette, for spending some time with me this morning. Thank you very much.

Colette M. Kress {BIO 18297352 <GO>}

All right. Thanks.