Bank of America Merrill Lynch Global Technology Conference

Company Participants

- Colette M. Kress, Executive VP & CFO

Other Participants

- Vivek Arya, Director, BofA Merrill Lynch, Research Division

Presentation

Vivek Arya {BIO 6781604 <GO>}

Good morning, everyone. I'm Vivek Arya, semiconductor analyst at BofA Merrill Lynch. Really delighted to see all of you. Welcome to our conference. And also, really delighted to have Colette Kress, CFO of NVIDIA; and Shawn Simmons from the Investor Relations team join us.

What we will do is start with a few questions from my side. And then we'll open it up for your Q&A as well. But just as background, Colette was named CFO of the Year by a leading Silicon Valley magazine last year. So I'm really delighted that she could join us for the conference.

And what we will do, Colette, is just start with a few questions and then go into Q&A. But welcome.

Colette M. Kress {BIO 18297352 <GO>}

Thank you. Thank you. So much.

Questions And Answers

Q - Vivek Arya {BIO 6781604 <GO>}

So maybe as a start, what we want to do is, with every company, just give -- get a very quick overview of how you are thinking about the second half. As we go into the second half, do you think you are more positive, more cautious, more even? Just a simple one-word answer. And then we will go into the fundamentals.

A - Colette M. Kress {BIO 18297352 <GO>}

I think that's always hard to use one word to talk about it because I think everybody realizes NVIDIA has quite a diverse portfolio of different things that we are looking

at. It's not a run-of-the-mill types of things that we're doing. When we look at the businesses that we are focused on and our focus on AI, I think that is a great driver of not the second half but really what we're talking about over the next decade or longer. So I think we feel very good in terms of what the future holds as well as our position and how we are traveling through this next decade.

Q - Vivek Arya {BIO 6781604 <GO>}

Got it. Then going into the different segments of the business, starting with Gaming. The key question is, is gaming secular or cyclical? Because there is one school of thought that says, well, gaming has done very well in the last few years because we have had a major upgrade of game consoles. And that is more cyclical, that they're getting to a level of maturity now. The secular part is, well, gaming is a worldwide phenomena. It's a social phenomena. So how do you look at the businesses? Is it cyclical? Is it secular? What is the right way to think about PC gaming?

A - Colette M. Kress {BIO 18297352 <GO>}

Yes. I think you have to look at gaming as its transformation of what it has become over even the last decade. The last 3 to five years, we've seen a really large movement in gaming, moving not to just a person with a computer or a person in terms of a console. You're looking at it as a social platform. You are looking at it as a way of entertainment. With a social platform, with entertainment, comes new ways that they use our underlying PC platform to play those games. You have eSports that has evolved, where people are essentially watching others play games. And to be online with your friends and playing strategically through games not necessarily only focus in terms of the graphic intensity there. So it's an entertainment area. Just as the U.S. sports, you see gaming as a worldwide phenomena. And more and more kind of gamers coming onboard. They're all at different levels. They're all playing different types of gaming. And each region around the world continues to play games differently. We have a very different type of subset in our Asia-Pac area, where they have centered the household, they've centered their entire being around the PC. And that's a very important part of entertainment. As we know, here in the U.S., we like abundance of all. We use consoles, we use PCs, we use tablets, we use phones. But with the underlying position of the PC and what we have seen is our ability to continue to improve gaming instantaneously by a new GPU and capable within that platform versus something that is static for 4 or five years. That has continued to drive the overall industry to build better and better games because of the overall horsepower and the performance that you can get with the overall GPU. And I think we'll continue to see that. The content is very important. The overall ecosystem is important. It is not necessarily just that piece of hardware. As you know, we have spent a significant amount of time investing in that ecosystem or investing in the actual gamer, what does the gamer want to see. And I think we'll see that continue.

Q - Vivek Arya {BIO 6781604 <GO>}

Got it. So at your recent Analyst Day, you showed some data that said Gaming has grown at 30% plus compounded over the last five years. I think in semiconductors, you're really not used to seeing that kind of growth. So that's why we are always very wary about seeing those kind of numbers. But if you sort of break it down in terms of units and content. So units have grown at a double-digit pace. So is that a refresh of

the existing base? Or do you think the market is actually expanding, that you are bringing in new gamers into the market? And by the way, how are you measuring that?

A - Colette M. Kress {BIO 18297352 <GO>}

Yes. It's a really good point. I think it's always been really hard given that -- our sector that we set in terms of semiconductor. When you talk about 30%, people pause and go, "That's a really large number."

Q - Vivek Arya {BIO 6781604 <GO>}

One extra number.

A - Colette M. Kress {BIO 18297352 <GO>}

It's a really large number for gaming, or I think that's larger or faster than the overall gaming in terms of industry. So we're very pleased in terms of that performance. Yes. The expansion of the overall TAM or the expansion of the overall market for gaming and the use of GPUs for gaming has absolutely increased. We have a great opportunity to refresh much of our installed base, hundreds of millions of gamers around the world, installed bases across many different of our versions of our architecture with our last architecture, Maxwell. And even prior to that. So given the performance improvement that we have seen from Maxwell to Pascal, our current architecture, there's just a abundance of reasons why you would upgrade. You see the higher-end types of games coming out. That's a great opportunity for them to come and, overall, buy. But what you see is you see our gamers coming on in waves of 2, waves in terms of teams because it really is peers coming onboard, not one by one. Yes. We sell one by one. But what you find is a group of friends are overall playing. You find the advancement of broadband. I know here in the U.S., broadband is prolific around everywhere. But it's not in many of the regions of the world. So when they are looking for that entertainment of finally getting online, gaming is a great place to start. And we're also seeing gamers come in terms of there.

Q - Vivek Arya {BIO 6781604 <GO>}

Got it. So if you were just joining NVIDIA. And I told you your gamer units have grown at double-digit pace the last five years, what would that make you think about the next five years?

A - Colette M. Kress {BIO 18297352 <GO>}

Well I think we all try and understand how do we predict a target going forward. And I think that's always a really hard thing to do. But double digit, I think it says that you've got a probably a pretty substantial installed base. And over time, if you continue in terms of the innovation of what we can do in terms of the GPU and the further advancement in terms of graphics, you have a great opportunity to continue them to think about in terms of upgrades going forward and expanding that overall base. Gaming is across many, many different genders. You have people of all ages in terms of gaming. So you still have a continuation from refreshing and also an ability for them to think about consoles or consoles plus now PCs in terms of gaming. So that's how I would look at it.

Q - Vivek Arya {BIO 6781604 <GO>}

Got it. In terms of the content growth and just the mixup that they have seen, another very interesting stat you had at the Analyst Day was that today, the median gaming card that you're in, it's about $180 or so, used to be $140. So there's definitely being an expansion in content. Have you seen that content expansion accelerate with Pascal? Was there something about Pascal that either made people upgrade faster or upgrade to a richer card than they had in prior cycles?

A - Colette M. Kress {BIO 18297352 <GO>}

Yes. So we are still facing some great folks upgrading and upgrading to higher-end cards than they may have had in the previous versions. There is a great opportunity just because of the overall price per performance. So there is a massive increase in performance. But now your dollar's worth more in terms of what you were able to purchase. They know that the games that are out there, the games that will be available even in the second half and future, that allows them to buy into something that they can play for a significant amount of time. So what we have seen is, yes, a continued rise over this period of time on ASPs. We get asked the question all the time that says, "Well are you at the peak?" And the answer is, no, there is still a significant amount of volume SKUs because we are really here in terms of providing gaming for every single type of gamer that is out there, no matter what kind of dollar amount they may be coming to the table, how we can make a tremendously rich experience, a much richer experience than what they would have had even 10 years ago. But we have volume SKUs that are definitely below the overall mean. And we have a significant amount of SKUs that also allow us even in terms within the top end. So anywhere from $100 to $1,000, we have a gaming card that we have. Sometimes, it's about the games that they're playing. Sometimes, it is just about having the best SKU that's out there.

Q - Vivek Arya {BIO 6781604 <GO>}

So if, let's say, the gaming card is ultimately meant to replace a console. And consoles are $300, $400, $500, then do you think this $180 has the potential to get towards that console like $300, $400, $500 at some point? Or just because you have such a diversity of customers in developed markets, emerging markets, what is the right conceptual way of thinking about where that $180 can go to?

A - Colette M. Kress {BIO 18297352 <GO>}

Yes. We're not here to try and say, "I want to be up there in terms of the console retail price in terms of that." We will continue to be assured that we understand our gamers, we understand their price points, we understand the types of games that we can. If we can provide more technology at a better price for them, the more that we'll do that. But I think you can see that there's definitely an area out there where higher price points that have been rather static over the last decade or even longer, we do still have an opportunity. But that's not necessarily the goal. We want to make sure we're well connected to that gamer in terms of the types of games that they want, the community they want and providing them that brand that establishes such that whatever game they want to play works seamlessly in terms of on the technology.

Q - Vivek Arya {BIO 6781604 <GO>}

Got it. Just the last one, quick ones on gaming. If you're -- would you say that the Pascal adoption was faster than the Maxwell or Kepler adoption? And if it wasn't, then do you think your PC gaming business, right, GeForce business, can it grow this year? I know comps are very tough. Last year, the growth was even far above the mid-30s growth. So I know comps are tough this year. But if Pascal penetration is still not at a peak level, do you think your GeForce business has a potential to grow this year?

A - Colette M. Kress {BIO 18297352 <GO>}

Yes. So we tended to look at the overall gaming results over several of our architectures. And what we have continued to find is there is something consistency of what we do. We try for architectures that usually are in market for a couple of years, a couple of years in terms of building that refresh discussion with the overall gamers. We tend to put out new gaming cards, as you've seen us even already with Pascal, to entertain that. So we're still in the early stages of Pascal. Pascal hasn't even reached full 3 quarters of being into market. And so we're still seeing a significant amount of refreshes. As we had discussed in terms of in our Investor Day and our earnings is, yes, right now, Pascal is, in terms of a refresh, a little bit faster than Maxwell. People pause and say, "Was that what you expected? Is that what it is it says?" It's exactly what we had expected, or we're very pleased in terms of that. That says we're right in line for a multi-year architecture to continue to be rolled out and be endorsed by all of the different gamers. And so we still have time in terms of that. We know what's coming up in the second half of the year in terms of games. We know that because we work with those gaming developers on bringing those to market. They need to see Pascal to see the capabilities of what they can write into the games. And we spend a lot of time working that for many months ahead of time before those overall games are available. So Pascal, working very, very well. And I think, yes, our second half of fiscal year '16 was a tremendous second half. It had Pascal for gaming probably growing about 60% year-over-year. Again, a pretty large number for a semiconductor company, i.e., us. But again, I think, the overall vibrance of the overall gaming market is still well, well intact in terms of the drivers. And we'll see how that looks.

Q - Vivek Arya {BIO 6781604 <GO>}

Got it. Lastly on competition. AMD launched their Polaris-based product last year. They are planning to launch Vega-based products this year. Are you seeing any difference in the competitive dynamics versus AMD? Are you seeing them become -- are they coming up more in discussions as you talk with your customers? How do you look at the competitive landscape? Has anything changed?

A - Colette M. Kress {BIO 18297352 <GO>}

Yes. So we've been competing with AMD for many, many, many years. Probably a pretty significant change in terms of how the 2 companies address the market about five years ago. We really started to think about the entire ecosystem and really focusing on that gamers. We looked at it as more and more capability and performance would drive the overall gaming market. And that is what we have seen.

We have seen a game portfolio that is significantly higher than what people would have thought what have been just good enough. We're nowhere near the good enough in terms of overall graphics, in terms of what those capable. So we know how to compete in there. And we compete differently. You rarely see us come out and say, "Here are our specs. Here are our semiconductor specs." We really kind of come out and say, "Here is our platform. Here is what we're going to enable for the gamer." And we have attracted many of those super high-end gamers. But we've also attracted everybody that understands the loyalty to that brand and the loyalty in terms of what we can bring. AMD has talked about becoming competitive or talked about bringing some things. Just haven't seen it yet. It's been more than a year in terms within that discussion. So again, we feel confident in terms of what we have in market and our ability to continue to innovate for that gaming market and our leadership in terms of the gamers there now.

Q - Vivek Arya {BIO 6781604 <GO>}

Got it. Maybe let's move to the next topic. The Datacenter has gotten a lot of attention. What do you think NVIDIA's core sort of sustainable differentiator in the Datacenter? Because we hear a lot of this or the other company sounding better on some hardware benchmarks or this or the other consumer saying, "Look, I am not beholden to the software tools. I have open-source tools, et cetera." And you guys have done so well in the last two years. But what can help you sustain your market share position in this market?

A - Colette M. Kress {BIO 18297352 <GO>}

Yes. It's a great way to look at it and a great way to think about it. Now when you think about what we're doing for Datacenter different from overall gaming, gaming has been an overall application for the user in terms of GPU. We are now surfacing on using a GPU in terms of compute. There's a lot of factors that have occurred in the industry, in the market that have enabled what we are experiencing right now. And being here in terms of our development over many, many years have reached this part. It's not about what chip we actually surfaced six months ago or what we have coming up in the next six months. If you think about our long-standing work that we did to create a platform and the development platform on top of that. People thought 10 years ago, when we rolled out CUDA across every single one of our GPUs for development and being able to program these GPUs was why? Why would you need that? Why would you do that? Well 10 years in the making, 500,000 developers around the world, now there's a why, now there's a very clear understanding. Those that we taught to, those that we taught in terms of higher education and research are some of the early people that are now in many of our customer base that we are now selling into because they truly have now understand the power of the GPU. There's another key area that happened over this period of time as we started to talk about Moore's Law. And the question started to say, "Wait a minute, will this continue?" So the focus on acceleration or different forms in order to accelerate the computing that's going to take us for -- with the substantial amount of data that is out there was key and very focused for us to concentrate on. But then thirdly, the use of GPUs and the use of parallel processing and understanding how to program them surfaced the era of AI and surfaced deep learning, deep learning and research, deep learning as a focus of AI, of an accomplishment that they weren't able to do for the last 20 years, reach superhuman capabilities and in forms of

detection, image detection or voice translation. And they -- leveraging a GPU using that, that has put us where we are today, okay? We've continued to now focus not just on the hardware. The hardware is probably top-notch. It's probably leaps or years ahead of others in terms of the hardware capabilities. But there's another key important part of it is, which is the software and the development layer that comes with that. Our focus on AI and democratizing AI is to say, "Where do you want to use it? What type of frameworks do you want to use it with? What types of industry? What types of workloads do you want to do there?" We will be there. We will be there focused on all different types of datas and the types of works that we have seen using GPUs. So we have a very, very good installed base right now. But secondly, you have people coming to us wanting to be taught, wanting to be taught that says, "How do I get started?" We're in a different era than where we were probably 15 or 20 years ago when you had any types of the computing errors of the previous play. The cloud is very important. People used to think about it as going to be a fall over place where you could get compute. But the reality is it's the way that enterprises will get started. That says, "It takes a long time to restart different configurations in the IT world." But moving directly to the cloud and moving and getting started and either remaining in the cloud, moving to on-premise or vice versa can be very, very easily done as we've continued to focus, not only on delivering our Tesla platforms. But also enabling cloud instances using GPUs and then also what we have in terms of AI supercomputers. So there's a reason why we're seeing what we're doing. It's not just one thing. Again, you don't hear it's not just about specs, it's not just about hardware. There's a lot to different pieces that have been put together that have established our overall competitive position. And we're continuing to run hard to establish that for the next decade as well.

Q - Vivek Arya {BIO 6781604 <GO>}

Now the one good thing about having cloud customers as good customers is that they adopt technology quickly. And then they roll it out very quickly. Sometimes, the downside is that they also have a lot of very capable semiconductor engineers inside the company, like Google has, for instance. And they decided to develop their own chip. Do you think that is a sort of limited competitive concern? Do you think it can be a broader competitive concern? How does the market play out over the next few years versus your sort of merchant silicon and platform solution versus some of your customers deciding to do things internally for certain applications?

A - Colette M. Kress {BIO 18297352 <GO>}

Yes. So some of our customers in the case of Google, we've all been working on this AI era for some time, 4 or five years, really trying to work. Many of these customers have significant amount of installed base of GPUs. We are known to continue to come out with new forms as quickly as possible. That will continue to enhance overall performance and overall capabilities that they have their workloads. It doesn't surprise us, though, that they would look for something that may be engineered and may be a subset of the overall GPU that they could use on a specific workload or internal application that they have. They're also going to focus on probably certain frameworks that they are very popular with or they -- TensorFlow, for example, with Google. Now keep in mind, we're going to focus on availability for all. We want the availability that you can start in one cloud, move to another cloud, you can move to on-premise. You don't want to be limited by the overall framework.

Some frameworks work very well for image detection. Some work very well for natural language processing. We want to enable all rather than limiting them there. I think the overall horsepower of what we have in terms of a team of engineers, engineers that are hardware but also even substantial amount of software is much more than any other one company that has other core assets could even focus on. But in these early days, it doesn't surprise us that those will try to have custom ASICs or custom one-off that they'll have. But again, we're here to be for the masses and for all of the different enterprises that are out there without limiting their choice in terms of what they may need.

Q - Vivek Arya {BIO 6781604 <GO>}

Got it. In the last few quarters, we have seen your Datacenter business do so well. And we have -- investor sell-side have been very surprised. Have you guys also been surprised?

A - Colette M. Kress {BIO 18297352 <GO>}

Have we been surprised? I would say we see the excitement around AI. We continue to really think forward in terms of there. I will say, sometimes, you kind of get accustomed to large numbers a little bit and large growth numbers and think that's normal. And you kind of forget that, I guess, it's not normal. We grew sequentially, Datacenter, 38%. And people, like, no, that was sequential, 38%. And I said, "Yes, I guess you're right. That is a large number. Isn't it?"

Q - Vivek Arya {BIO 6781604 <GO>}

So that is what we should model for the next quarter...

A - Colette M. Kress {BIO 18297352 <GO>}

I said that was what we had in terms of the last quarter. Keep in mind, this is still a tremendous evolving business. We get asked all the time, "How do you know what is your visibility?" We get asked often that says, "Well are you going to provide 3-year guidance and 1-year guidance?" And I said, "I think we're doing pretty good with 1 quarter guidance. And let's just keep it at that. And I'll let you know if it changes. But not anytime soon, okay?"

Q - Vivek Arya {BIO 6781604 <GO>}

I see. But just broadly, if you look at the Datacenter business in the past, I think it was a lot more exposed to HPC and enterprise. And I think the deep learning part had not really taken off. So it went from a period of lumpiness to now a period of very strong secular growth. At what point should we start worrying about seasonality or customer concentration? Or so if -- like do you already have a good sense of how the back half is going to shape up? Or do you still think that it is still dependent on certain customers making certain decisions that could create wide swings in what that number could be, positive or negative?

A - Colette M. Kress {BIO 18297352 <GO>}

Yes. So I think you have to look at the Datacenter business about the breadth and depth of its expansion over the last several years and what we have within our Datacenter business. There is still a phenomenal high-performance computing business. A high-performance computing business can be and will probably continue to be conversions with AI. High-performance computing focuses primarily on very deep mathematical computations, very difficult things in oil exploration and/or things in terms of some of the biggest supercomputers around the world. And you may have an instance where they use AI to shortcut all of the different precision that they may need to do in terms of going forward. So we had talked about this last quarter, that business doubling year-over-year. And people looked at that, says, "Well that must be the fastest." I said, "No. Remember, we indicated that the entire Datacenter business was almost tripling." So again, we're talking about large growth numbers here. So doubling is smaller than almost tripling. But what is also in there is our GRID business. Our GRID business now says there's a one to many need, putting in GPU in the cloud and serving multiple types of users that can extract the GPU in its cloud instance. We are seeing workstations in the cloud. We are seeing applications in the cloud. We are seeing PCs in the cloud, security reason. Financial services are very key on being able to protect that overall information. But the overall collaboration need of being able to see information from a cloud so that you can work globally continues to fuel overall virtualization and the need for very graphic-intensive types of applications that may be surfaced. So it's the second business that we have in there. The other businesses are focused on AI, focused on AI and internal hyperscales. We talk as best as we can to say, "Yes. We're working with the hyperscales." And so which ones? And we say, "Yes. We're working with the hyperscales or all of them across the world." But that broadens. It broadens in terms of, yes, further internal work. But it also means enabling the cloud instances. You have just about every single cloud service provider now putting and having a wide range of instances available using GPU computing as this is where they see a significant amount of demand. When they say they see a significant amount of demand, they have people requesting that. So the hyperscales are important piece. But they're multifaceted, multiple in terms of creating search AI-enabled apps, natural language processing. But also what they're doing in terms of enabling any types of enterprises or research that may use their overall cloud. Then lastly, remember, we have our AI supercomputers. These are to enable those enterprises that really have to think about how do I start again rebuilding overall infrastructure for AI? We've approached a containerized version. Just plug it in, string them together. And you can actually move quite quickly in terms of getting into the overall AI. So the breadth and the depth of our overall customer set. When you had seen at our overall Investor Day, we talked about an 8x increase in terms of the number of customers that we are working with across this overall business over the last couple of years. And that spans all of these different businesses that are here. I can't say that I don't have individual projects because, of course, we do. Of course, we have individual projects that add up and produce what we have. But it's not 1 or 2 different customers. It's a big, big group that are all happening at the same time.

Q - Vivek Arya {BIO 6781604 <GO>}

One thing we saw in the Gaming business is as the gamers moved to Pascal, that was a very good expansion in your content than the value that you are providing. Do you see something similar in the Datacenter side? Because I don't think Pascal is as

widely adopted in the Datacenter quite yet. So as those customers move to Pascal and then to Volta, should we expect a similar expansion in your content?

A - Colette M. Kress {BIO 18297352 <GO>}

Yes. So it's a different beast when we talk about the enterprise nature of our infrastructure versus a gamer. Essentially, right now, what we are selling into the gaming world is we sell just Pascal. We don't necessarily keep multiple different architectures. Gamers want the most recent. And we are doing a very good job in the transition to assure we slow down the other architecture before we ramp. In enterprise, it's a bit different, okay? You're talking about them qualifying many of these architectures within their infrastructure. The qualifications are assuring in terms of the specs that they want to see with the individual workloads or the individual applications. You have to match that with everything else that you have in the datacenter. You have to assure the security needs in terms of that within your overall datacenter. That can take them some time. That can take them some time in terms of working with a subset of 10 moving to a slightly bigger project and then saying, "I'm ready for full rollout." We're going to move faster, though. We will continue to, from a Kepler to a Maxwell to a Pascal to a Volta, see that overall market. It hasn't really changed anything from an enterprise part. We are selling all of those different architectures because there is still a tremendous value to them, a cost savings to them from getting that architecture even though there's a new architecture coming around the corner. And that would stall them that they said, "Hi. I got to go move to the newest one." They will continue qualifying what they have in terms of the current. And we'll continue to work with them in terms of seating new architectures that are coming to make sure that is meeting their overall needs. And we receive feedback in terms of what to incorporate in terms of those. So it's just a different cycle in enterprise than it is in terms of gaming.

Q - Vivek Arya {BIO 6781604 <GO>}

Got it. Maybe in the few minutes that we have left, Colette, I wanted to just hit on 2 questions. One is on your Automotive business and one on financials. So on the Automotive business, how do you think the work shapes up? Because you have sort of the NVIDIA camp, right, where you have signed up a lot of customers for autonomous driving. Then you have the Intel Mobileye camp. How are customers making that decision? Is it an either/or? Is it complementary? How do you think that work shapes up?

A - Colette M. Kress {BIO 18297352 <GO>}

Yes. It's an interesting question because I think everyone always assumes the competition is equal and that it's the exact same type of thing. When you think over the last three years or more and the focus in terms of autonomous driving and how the mindset has overall evolved over that period of time, probably three years ago it was, well, thought that says, "Well through cameras, we will get to driving without a driver. We will get to autonomous driving." But there was a very important subset of car manufacturers and start-ups that said, "Actually, we need compute. We need a significant amount of compute because this is a very difficult computing problem." The amount of the data that is coming together that needs to be triangulated to find a pathway for the overall car to travel is the importance. It's not about detecting

everything along the road. Detecting a stop sign, detecting a sidewalk doesn't help you how to drive. It just tells you what's on the road. And having that pathway, your brain thinks about all of those different parameters on what is the best method to overall drive. So that has emerged as a very well-known understanding and as may have seated why you have seen partnership on the other side of taking a smart camera and possibly in terms of taking compute. But there's nothing in market. We're on our third version of our platform today. We have more than 225 different partners, OEMs, start-ups, research in terms of working in there. Start-ups are an important part. Many of them are being purchased. Many of them are approaching the automotive industry very different than many have approached in the last 20 years. They may not care in terms of the wheels, the car frame, the actual engine. They just may be thinking about in terms of the software and the brains that come together. Our platform, very similar to our work in the Datacenter, is focused on the software. It is focused in terms of the best options that you have in terms of a production level of this compute. It's not about taking a large supercomputer and opening up the trunk and moving the groceries over and sticking that in. You've got to get it into a form factor that it can exist. So we have now mastered that and have been working with many of these partners in terms of the software as how they think they want to bring these cars. We've got the first production cars on the road with Tesla with our platform in there that will move. And they have the hardware that enables all the way to Level 4 with the exact same hardware that they have today and they continue to build. So you'll get to this point not of your depreciating cars. But your car is actually getting better over all the time. We've announced significant partnerships with Audi, with Daimler and the most recent one that you saw, Toyota. Those aren't small players. Those are very important, those. What you've seen, though, is the auto manufacturers move from this was a 2030 problem to a 2025 problem to a 2020. If it's a 2020 that they want to get to market, we're probably at the point where we have just enough time for them to do that. You're going to see them decide. They need to decide quickly on how to move those lines, those manufacturing lines and the details that they can get to reach that point. There will be those that will push to be a little bit earlier, those that will push to probably be on time and those who'll only be lagged a little bit. But that's what we're going to see. Still forming a partnership is challenging. I think the way you think about automotive, though, is our ability to work with auto manufacturers and understand the support of the Tier 1s, understand the high-definition mapping partners that are key. There's a lot of people that have to be coordinated. And I think it's really challenging to think about having multiple partners actually delivering the solution. It's a very complicated type of working together in terms of there. So I think we're very pleased with a full end-to-end platform that we have done and the tremendous amount of support that we have with our partners so far.

Q - Vivek Arya {BIO 6781604 <GO>}

And just last one in terms of use of cash. Definitely, since I've only gone through 1/3 of my questions, there's no lack of organic growth opportunity that NVIDIA has. But there's also a lot of consolidation in the sector. So just in terms of use of cash, do you think the priority is still returning cash to shareholders as you have been doing right on a very consistent basis over the last few years? Or do you think there is room, right, for looking at inorganic opportunities also for NVIDIA? Or you just don't need to?

A - Colette M. Kress {BIO 18297352 <GO>}

So our first focus on cash to be really clear is what we need for the business and what we need in terms of the growth. There's a lot of people that have looked at this to say, "Wow, your investment has changed over the last couple of years." I'm like, "No, actually, we're always investing." And we take very serious pride on investing correctly in the most efficient manner that we have. Probably very different than any other super large company is that we will think, do we need to spend that? Is that the right place? Is that the right place to move forward? And we will invest. And we've invested in the overall ecosystem but also in terms of headcount that we think we need in engineering and focus in terms of the sales and marketing to extract into these markets that we are going to. So it's going to be our very, very first place that we think about the overall cash. That means, though, in some cases, it might be easier to invest in bulk and buy small teams, invest in small teams that can be there. We're not interested in terms of the major consolidation, big business, big business, your catalog, my catalog merging together. I don't think we see that as something that would help us in that manner. But if we can think about the full vertical integration of what we're doing and what we could bolt on to there, sure, we'd absolutely look at it and make those investments as appropriate. But the last thing that we're going to do after we finish all that is say, "Is there excess? And is there excess that would be better used in terms of our shareholders?" Yes. And then we'll return that. And that's all you should think about in terms of how we look at it. It's not the opposite of we need to feed. It's a, yes, we want just to make sure that we're investing appropriately in our business.

Q - Vivek Arya {BIO 6781604 <GO>}

With that, the end of our time, thanks, everyone, for joining us. Thank you, Colette. I really appreciate.

A - Colette M. Kress {BIO 18297352 <GO>}

Thank you.