# JPMorgan Tech Forum

## Company Participants

- Rob Csongor, VP, IR

## Other Participants

- Chris Danely, Analyst, JPMorgan
- Harlan Sur, Analyst, JPMorgan
- Unidentified Participant, Analyst, Unknown

## Presentation

### Chris Danely {BIO 3509857 <GO>}

Thanks everyone for coming. I am Chris Danely, the senior semiconductor analyst here at JPMorgan. It is hard to believe it is our 11th Annual Tech Forum here. It just keeps getting bigger and bigger along with my waistline, which I guess sometimes is a good thing.

Anyway, remember the format is 30 minutes per presentation. It is pure fireside chat so all Q&A. So whenever anybody has a question feel free to raise your hand or throw some rotten fruit or something like that to get our attention. That is the goal.

### Rob Csongor {BIO 3210739 <GO>}

No, don't do that.

### Chris Danely {BIO 3509857 <GO>}

To start things off we had NVIDIA who is going to be introduced by my trusty cohort here, Harlan Sur. But again, everybody have fun and hopefully we all find out something today. Thanks a lot for coming.

### Harlan Sur {BIO 6539622 <GO>}

Great. Thanks, Chris. So to get things started here we have NVIDIA. We are very pleased to have Rob Csongor, who is Vice President of Investor Relations for NVIDIA, here with us this morning. Thanks, Rob, for joining us.

### Rob Csongor {BIO 3210739 <GO>}

Thanks.

## Harlan Sur {BIO 6539622 <GO>}

NVIDIA held their press event on Sunday and I think that one of the overall sort of overarching themes was the untethering of video gaming. Essentially gaming anywhere, on any screen. And on any device. And to support that the team introduced a plethora of products.

So Rob, maybe to get things kicked off here, why don't you provide an overview of what the team rolled out on Sunday? Then we can open it up for Q&A.

## Rob Csongor {BIO 3210739 <GO>}

Okay, sure. I guess to summarize I would start with I guess what our biggest surprise was. We unveiled an NVIDIA handheld gaming device called Project SHIELD. I think that was the only actual secret that we actually managed to keep at CES. I think everything else -- as you know, we also announced Tegra 4 which was probably the worst kept secret at CES.

But I think Project SHIELD was a surprise for most people. But the more we have talked with press I think one of the common questions that we have gotten is what took you guys so long. I think most people associate NVIDIA with gaming expertise. It is at the core of NVIDIA.

It is certainly a huge market. It is the largest consumer entertainment segment. I think, just to give you guys a frame of reference. And we always talk about gaming. A lot of times when we talk to the Street -- people always smile when you say gaming. But just to give you an idea, the number one movie this year, blockbuster movie in 2012, was The Avengers. In the first 72 hours. So the opening weekend box office revenue for The Avengers was about $160 million in revenue.

This year the number one blockbuster video game was Call of Duty Black Ops 2. The first 24 hours of Black Ops 2 was $500 million. So it is significantly -- it is very big business, on the order of about $12 billion to $13 billion when you add up all of the different components. It is 65% of what people do on a tablet and on a smartphone. So there is a lot of obvious market opportunity there.

So one of the things that we did is we announced this gaming device. One of the things that I wanted to make clear was -- because we got questions afterwards -- was, hey, this is a game console. Isn't the game console business model to subsidize it and make money off of the content?

Obviously the first thing we are pointing out is this gaming devices is Android. It is pure Android. It is an Android gaming device and that is an open platform. So the first thing we demonstrated is you are on Google Play, you could launch any app that is on Android.

However, it does have other things. You can then go to TegraZone and play some amazing games. We showcased Hawken, which is a brand-new game just ported to Tegra 4. So at the heart -- by the way, I just want to make it clear -- at the heart of this handheld gaming device which we call Project SHIELD is Tegra 4.

So Tegra 4 we also launched at Sunday. It is the world's fastest mobile processor. It has 72 graphics cores. Just to give you a frame of reference, Tegra 3 is 12. And Tegra 3 I think is widely regarded as pretty good.

So 72 graphics core. It is the first quad A15 processor. So it is a 4-plus-1 architecture, kind of the big/little architecture that we started with Tegra 3. Yet for all of that it runs at roughly half the power of Tegra 3 in most use cases. So we are pretty excited about it.

The other thing that we announced was the GRID server, which was something we disclosed earlier in the year. But this is basically the expansion of our GPU business into the server. So what it is is GPUs on a rackmount product. It's designed by NVIDIA. It goes into a server rack and it delivers an enormous amount of processing capability for gaming.

And it is virtualized. So what you can do is think of it as Netflix for gaming. Imagine next year with any luck you check into the hotel here and one of the things you will be able to do is turn on your TV and there is a controller there and you could play Black Ops 2. There is no game console. There is no PC. There is just an Ethernet cable plugged into the back of the television.

So one of the things we demonstrated. And I don't know that -- I wouldn't call Project SHIELD the intersection point. But it ties all these things that NVIDIA has been working on together. You have -- just to make it clear, what you were doing is you are seeing somebody playing with a handheld device that is pure Android and then you say I want to stream it to my TV. I want to play it on my TV.

So we had a 4K LG TV. You can just play any Android game. You could play special games designed for Tegra. We then have a partnership with Steam where we then press a button and now you can play, you can access your PC, which is somewhere else in the house, wirelessly. You now start playing Assassin's Creed, which is a very high-end PC game, on your TV.

Then you say I want to connect to my GRID server, whatever your service provider is for games. Now you can play a game off the Internet and play it on your TV through the Project SHIELD device. So it has been very exciting.

I think I was just showing you -- we turned on Bing this morning and we were listed as one of the top five coolest things at CES. So we are pretty happy about it and looking forward to hopefully making some money off of it.

**Harlan Sur** {BIO 6539622 <GO>}

Yes, Project SHIELD has certainly generated a lot of interest, as you mentioned. I guess the question that the market is asking is when is SHIELD going to be available and at what price points is SHIELD going to be available to consumers and through what distribution channels are you going to try to launch this product?

## Rob Csongor {BIO 3210739 <GO>}

Those are all fine questions that I can't answer right now. We have said that it is available in Q2. But we haven't announced a distribution strategy. We will obviously have a distribution strategy and we will roll that out when we can.

I think the most often asked question is how much. There has been a number of articles, some analyst reports that have pointed out things like what it should be priced at. If you guys have opinions, we will be happy to take them.

But I mean essentially you are looking at the functionality of, say, an iPod Touch plus a JAMBOX plus a game controller. I mean that is about $450 worth of stuff. I am not saying that is the price. But we will roll all the details out a little later on.

## Harlan Sur {BIO 6539622 <GO>}

Okay. Then on Tegra 4, at the event on Sunday I think the team showed some performance comparisons relative to the iPad 4, relative to the Nexus 10 tablet and a bunch of other tablets. Performance was, by far, better with the Tegra 4-based platforms.

The team is sampling the product now and the design cycles, whether it is smartphones or tablets or compute platforms, is fairly lengthy. So I guess the question is given the solid traction that you had with Tegra 3 last year in tablets, the Surface, the Nexus 7, the Nabi 2. And others, do you anticipate your share in the tablet market with Tegra 4 will be higher in 2013 than it was in 2012?

## Rob Csongor {BIO 3210739 <GO>}

It is hard to say. It is really hard to say. I think that we obviously got a good start and we have -- I think the last report we were a higher market share in Android than anybody and certainly in Windows.

But obviously everyone is forecasting the tablet market to grow pretty fast, to be the size of the notebook business within two years. As part of that there is a very large ecosystem starting to form. Everything from Shanzhai tablets in China, millions and millions of low cost units, children's tablets.

I don't know if you guys saw the -- did you see the Nabi Jr.?

## Harlan Sur {BIO 6539622 <GO>}

Yes.

## Rob Csongor {BIO 3210739 <GO>}

Nabi Jr. was launched. It is a kid's tablet using Tegra 2 and it is at Walmart at the end of this month for $99.

So anyways, we are not going to win all of them. I know we are not going to win all of them. I think we will do fine. We are not going to win all of them. But I think the combination of all of that plus I think what you are going to see is Tegra showing up in more types of devices.

We have talked about our automotive business. We have embedded business. We have -- obviously, you saw Project SHIELD so you know that you can make a gaming device out of it. In fact, mobile devices I think have become your preferred gaming device for many people. So there is just a lot of different markets that are possible, I think, with this type of technology.

## Harlan Sur {BIO 6539622 <GO>}

2012 was the year where we did see some of your competitors exit the applications processor market. Texas Instruments, Freescale -- they had some, I would say, fairly substantial customer engagement. So with the exit of these two competitors have you seen a new set of customers that are coming to NVIDIA to engage with you on your Tegra platform?

## Rob Csongor {BIO 3210739 <GO>}

Nothing that we can announce or talk about. I mean, sure, we would love to do a tablet for Amazon and we would love to do a tablet for a lot of people. So we will see. I don't know what we can talk about there.

But I think just qualitatively, I think one thing that has become clear I think is that it is easy to do something, to make something. You can make an apps processor. I think that is pretty easy for anybody to do.

To make one that is world class is very hard. It is really, really hard. Anybody who is in the graphics business knows how hard it is to extract the performance out of a graphics core. It just takes an enormous amount of expertise to do it and I think that is the reason why not everybody can make a world class --

## Harlan Sur {BIO 6539622 <GO>}

Absolutely. The Tegra 4, as you mentioned, was well telegraphed to the market -- the performance, the specs, the fact that it was probably going to be rolled out at CES. I think the other product that I think the market was maybe anticipating would be

introduced by NVIDIA was your Grey chip, which was an integrated applications processor with 4G cellular modem all integrated into a single chip solution.

So I think there was some expectation that you would roll that out here at CES. I guess the question is, is the team still on track to introduce the product in the first half of this year? When would you expect to start to sample Grey. And what would be the earliest that we would see some of your potential smartphone customers ramping this solution?

### Rob Csongor {BIO 3210739 <GO>}

We are exactly on track on Grey. We had not anticipated launching it here. When we had disclosed our roadmap we said Wayne, our internal codename for Tegra 4, would be launched right on the intersection line between Q4 and Q1 and then Grey was going to be later in the year. What we have disclosed is that we are sampling Grey in the first half of this year. The product is essentially done.

### Harlan Sur {BIO 6539622 <GO>}

Okay. Done meaning out of the fab or --?

### Rob Csongor {BIO 3210739 <GO>}

Taped out.

### Harlan Sur {BIO 6539622 <GO>}

Taped out, okay.

### Rob Csongor {BIO 3210739 <GO>}

Then we expect -- for these types of devices it just takes a while to get them designed in and certified and validated and so on. So when we have talked about Grey we have talked about it as it's -- by the time you get devices out -- I think it samples in the first half of the year. Device is, I think, the second half of the year. You might see some revenue this year.

But revenue-wise, it is really a 2014 contributor. This year is mostly Tegra 4 plus i500.

### Harlan Sur {BIO 6539622 <GO>}

Got it. Any questions in the audience?

## Questions And Answers

### Q - Unidentified Participant

(inaudible; microphone inaccessible)

## Q - Harlan Sur {BIO 6539622 <GO>}

Why don't you repeat the question?

## A - Rob Csongor {BIO 3210739 <GO>}

Yes, I will repeat the question. The question is the new game device from NVIDIA, is that something that we are demonstrating?

We are certainly demonstrating it to customers and the -- well, we are demonstrating it to the press. The customers are gamers. So we are not -- we don't have it openly available and we are not handing them out.

It's still -- that version that we are showing is not the production version. So the press, we are giving it to the press and the press are playing with it and writing their reviews and doing their blogs. It is already all over YouTube and everything. So if you want to see how it works and everything there is a billion videos already.

## Q - Harlan Sur {BIO 6539622 <GO>}

Any other questions in the audience? Maybe -- oh, back there.

## Q - Unidentified Participant

It is Rod Hall. I just wanted to ask you about this gaming device. It seems like most gaming is moving on to these mobile platforms -- smartphones, tablets. Why would you even bother to make one? Where is the market for that?

## A - Rob Csongor {BIO 3210739 <GO>}

Where is the market for the -- I just want to make sure I got the question right. Where is the market for gaming?

## Q - Unidentified Participant

Yes. It seems like gaming devices, stand-alone gaming devices are on their way down as people play more on connected to smartphones or tablets. I am just wondering, I am just curious to know where the market for those kind of devices is in the future; why you guys would put effort into making one.

Is it just to showcase Tegra 4's capabilities or is there still a big market out there that we are unaware of in the future?

## A - Rob Csongor {BIO 3210739 <GO>}

No. It is definitely not a reference platform for Tegra 4. It would be a really expensive reference design.

I think the difference, the fundamental difference between this and other, I would call them game consoles, is that the game consoles are fundamentally closed platforms. So what we believe we are doing is enhancing the gaming market that you just referred to.

The growing gaming market in Android, I think, is taking off because it is open. It is an open platform. You are not paying $60. You have free to play, you have user-generated content. And in addition you have your blockbuster games.

So the successful elements of the market today are free to play, some people call it freemium which is starting to ramp like crazy, especially in China which is our biggest market for our GPUs. Then you have got all the Android content. So all of these things we would like to feel like we are just accessorizing it.

When we talk to gamers one of the frustrations if you play an Android game is that you kind of have a joystick by moving your thumb around on the glass. Wouldn't you like a real joystick? You should sit with me when we talk to some of the gamers, they love it.

You already see a huge accessory market out there already. Have you guys seen all these components that will strap onto a tablet? They have all these doohickeys that they can Scotch tape it on to a tablet and then try to make it a better gaming experience. All we are doing it is just tapping into that.

## Q - Harlan Sur {BIO 6539622 <GO>}

Any other questions in the audience?

Maybe moving over to your GPU business and computing fundamentals, PC shipment demand continues to be relatively muted here this quarter and it looks like first half of this year, even with the rollout of Windows 8. However, the gaming side of the market has been outgrowing the overall market. As you mentioned, there were several huge blockbuster games that were launched in the second half of last year that contributed to NVIDIA's growth, especially in the Third Quarter.

In hindsight, your guidance for Q4 for revenues to decline about 8% sequentially seems spot on with the soft demand environment. So I guess the question is as the quarter progressed, as you look at the near-term fundamental environment, are you seeing anything different, positive or negative, relative to your expectations?

## A - Rob Csongor {BIO 3210739 <GO>}

No. I think our expectations are pretty much what I think you guys are. There is a soft market out there for sure. Our Q4 guidance was based on a couple things. One of it was some softness that we see in the market.

One of the things we have been pointing out recently is that what I think many people don't know about NVIDIA is that we do not address the whole PC market. I

think we have talked about that in the last several conferences. We focus on specialty PCs like gaming, like workstations, like high-performance computers. Those are specialty PCs that are really only 5% of the overall market. But they drive 75% of NVIDIA's gross margins. They drive NVIDIA. So 5% of the PC market and that is it.

Now those markets are not immune to macro conditions, they are just more robust. Gamers are not going to not buy Black Ops 2 because there is a flood in Thailand and hard drive prices are -- they are wrapped up around the block. So it is a little more robust.

But I think our Q4 guidance was based on the macro and then also just based on the fact that we saw that for tablets Q3 was a build quarter. For Nexus 7 and for Surface and for tablets in general people were clearly building ahead of the holiday. Then Q4 is post the holiday build. So we just saw a seasonal decline.

We don't know what seasonal means yet. It is still a relatively new business for us. But we clearly saw that that was a seasonal build.

So going into next year I think we will have to see. We will have to huddle up and figure it out. I think we continue to see PC gaming growing and DFC intelligence is basically projecting 10% CAGR for the next three to five years. So we see it remaining very strong, particularly in Asia and particularly being driven by the free to play model.

I think the Quadro business we see softness in the business. But the Quadro business has not gone through its capital refresh yet and that is the one thing that I think will help us.

## Q - Harlan Sur {BIO 6539622 <GO>}

Yes. That was the one question I was going to ask you because you have been talking about the (Romney) ramp being slower in the workstation market and the Kepler ramp tied to that is still in front of you. Have you gotten any more visibility about when that ramp will potentially start to kind of unfold?

## A - Rob Csongor {BIO 3210739 <GO>}

A little bit. It is slow, it is just slow. Quadro always ramps slower. Typically our consumer GPU business you will see product launch and then it is, boom, it is out.

In Quadro you have to -- we provide, for example, the Quadro to HP. HP has to certify the workstation. It goes through apps testing and certification for 3D Studio Max and all of the various professional applications. So it always just takes a little longer. Then it is just kind of staggered.

## Q - Harlan Sur {BIO 6539622 <GO>}

So the Quadro business was weak in Q3. It was weak in Q4. It doesn't sound like fundamentals have changed all that much there.

## A - Rob Csongor {BIO 3210739 <GO>}

I don't think so. I hope we are at the low point just because, again, we were hoping to already have been in the Kepler refresh. So hopefully that was the low water mark.

## Q - Harlan Sur {BIO 6539622 <GO>}

I think one of the important things which you touched upon was there is this idea in the market that NVIDIA is tied to the overall PC markets. I think it is important -- I think you mentioned 70% of your gross margins come from the specialty PC segment of the market. I think that translates into, what, roughly about two-thirds of your GPU revenues are tied to the specialty PC gaming segment of the market, which -- specialty PC segment of the market which tends to carry higher gross margins. Is that kind of the way to think about it?

## A - Rob Csongor {BIO 3210739 <GO>}

Yes. If you look -- that is exactly right. If you look at our business and all of our GPU shipments, 20% of the units are in that specialty PC segment. So 80% of the balance is what we call premium PCs, which is somebody buying our lowest-end GPU and putting it into a notebook and then up-selling it. So margins for those are significantly lower than up above.

In the premium PC segment, as you can imagine, I mean if you looked at our announcement on Sunday you just can't imagine all of the software work that goes into creating virtual GPUs that you can put in a server or the software that went into that gaming device or the amount of complexity of what it takes to build the workstation software that generates the special effects that you see in movies. I mean all of that is such high barrier to entry that obviously that is where we focus our attention and that is where the high gross margins are.

## Q - Harlan Sur {BIO 6539622 <GO>}

So JPMorgan's tech team is anticipating a flattish PC market in 2013. I think, as you mentioned, the third-party research guys that follow the gaming industry are anticipating that gaming-related compute platforms should grow, within that GPU market should grow. Is NVIDIA anticipating that similar to 2012 that you will outgrow both the specialty PC gaming market as well as the GPU market?

## A - Rob Csongor {BIO 3210739 <GO>}

Well we haven't given guidance but we would certainly hope so. The one thing that we are proud of is over the last four years, if you have looked at our GPU business minus the chipset business which we exited, we have grown steadily despite just about every headwind you can think of. Whether it is floods or everybody was saying attach rate was going to decline and everybody was saying -- anyway, I think we have executed pretty well.

We have come out with -- not only have we kept -- we keep innovating on the gaming side, which is what drives gamers. We keep innovating for the workstation.

The HPC business is our fastest growing business right now.

You saw Intel announce the Xeon Phi and they are entering this market. And you know Intel doesn't do anything unless they think it is a big market. So we now have GPUs also going into the servers.

I think one of the fundamental questions I always get and people always ask is how can GPUs be a growth business when the PC market is declining? I think the answer is we are in robust segments of the PC market and then there is these new growth segments which are kind of outside the PC market.

## Q - Harlan Sur {BIO 6539622 <GO>}

We have a question right here.

## Q - Unidentified Participant

(inaudible; microphone inaccessible)

## A - Rob Csongor {BIO 3210739 <GO>}

The question was, are we concerned about supply with TSMC given Apple might move in there. We are not now. We were concerned about supply last year for sure. But we are not concerned right now. I think we have good visibility on our supply and I think TSMC has got a good supply and a good program for us so I think we are good for the foreseeable future.

## Q - Harlan Sur {BIO 6539622 <GO>}

A question right there.

## Q - Unidentified Participant

Can you say a couple of words about the Xeon Phi and why you think customers are going to keep choosing your product? The reception has been good on Phi -- lower prices, similar lots, easier coding.

## A - Rob Csongor {BIO 3210739 <GO>}

I think that if you were to speak to people I think there is a couple of things that would be clear about our position versus Xeon Phi. We have a significant head start. We have been developing, for example, libraries, pieces of code called directives, which are the code that you need that calls a multitasking algorithm in to take care of your code.

So those applications, those libraries, those directives have been developed for all of the key markets, like finance and molecular dynamics and everything. And it took us seven years. It has taken us seven years. Intel still has to write all of those.

And the issue of easier code is just not what you think it is. When Intel says it's easier to do code primarily what that refers to is that if you had x86 code it is x86 code. You still have to write all of the parallel programming algorithms. So the x86 part, yes, that will port but you still have to write all of that new stuff.

Intel's strategy so far has been to drop price and that has been successful. I think that is a good strategy if you are entering the market. I think they have been funding some places and that is fine.

But I think even that is partially -- I think that is a partially successful strategy because you still have to write all of the code and that has a cost. So it is not so straightforward.

Overall, we are thrilled, we are thrilled. I mean you know Xeon Phi is Larrabee 4. I mean this is -- we take Intel seriously every time, every time they announce a GPU.

But anyways I think it is a validation for us. One of the issues we had always run into is that sometimes you need two suppliers. A lot of places you go they require two suppliers and I think having Intel in there I think validates the market for us.

## Q - Harlan Sur {BIO 6539622 <GO>}

Great. Then my closing question, as you think about 2013 and the growth prospects it is clear that Tegra, your Tegra business, will continue to be one of the fastest-growing segments for you. This year kind of help us rank order the other major drivers of growth for NVIDIA in 2013.

## A - Rob Csongor {BIO 3210739 <GO>}

Wow. Rank order them? I don't know if I can do that, Harlan. But let me identify what I think our growth areas are. I don't know if they are particularly in rank order but --.

I think this year will be a good year for us in China phones. I think it will be a good year for us certainly for Windows tablets. I think you will see automotive; it will be a good year for our automotive business. I think it will be a good year for high-performance computing. And I certainly hope it will be a good year for Project SHIELD and for new types of Tegra devices coming out.

Hopefully we still have a few surprises left. Oh. And I think it will hopefully be a big year for our GRID, the cloud computing products, because we announced the gaming one. We have disclosed that there is a professional version, what we'd call GRID Pro. So there is the pro version and then there is the gaming. And we still have that coming.

## Q - Harlan Sur {BIO 6539622 <GO>}

Great. Thank you, Rob. Thanks for joining us today.

**A - Rob Csongor** {BIO 3210739 <GO>}

Sure.