Dadi Perlmutter Keynote

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Dadi Perlmutter Keynote

[Beginning of recorded material]

Dadi Perlmutter: I'm going to talk about mobility. I'm going to talk about basically personalizing mobile computing, or computing via going to mobile. The past few months have been quite tough for me and my family. There were health problems of our parents, so my wife had to go to Israel. I stayed with my daughter in the U.S. doing work and watching her. And unfortunately, my son had an accident in Europe, and he was in the hospital there. And I presume many of you are parents, and the worst thing you want to have is one of your kids in that position, and you cannot see them.

Thanks to mobility we had phone discussions, but I told him, "You're telling me everything is fine, but I don't believe you. I really want to see you." So, he said, "No problem. I have my notebook with me, and we could set up a video conference call, and I could show you that the situation is not as bad as you might think." Which, of course, we set up this vide call using Skype. Yes indeed, he was in the hospital. I was worried, but seeing is way better than hearing. And this is how mobility kind of helped us. And the fact that he had his notebook with him was very good.

By the way, I asked him, "How the hell do you have your notebook with you on vacation?" He said, "Two reasons. One, I'm your son, and therefore I'm still doing some work during vacation." So, that's not a good thing that I

taught him. And the other one, "I do use my notebook for video calls, so I can talk to my girlfriend, so I can talk to family, I can talk to friends, and it's way better than using a phone."

Pat spent his time talking on the upper right side on the computing world, on the teraflow. I'm going to spend time on the lower part: clients, desktop, notebooks, all the way to extremely low-power, all the way down to milliwatts that will enable getting Intel architecture CPUs into extremely small functional devices that can fit in your pocket. And Anand Chandrasekher is going to devote the next hour to go talk about this one.

The beauty of the whole thing is that basically that all this, from small handheld that could fit your pocket, all the way up to a teraflow machine, all running the same base software, all accessing the same set of applications, all accessing the same Internet. And I think this is a new thing that only Intel can deliver.

So, talking about getting things more personal, I want to start with a little bit of history. This is what a personal computer used to be. It was way more personal that the big mainframe that was in a backroom back in the '80s when the PC was invented. But we all have to admit it was quite a boring, [beige] huge device making a lot of noise, sitting on your desk. And there

were not too many industrial designs of these boxes. It was personal, way more personal than anything before. But it wasn't really personal. It wasn't yours. You didn't carry it with you. I don't think that anyone had any emotional attachment to this machine.

It is getting way more personal. People are carrying notebooks with them. And mobiles are becoming way more mobile; they're becoming more stylish; they're becoming more adaptable. And you can see them in a large variety of form factors -- of shapes, of sizes, of colors -- which brings much more connection, a personal connection, a personal/emotional attachment to these machines.

One of the proofs that this is more personal, it creates more desire for people to use, is by how many people are buying notebooks. And I don't think anyone was focusing well the evolution of notebook in the past few years. And if you look at the chart, you find out that basically all the analysts, including Intel by the way, were upping their estimates on how many notebooks are going to be sold on a yearly basis. And it's been continuing, and it goes up and up. Our current focus is that notebooks will surpass desktop sales anywhere between 2009 to 2010.

So, I'm going to devote this talk to notebooks. I'm definitely going to talk about the new platform, Montevina. I'm going to introduce new platforms for both notebooks and desktops called Nettop and Netbooks. I'm going to expose new technologies which we're going to put into our products based on customer surveys that we are doing. I'm going to give more data on WiMAX, and last but not least, talk about Stine, which is becoming a more and more important factor of personal computing.

So first, in order to make something personal, you have to enable more and more people to use this technology. So, it means that it has to be simpler, it has to be more affordable, and it definitely has to continue to use the probably most astonishing, most important application that exists on the Earth today, which is the Internet. You need to bring the Internet to more people. And probably with this technology is where portability meets affordability, which means that more people could use now this technology.

It starts with kids in school. In any school, from emerging markets to mature markets, buying notebooks for kids is very expensive. And it's a usage that could be spread across many people, either the first computer in emerging markets where affordability is very important, all the way to people in mature, richer countries that are using second or third or fourth PCs, and they're buying this one.

So, I'm going to show here two new designs that are going to use, uh, this technology, which is very much based in an Intel Atom technology. This notebook is running Linux, and this other notebook is running Windows. So, as you see, affordable doesn't mean ugly-looking, not interesting design. It's really nice, good-looking, stylish design.

Personalization really means that you have more choices. You cannot have one-size-fits-all. Different people have different needs, or the same people have different needs based on what they're doing during the day, or evening, or night. You may use a notebook during the daytime at work, and you could use a MID in the evening when you go with your family to a nice event.

So, you could choose -- based on our technology which is software consistent across the whole spectrum of these devices, all the way from the high performing, running everything you want, good performance, you can do media creation; highly demanding, performance demanding applications running on a Centrino notebook -- using the more affordable Internet-centric Netbook or Nettop. And last but not least -- Anand is going to spend more time on this one -- really getting all these capabilities and putting them in our pocket.

What are the characteristics of this Netbook? They are Internet-centric. It doesn't mean that it's limited to the Internet, but having Intel architecture inside this box really allows you to access the Internet using exactly the same capabilities you use on your PC. It is using the Intel innovative process technology, 45 nanometer hafnium-based silicon. And you could use this technology for building teraflow machines, mainstream notebooks, and extremely affordable CPUs to put into Nettops, and extremely low power CPUs to put in your MIDs. It runs the software of Windows or Linux. And in order to be affordable, it has to be purpose-built. And last but not least, because of its low power, it allows you to build it in a fashionable, extremely small form factor.

Being affordable means it's all about cost. And we've put a lot of technology into this affordable CPU, so you could build a really small motherboard. It starts with anything you need to do with power supply and voltage regulations; extremely low power allows you to eliminate the hissing; packaging technology that allows you to connect directly to the motherboard, eliminating an expensive socket; clock and last but not least, anything that has to do with better routing for the motherboard.

It comes up with saving, on the motherboard itself, 20 to 25 percent compared to a low-cost desktop or notebook design that exists today. But there are many things that will be done to increase the saving for the OEMs and ODMs that are doing these designs. It optimizes various platform factors from CPUs to remove fans that not only create noise, but also cost some money. It allows you to put or move a half-disk to a smaller, cheaper solid-state disk; and allows you to put various operating systems and re-innovate around supply chain. So, this is a purpose-built focus on cost to make sure that it is way more affordable than previous designs for low-end computing.

We are working with [the ecosystem]. And later this year, in the summer, we are going to get this product into production. There are going to be many manufacturers creating designs for these solutions -- both for the battery operated form factor, and things that are on your desk.

I'm now going to move to talk about notebooks. Developing for the notebook means that you need to understand what people desire. When you want to make them more personal, you need to understand what creates emotion, what really makes people feel good about a technology. And what's better than asking the end customer directly? So, I'd like to roll a video, and show you what they think.

[Video]

So, talking about notebooks, like clockwork, every year we come with a new solution that gets better and better over time. And this time, I want to talk about our June of 2008 notebook called Montevina. Montevina does great things across the whole foundation of mobile computing, starting with the traditional form factors of mobility; starting with performance, battery life, stylish form factor, wireless; and expanding things to new vectors, new capabilities around manageability, virtualization, and security. So, let's talk about them one by one.

But before doing that, we are basically up-leveling our branding. Because of the greatness of Montevina, we believe it worth calling that the real new Centrino, or Centrino 2. First, we start with performance. With Montevina, we're going to put in even a higher performance, Core 2 Duo, on 45 nanometer . . .

And there is a growing need, a growing desire, for more and more performance. Professor Wessel, from the University of California at Berkeley, is a music professor. He's writing music, and then he comes along

and performs this music using notebooks. And he would like to have more and more performance. And the more performance we deliver, the better it is.

But computing performance is one aspect of performance. The second aspect of performance is very much visual computing. And visual computing becomes an extremely important factor in notebooks. Visual computing spans across multiple vectors. It starts with delivering high definition DVD, both [Blu-ray] and [Edge] DVD factors.

Video quality is becoming a fundamental feature, and we are scoring above 120 in a measure called HQV. By the way, the highest score you can get is 130. This is the score that you're expected to get on today's higher end graphics card. By the way, it's comparing to less than 30 that we scored two years ago, and around 95 that we scored on our [Carmel] generation platforms.

It comes with new display technology and display ports, [Edge DMI] with [Edge TP]. It comes with a scalable performance. Up until now, we had a fixed performance. We can now scale our graphics performance across multiple power performance points. And we are delivering 1.7x performance over the previous generation using a low-power, 533

megahertz solution. And we're going to deliver up to 2x using a 640 megahertz at the higher power. So, this is a great scalability.

And last but not least, battery life. Our new chipset, codenamed [Cantiga], running on Intel 65 nanometer technology, could run a full-scale HD-DVD movie for two and a half hours. And our next generation is going to run even longer, because unfortunately flights from San Francisco to Shanghai takes way more time, and I would like to see more movies along the way.

But we have been spending the past 20 to 30 years on improving processing performance using silicon technology. And the CPUs and graphics and media chips have improved significantly year after year after year. But I/O remains limited very much in performance.

So, I'm happy to say today that Intel is going to introduce its solid-state disk later this year. And it comes with many wonderful features. It comes with the right form factors; it comes with the capacity of 32 gigabytes and 60 gigabytes. It gets, because of its speed, to a much faster response time of the system. And of course we solved a lot of performance issues and reliability issues that exist on current designs of solid-state technology.

So, in order to manifest the great performance of our technology on the Montevina, I would like to call both Craig and Adam to help me with this one.

Craig: Hi, Dadi.

Dadi Perlmutter: So, what are you going to show me today?

Craig: Good to see you. Well, we're going to start out with the visual computing that you mentioned on the previous [foil]. Over here, we've got a couple of Montevina systems. This is an Intel concept, as is this one here. What we're doing on this -- from the current generation that we're shipping today, we've made some significant changes to the visual computing, and we're able to actually play HD-DVDs like "Karate Kid" --

Adam: Whoa, whoa, whoa. It's 2008. Maybe we update that just a little bit.

Craig: All right, what about Blu-ray?

Adam: Blu-ray's good.

Craig: Maybe some new titles like "I am Legend," or in this case, "Resident Evil: Extinction." It's kind of a zombie movie, so be careful on that. But it's a really big deal to be able to do this with Intel integrated graphics, because not only do we have the hardware engines to get the job done, but we can get it done in the chipset and save the energy, save battery life so that we can get through the movie, and still have time for some other things.

Adam: Yeah, maybe enough to go ahead and do a little gaming, as well.

Craig: Okay.

Adam: So, when we're talking about integrated graphics and gaming, a lot of people have been a little skeptical. But we want to go ahead. And with Cantiga and our newest generation, we're looking at double the frame rates and almost double the performance of 3D mark in some games like this. Or playing a little "Universe at War."

And I don't know about you guys, but as far as versus the desktop, I'm a mobile gamer myself because after about five minutes of sitting down at the desktop, the wife comes after me with chores. It's too easy for her to find me. With the mobile platform, easy to go ahead and get out, and maybe do some serious gaming outside of the house for about two or three hours. You know what I'm talking about.

Craig: In the garage?

Adam: Well, you know, whatever it takes to get away.

Craig: In the dog house. Be careful there.

Adam: Yep, yep. Sure. So, as we can see, Montevina's going to bring us to the great new entertainment value that we have comparable to the desktop, and give you that ultimate experience on the go, Dadi.

Dadi Perlmutter: Okay.

Adam: I think, Dadi, you might be able to use some that extra gaming performance.

Dadi Perlmutter: I'm looking for a better performing pistol game.

Adam: Okay. What about a first-person [tickler]?

Dadi Perlmutter: Okay, maybe. So, we're talking about I/O. And I really want to find out -- is solving the I/O problem really solving the performance of the platform? And I'm also told by some skeptics, even though being a computer architect myself -- it doesn't sound right that people say that if you have a solid-state disk, you don't need a fast CPU, which I find completely wrong. But I want to see in my eyes, and I want to show the audience what is the [comparison].

Adam: You're a pioneer in this business. With Intel SSD and enabling those, it actually unlocks the power of your processor. So, for Intel, we make the fastest mobile processors in the world. However, if I'm bottlenecked at the I/O, it doesn't unfortunately give me much. So, if you wouldn't mind, we're going to go ahead and jump into a live demo here. Dadi, would you give us a hand?

Dadi Perlmutter: Sure.

Adam: All right, I'm going to introduce this here. What we have are three identical systems onstage. Dadi, this one's yours. This is the Intel Core 2 Duo with a magnetic disk. Don't worry, it's a 7200 RPM magnetic disk; it's quite fast. But unfortunately, this middle system is mine, and this is a Core 2 Duo system with Intel solid-state disk in it. And this is no ordinary disk. We've done a lot of things in working with our chipset to take advantage of our Nano Flash and our I/O drivers to make this happen to the expectations of the industry.

Dadi Perlmutter: Yep.

Adam: And Craig, your system over here?

Craig: Fortunately for my computer here, I have everything that you have, Adam, including the Intel SSD. But I also have our Penryn 45 nanometer hi-k processor. So, we're going to see how that affects our little video encoding scenario. Why don't we give this a one, two, three really quick here, Dadi, on "Enter." One, two, three.

Adam: All right. Well, what's happening here is we're using Sony Vegas Pro 8 to do a little bit of a video encoding. We're taking a high definition video clip, and we're going to crunch that down and get ready to put it up on YouTube. So, right now what you see is with this system over here, we're offering HD boost. We've got special instructions for SSE4. As Craig mentioned, he does have the Intel SSD drive in there, as well, and that's really going to give him an advantage.

Craig: And it looks like I'm done.

Adam: Nice work, Craig.

Craig: So, as far as eliminating that bottleneck, if you really wanted to get that last ounce out of your processor, let's eliminate the other slow pieces.

Adam: Oh! I'm done.

Craig: [Crosstalk] you're set?

Adam: In this case, we were still able to take advantage of that SSD drive to get the video file on and off the harddrive quickly, and get the application up and going sooner.

Dadi Perlmutter: You mean that I am the slowest over here?

Adam: You are extremely slow.

Craig: Sorry about that Dadi. We promise we'll give you the faster machine next time.

Dadi Perlmutter: Okay, yeah.

Craig: It doesn't look like you're going to be finishing anytime soon.

Adam: But you can see here not just the reliability; not just the extra battery life; not just the quiet system that you get with an Intel solid-state disk -- but you do get hand-in-hand performance with our Penryn architecture processors.

Dadi Perlmutter: Okay. Thank you very much.

Craig: Thank you, Dadi.

Adam: Thanks.

Dadi Perlmutter: It's wonderful to see a shiny microprocessor even brighter with the new I/O technology. I talked about personalization, and making things personal meaning you need to continuously ask the people that are buying this technology what they need. And we do that on a yearly basis. And it's not surprising to see that performance is still at the top of what people desire from a good notebook. And of course, they want battery life; wireless capabilities; and good, wonderful looking; and small and light.

But in the past two years, we are getting more and more input that people are more and more concerned about protecting the data in their notebooks,

especially when they are stolen. This is something that we have not seen earlier. And I talked about this one in last year's IDF, and I mentioned that this is an unmapped requirement. This year, I'm going to say that we've done something about it.

So, I'm very happy to announce the Intel Antitheft Technology, which Intel is working together with the industry notebook OEMs and all the big names of service providers and security software, ISVs, to make sure that we have a solution that really works on asset and data defense. One of the biggest worries is that if I lose my notebook, if it's been stolen, that the notebook and the data is not going to be maliciously used by people who I don't want to use the data on my notebook.

So, we have the mechanism building on the Intel Manageability System, a secure processing that we have inside the notebook, and we are kind of protecting the data. And it enables, whenever this notebook is going to be connected to the system, to basically lock the system, lock the disk, so people cannot be maliciously using and getting the data.

We are putting a lot of effort into management of corporate clients. And we introduce Manageability two years ago. So, this is kind of a refresh. It really puts in all kinds of manageability and security capabilities, like managing

disk protection. It's a network security creating a [tacit] execution to make sure that the thing that you could do, or our IT could do, that no one else could go access those.

It has an energy efficient performance, because you can have your desktop or notebook sleep, and it could be waked up remotely if someone wanted to make some kind of a manageability access to your machine. It, of course, allows a service provider to go put provisioning into your desktop as part of a service agreement you may have with this service provider.

This is a roadmap. We created this technology and put it on our desktops back in 2006. We have taken this technology and made it wireless-ready, making Santa Rosa last year. And we introduced the new [wave] of Manageability at the late end of last year. We are now introducing a better technology going into our Centrino 2, and of course are going to continue to evolve this technology on our architecture.

So, what is this next thing that we're going to do? It is very much around improving wireless manageability. And it very much could wake up your notebook, which is going to be asleep, saving battery. And if it needed a service, needed an access, you could wake it up remotely over the wireless communication. And it could create a client-initiated remote manageability,

which means you [set] up to a service, the service wants to do something with your notebook, you want to get some kind of an upgrade or a fix, you could do it remotely.

The next big thing we are talking about is virtualization. It allows all kind of capabilities like building different partitions on a single client, which means you might run your regular stuff, and then come out with a service, or you want to partition between what you do at work and what you do at home without each one interfering with each other and creating all kinds of problems or attacks in your system.

So, I'd like to have this opportunity to invite a customer to talk about how they are using virtualization to supply new services that enhance the product that they are selling. So, I'm very happy to call George [Hay], Senior Vice President and Chief Technology Officer of the Lenovo Group. Good morning, George.

George Hay: Hi, Dadi. So, I know you speak English better than I do. But I do believe I speak Chinese much better than you do. So, I will speak Chinese. [Speaks in Chinese]

[Video]

That's all for my presentation. Thank you, Dadi.

Dadi Perlmutter: Thank you very much.

George Hay: Thank you very much. As usual, a pleasure.

Dadi Perlmutter: I'd like to give you an update on WiMAX technology and its acceptance in the marketplace. Korea is the first place where the first version of WiMAX named WiBro was launched. It's increasing the number of users. It gets more population covered. More devices are being designed to use WiBro, and it gives way better performance for data access than a regular 3G user is getting.

Komstar, a Russian company, is going to start later this year on early deployments of a mobile WiMAX in Moscow. And a joint venture between KDDI and Intel are preparing early trials using WiMAX in the beginning of 2009 in Tokyo.

We are working on a technology, we are preparing this technology, we are going to make the Montevina WiMAX ready. And I would like to call Craig to go help me to show what we are going to do with WiMAX. So, if he's not going to come, I'm going to do that.

Basically what you see over here is WiMAX waves coming in. And you can see video streams coming around. There's multiple products coming from multiple users. So, what you see over here is a base station for WiMAX. This one is done by . . . as I mentioned before, we're going to have multiple products in Montevina. The first one is the embedded card of having both Wi-Fi and WiMAX, going to be part of Montevina, and we're going to do that. Hi, Craig.

Craig: How you doing?

Dadi Perlmutter: I'm doing your job better than you are.

Craig: No, no, please. You're doing a fine job.

Dadi Perlmutter: This is a . . . point, a PC/MCA card we're going to fit into the notebook. And this is a USB dongle by Asus supporting WiMAX. So, we are getting ready for WiMAX to start showing up later this year, and of course evolving and continuing later this year.

Craig: So, we're also going to see some great clients that are coming out for the year of WiMAX in 2008. Obviously Anand's going to be talking about some of our new MID designs. I have an R50 from Asus over here, as well as some great -- Adam-invented designs over on this side. So, this is an IVE for Intel Vehicle Entertainment. So, in addition to all of your navigation as well as all of your in-car entertainment, that's going to be tied together with broadband.

Then again with our new category of Nettops, and some of our very, very nice thin and light notebooks that I have over here, an X300 from Lenovo. It's going to be one of the very thinnest and lightest notebooks with a full array of features, as well as another thin and light model we have from Founder at the end. And then, of course, is our coup de grace, all of our Montevina notebooks down here at the bottom playing some amazing games.

So, we're going to see some really great -- it's not only about the bandwidth that we're going to get down to these clients for Montevina, but also about the latency that we're going to get. So, as far as that high speed and quick responsiveness, that's going to be a great call for us. So, this M51 from Asus as well as the new Aspire. So, some great new stuff that's going to come down for connectivity for WiMAX, Dadi.

Dadi Perlmutter: Okay, wonderful. Thank you very much.

Craig: All right. Thank you.

[Applause]

Dadi Perlmutter: Talking about personalization, it's at the end of the day about style innovation. We have here a large variety of designs which are becoming more and more beautiful as we speak. These are all Montevina designs for various OEMs. And in order to show you what we are doing with this, I would like to roll a video to show you what people think about how mobility and innovation are connected. Please roll the video.

[Video]

Talking about fashion, my daughter bought me a nice present, which is this new cell phone. What she thinks about me, I don't know. I don't know what you think. And I invite you to go see my notebook.

So, doing things so nice, so fashionable, so desirable, requires a lot of great technology underneath it. It first has to do with packaging, and we have made a lot of effort to reduce our packaging size from 35 millimeters to 22 millimeters on a side for our new Montevina systems. And just on your right, you see the extremely small packaging technology we're using for our mobile Internet devices. So, making things smaller, lighter, is better. It's like the Monkey King -- not the huge sticks; it's the small sticks that matter.

It's also about power. And we are introducing a new line of products support 25 watts on Montevina. And all this wonderful technology really generates new designs that you were not seeing beforehand on [U.S.] technologies -- things like the MacBook Air. Very stylish, very thin, nice design, and of course is running everything that you would like to run on a notebook.

But Apple is not the only one. I'm happy to hear that Lenovo 8300 is extremely light -- I'm told weighing less than a kilo -- having a solid-state disk inside, a great Intel 45 nanometer processor. It is going to be Montevina-ready. And it's a very nice, thin, light -- it's the notebook of your desire.

So, if it's so good, I think we can make it better. And we're going to continue our yearly cadence of creating new notebooks every year. And I love this quote that I saw two days ago from Daily Tech. You could set your clock to Intel's mobile platform roadmap, and you could continue to set your clock according to this one.

Calpella, our 2009, is going to feature a new microprocessor, the next generation coming out from the Intel Tick-Tock Factory, coming to mobile next year, together with the stunning new computing visual experience, better manageability, better security for consumer and the business, and last but not least, evolutionary power management. We are going to feature new power management capabilities on Calpella that are really playing between the power of a CPU and graphics and visual computing, so you can get the best performance still not burning your laps.

What I'd like to show here is a technology that we are working on in our labs, which is [unintelligible] wireless. On your left, what you see is a video running on a regular wireless device. This is exactly the same system, same CPU, same platform, same video, but applying the power management capabilities that turn on and off the wireless, because the video is being delivered through the Wi-Fi into the computer. And you can see between the red and the green that we are saving about 4x power on the Wi-Fi card. By the way, this is about half an hour battery life running a video over the wireless.

So, we believe that this great future is going to come including the new notebooks, the new Netbooks, going to make mobile more personal, more desirable, which is going to make all our forecasts look smaller today than what they will be in the future.

So, to summarize, the computer is getting personal formability, and is getting better, more features. It's including new manageability for the client. It's extending the reach of the PCs because we make it more affordable through the Nettops. And last but not least, we make it nice, desirable, fashionable, great-looking using our technology. So, thank you very much.

[Applause]

[End of recorded material]