

Renee James; Vice President, Software and Services Group

Female Voice: Ladies and gentlemen, please welcome Renee James.

[Applause]

Renee James: Good morning. Let me add my welcome to IDF and talk to you a little bit about software. At Intel, software is all about developers. Our job is about turning your visions and creativity into new experiences, as you heard, on Intel platforms. So today I'm going to talk a little bit, and I'm going to also invite several developers up to share their experiences with you.

In addition to that, towards the end of the speech, I'm going to pick up on the Intel Atom™ Developer Program that Paul talked about yesterday, and we're going to go into a lot more detail. Specifically, we're going to talk about how you can make money, so I know you'll all want to stay for that.

Yesterday, Paul talked about the computing continuum, and how we're expanding into new segments of computing. Today, I'm going to show you how developers take advantage of the innovations across this entire continuum.

I'm going to start on your right side, on the right side of the continuum, and talk about multi-core and parallel processing, and the fundamental resources that are available for developers to get the most out of Intel platforms. Then we'll shift gears and we'll look at what's going on in mobile and devices and some of the other activities, and talk about the Atom Developer Program.

Tools are the basic building block for developers. I think you know that. We've been talking to you about tools for a long time. We support every stage of development for all of our different microprocessors with tools. We work with you from composing code, optimizing code, and really trying to tune and debug to get the most performance.

Last IDF, I talked about a new set of tools that we were going to come out with this last year, which we shipped in May, which were for parallel computing for client applications that plugged into Microsoft Visual Studio on Windows. This is the first set of client tools that we have available to take advantage of multi-core processing, which would ease the implementation for developers. It helps developers plug into any phase of code: existing code, writing new code, trying to find areas where they can parallelize their code.

Since that launch, there's been a lot of interest on the site. I'm going to talk about the resource and the site where all of this can be found at the end. Everything I'm talking about – so you don't have to take lots of notes – is actually out on our developer network, so you'll be able to get details on all of it.

But since that launch, there's been a lot of interest. There's about 1,000 downloads a day on the client tools. And customers are already seeing real results. You can see a testimonial here from the University of Houston talking about what they were able to get out of using the client tools, an order of magnitude or a 10x improvement on their code.

I think the important thing about these tools is that they're meant to be easy to use. Intel has long produced high-performance computing tools for parallel programming. Many people know about our tools. This tool suite is really meant to ease development at any phase. It can be on existing code, as I just said, for people doing client-based applications.

Enough of me talking about that. I'm going to start with our first developer – and we have many, so be ready – who has used Intel tools to do a client-side application. It's multi-core, 64-bit, threaded. And they're going to talk to you about what they've been able to accomplish with Intel. Help me in welcoming Carl Jacobson, the Vice President of Marketing from Cakewalk. Good morning, Carl.

[Applause]

Carl Jacobson: Good morning. Thank you very much.

Renee James: You're first up. No pressure. [Laughs]

Carl Jacobson: Wow. I just wanted to take this in. When Intel called and said you needed an opening act for the keynote –

Renee James: That's right.

Carl Jacobson: – I had no idea of the scale of this.

Renee James: That's right.

Carl Jacobson: But scaling is something that we do well together, and we'll get more to that in the demo.

Renee James: Fantastic. Tell us a little bit about Cakewalk, set up the demo, and then we'll have Brandon share some music with us.

Carl Jacobson: Absolutely. I'd be happy to do that. Cakewalk is a company of musicians, and we create tools for musicians. All of us, we use the tools, and we put everything that we can into making sure that people can be more creative. And that's one of the things that's great about working with Intel, is that you give us the air that we breathe to do that. Every single chipset, every single platform advance that you've done, we've taken advantage of that, and we've taken things further.

As you can see on the slide up on the screen today, right now, Pentium 4, we hit it.

Renee James: [Unintelligible]. There you go.

Carl Jacobson: When you introduced multi-threading, we added that, and we opened our cores up to be unlimited. So as many cores as you have, as many threads as you have, we take advantage of them. And it just kept going until we got to the Core-i7. And with that, you completely knocked it out of the park. Anybody in the back with gloves on? Put them down. It's gone.

Renee James: Outstanding.

Carl Jacobson: We worked really closely with you. Through the optimization work and the developer tools that you provided to us, and the support that you provided to us, we realized a 30 to a 240 percent increase in efficiency throughout our application. And it really, really took things to the next level. So I've got Brandon Ryan here.

Renee James: Good morning, Brandon.

Brandon Ryan: Good morning.

Carl Jacobson: To introduce him, I'd just like to say, Intel, you guys, your rock stars are not our rock stars, but our rock stars really are rock stars. [Laughter] They're musicians that run the complete gamut, you know? Musicians like Brandon, lead rock stars, people that make film and videogame music, and people that are just rock stars in their head that like to get down in their bedroom as a DJ or a musician.

Renee James: Mooly, are you out there? [Laughs]

Carl Jacobson: So Brandon is going to be playing a project for us from Cori Yarckin. She's one of the top up-and-coming female artists here in the States. And he's going to show you what was possible before all of the optimization work that we did, and then he's going to take it to the next level and show you what's possible today.

And just before he gets in I just want to say everything that he's doing today – you might not realize it when you see it – but these were all

separate stages of the process of making music. And he's realizing everything all at once on one machine, and it's really, really amazing, so I'm going to turn it over to Brandon now.

Brandon: Yeah, hi. The core i7 has really been a godsend for musicians, and part of the big deal about this is that everything we do, we can do instantly and in real time. So for instance whenever I want to play an instrument, no matter how many layers I have, it's right there, and I can just reach right in and play. Any kind of instrument, you know. So everything, no matter how many layers are going on, is right there and available to me. So it's about immediacy. But it's also about just having tons and tons of layers and many, many tracks, and as many instruments and effects as you want.

So this first project is about 40 tracks, which would've been pretty impressive even a few years ago, and some effects processing and things. The second version of the project I'm going to show you is 140 tracks, so a huge increase, and each track is an instrument or a layer or a sound. And then there are tons of effects processors that give you complete studio quality sound, I mean a giant room full of gear. So we've moved to that level and the ability to do this on one computer. So it's really a dream come true.

So let me just show you a little bit of the first project and then we'll talk about the second project. And I actually have them both loaded. I can switch between them, and we're using all of the RAM [due] to 64-bit capabilities. So let me just hit play, and we'll play just a little snippet of the 45-track version.

[music plays.]

Okay, so it sounds pretty good, sounds pretty good, but not completely fully orchestrated like something you'd hear at the Grammy's or something like that. Now this is our 140-track version, and I'll play this and kind of scroll down and show you the whole thing.

[music plays.]

Here come a lot of tracks. That's good. So I'm going to go ahead and just mute so we can hear all the orchestration that's happening. So essentially like a full orchestra has been added to this piece of music. And then on top of it there's actually a high-res music video as well, which I'll go ahead and bring in here, and so this is an 800-megabyte video playing along with these 140 tracks and many, many instruments, two dozen live virtual instruments, 50 effects, all happening at 96 buffers. So the real-time capability of this is two milliseconds, which is essentially real time. We're using all of the cores available, so as many cores and as many multithreading tools you want to give us, we'll use.

Renee James: Fantastic. Thank you, Brandon.

Brandon Ryan: So, yeah, really a dream come true. Thank you.

Renee James: Okay. Thanks, Carl.

Carl Jacobson: Yeah, thank you, Renee.

Renee James: We appreciate your support. All right. So thanks Cakewalk for getting us started. Our innovation in tools isn't stopping with the parallel suite. To that end we've acquired a couple of new companies. Paul mentioned we've made many software acquisitions. Two in this area that many of you in the audience know because I've talked to some of you yesterday, Cilk Arts and RapidMind – both of those companies will be incorporated into future releases of our test and our data parallel tools, giving you, as developers, even more support as we work towards our future multicore products and even into some of our high-performance-based products.

So as you heard from Sean yesterday, embedded is also a very large focus area for Intel. And you see the overall embedded market segment is growing very healthily. These are a couple of examples. Not all of them. But to ensure that our developers -- as I said, software at Intel is really all about helping you as developers work with our platforms -- so to ensure that we have the best-in-class tools and the best operating environment support for embedded, we made another acquisition, which I'm sure you've heard about, of Wind River Systems.

Okay, that's good. Wind River, I think you all know, is the market leader in embedded tools and operating environments, as well as middleware and other professional services. And I'm going to have Scott Morrison, who is the general manager of VxWorks, join me

today, and we're going to talk about how we work through some of the challenges for multicore in embedded. Scott?

Scott Morrison: Good morning, Renee.

Renee James: Welcome to Intel, Scott.

Scott Morrison: Thanks. It's great to be here.

Renee James: Yeah. Give us a little background about Wind River very quickly, and then we'll get into the multicore.

Scott Morrison: Sure, yeah, because not everybody's familiar with the company. So Wind River was founded in the early '80s and we released our market-leading real-time operating system VxWorks over 20 years ago now.

Renee James: Yeah.

Scott Morrison: And we actually released about 5 years ago a complimentary product which is now the market-leading embedded Linux solution in the marketplace. And we've had a lot of success over the years, fortunately, to the point now where there's over a billion – that's a billion with a B – devices that've been deployed –

Renee James: We like billion.

Scott Morrison: Yeah, we like billions, especially in embedded. But more than a billion devices have been deployed using a Wind River operating system. But

we're not just an operating system company. We've always had a very strong focus on tools right from the beginning, and I think it's actually driven a lot of the adoption of the operating systems and the success we've had over the years.

Renee James: So what are some of the common challenges that developers are facing in embedded today, we've been talking about this morning?

Scott Morrison: Okay, yeah, sure. Well, as you know, the embedded market is a very broad marketplace. It's actually a collection of a lot of submarkets. But that being said there are a lot of common factors. In fact, there's overlap with some of the things that were said earlier today, and so those being things like smaller form factors and lower power consumption and more connectivity, all at the same time that our customers are being driven to add more and more features and functions to the devices. And actually those things together are driving probably the biggest trend we're seeing in embedded, which is the adoption of multicore processors. And multicore is a great solution for many of those things. You get a lot of additional performance and lower cost, lower form factor. But it does bring with it some challenges, in particular software complexity and debugging challenges for the embedded developers.

Renee James: So are you going to give us an idea of how you solved this problem?

Scott Morrison: Sure. We just happen to have an embedded developer working on his device over here.

Renee James: Just happened to have a developer. Good morning, embedded developer who just happens to be here.

Scott Morrison: What a coincidence.

Danier: So I'm [Danier], and I'm working on a medical device. It's heart monitoring equipment, and I'm going to show you how you would use the tools here.

Scott Morrison: Great.

Danier: First I wanted to show you what I have here, what it's working on. It's a core 2 duo board and some other Wind River tools out here. So let me show you what I have on the screen up here. So what you're seeing is the LCD screen of my equipment. These graphics were created using Silicon Graphics Suite from Wind River, and the beauty of this is I design it on my PC and with the click of a button it runs on this unchanged, no compilation. It runs as it is, so that's the beauty of it.

Renee James: Fantastic.

Scott Morrison: Very efficient.

Danier: So while I was porting this my work was to port over from a single processor to a multiprocessor, and [ambulant] systems have their own challenges. So let me show you some of the tools that I used. So I was tracking a bug, and I wanted to show what tools did I use for it. So one of the very good tools that we have in the tool suite is called System

Viewer, and let me just show you one of the logs of the System Viewer toolset. So System Viewer, as you see, is like an oscilloscope for software, and it measures everything that's happening on the board at a nanosecond accuracy.

So my problem was that I had two tasks, two processes running at the same time, on two cores. In a normal system when I had only one core, this would not have occurred. As you see, in 10 microseconds since this process started, it started creating resource conflicts. So I would use this tool to detect this kind of very minute differences. And then I would use a tool like [Datek] – so what I have here is a vendor-ware [unintelligible] [emulator] that fits onto the processor and the best part about this is that it can synchronously debug multiple codes, two or more, running at hundreds of megahertz. And it works on core 2 duo right now.

Scott Morrison: And Atom I believe now, too, right?

Danier: And Atom too, yes, that's right.

Renee James: Fantastic. Okay.

Scott Morrison: Okay, well, thank you –

Renee James: Thank you very much.

Scott Morrison: I'm glad you were able to get the bugs out.

Renee James: Thanks for that. So that's great news that that's all running for Core 2 and Atom now, and so our embedded developers can, if they don't already know you, can get to know you immediately.

Scott Morrison: Absolutely. By the way, I don't know how many people noticed, but Danier never said what operating system he was debugging on, and the reason is that all of the tools you saw there, they run equally well on VxWorks and Wind River Linux, and that's true of other tools we don't have time to show you today and even middleware components we have available.

Renee James: Do you want to give us a glimpse of the future of embedded and then we'll –

Scott Morrison: Sure, absolutely. I think it will show up on the screen, some of the more–what we would consider leading-edge embedded systems that are available today. And many of these, you know, are things that were dreams of science fiction 20 years ago, and even 5 years ago were very hard or impossible to realize. And a lot of what you're seeing here is sort of realized through the use of multi-core processors and advanced tools.

And in fact the things that are in development right now that we're working with our customers on are very, very exciting and are going to even significantly increase in terms of form and functionality, largely powered by multi-core processors and embedded tools that can unlock the power of those processors.

Renee James: Well, thank you. Thank you Scott, and welcome to Intel.

Scot Morrison: Thank you very much, glad to be here.

Renee James: Okay. So a lot of the work that Wind River does is buried in the system and you can't see it. So I'm going to switch from the invisible to the visible and talk about visual computing, which is of course about everything you can see.

Last year, I introduced the Visual Adrenaline program, which was our developer program aimed at bringing graphics tools to developers and working to ease the process of creating visually stunning experiences on Intel platforms. Since the launch—you can see on here how many users we have—we've had 800,000 page views and over 60,000 visitors a month to the Visual Adrenaline program. So we're very happy with the developers' support and the activity that we're seeing in the program.

But visual computing isn't just about bringing in graphics. It's also about digital media. So today, we're announcing an extension to the Visual Adrenaline program with a media STK. This is a STK that allows developers to accelerate video transcoding on the CPU and on Intel integrated graphics through a simple hardware API. CyberLink—many of you know—is an early adopter of this tool and helped work with Intel on the STK. And I'd like you to hear from their CEO, who unfortunately couldn't be with us today. But let's hear from the CEO, Alice Chang.

[Video plays]

Renee James: So thanks to CyberLink for their help. As Alice said, it is very easy for you to get engaged with us on the media STK. Again, I'll talk about the resources available at the end.

So the media STK gives developers the capability to work on integrated graphics, but it also gives them the ability to prepare for where we're going in the future with our high performance graphics, which is code name Larrabee. You heard a little bit about this yesterday from Sean.

But Larrabee isn't only about visual computing. Larrabee is also about parallel computing. So the STK and hardware provides flexibility and the compatibility of the Intel architecture to scale for throughput compute as well as intensive graphic applications. The software tools that we're building are going to be a full suite. I talked about this last IDF. Today what I'm going to show you is a couple of early samples.

We have STVs and the early STK shipping to several developers now. So you know—because I've had a lot of questions on this—we are supporting not only native programming, but also all of the standard graphics interfaces. So DX, OpenGL, and of course OpenCL as the standard evolves. We have early video back on a couple of samples. I'm going to share those with you today.

And the other thing I want to add is last year we had a dedicated developer forum around Larrabee and our integrated graphics called

the Visual Computing Summit. We're planning on doing that again. So we're not doing a lot of that work here today. We had a lot of things we wanted to cover with you. We're having a very focused developer forum for that, so stayed tuned on that.

Okay. The first video I'm going to show you is a standard video game effect called "film grain." It makes the scene as you see look old and scratchy. The point here is that on a standard GPU, it takes roughly 120 lines of code to just create this effect. By comparison, on Larrabee the developers that worked on this were able to set up this technique with 25 lines of code and get it running. This is an example of a very traditional technique, much easier to do in the programming model. We're talking about using a standard IA base with standard C++ programming model on Larrabee.

The second video is called [a torse nod], and this is a technique called "list render target." And again, if you take a look at it, you can see the overlaps that show what you see in real life—the darker colors—overlap front and back. This is about 500 lines of complex DirectX code on a traditional GPU, and it was 150 lines of code to set this up on Larrabee, or 30 percent less required than programming a traditional GPU.

So these are just a couple of early examples. We wanted to show what some of the developers have started working on. And the tools, as I said, will be part of the Visual Adrenaline program, and you'll hear more about the computing summit coming.

Okay. So we've talked about multi-core a lot. We've talked about parallelism. We've talked about visual computing. And we've briefly talked about throughput computing.

So what I'd like to do is talk about and introduce a company that puts this all together. And the reality is they make beautiful things that are visually stunning, but they're really a high performance computing partner of Intel's. What they really do is very complicated high performance computing. So putting together parallel computing tools, the amazing use of Intel core products and HPC, they've created things that they've never been able to do before, and push the boundaries of high performance computing.

I'd like to introduce to you the head of R&D from DreamWorks Animation, Lincoln Wallen, to talk to you about what progress they've made since they moved over to the Intel core product line. Good morning, Lincoln.

Lincoln Wallen: Good morning, Renee. Good to see you.

Renee James: Nice to see you. Lincoln, we announced last year at IDF that we were in a partnership with DreamWorks, and we've been working together for about a year. So why don't you give us a status report before you show us our wonderful progress.

Lincoln Wallen: Sure. Well, our teams have been working together for as you say just about a year. It's been a pretty intensive collaboration. One thing that's certain about our business is the increase in creative appetite. You

might remember last year that Jeffrey mentioned Shrek's Law. Well, to remind you, Shrek's Law is Jeffrey's way of communicating that every iteration of the Shrek franchise, the amount of compute power that we require to meet the creative appetite doubles. Well, our creatives are still pushing the envelope.

Renee James: All right, well, so why don't we move into you showing us where you guys are going.

Lincoln Wallen: Sure. Well, you may remember in Shrek 1 there was a dragon—a beautiful dragon.

Renee James: I think we're going to show the dragon so people can get a reference. The dragon from Shrek.

Lincoln Wallen: Remember the dragon? In our next movie coming out next year—How to Train Your Dragon—the dragons are not just supporting characters, they're actually some of the main stars of the movie.

Renee James: I think we have a picture of one of them.

Lincoln Wallen: That's right. Indeed in some of the scenes, there are more than 1000 dragons performing at the same time.

Renee James: These dragons are different than the Shrek dragon though.

Lincoln Wallen: They are different, yes. Following Shrek's Law, our creatives really want these dragons to be central characters, to emote, to bond with the

other characters in the scene. So the complexity of their animation is pretty astounding—almost four times the amount of animation controls are needed to actually get the performances out of these dragons.

Renee James: So I think we're going to show this is an animator's work station where the dragon is set up.

Lincoln Wallen: So as you mentioned, we really use Intel tools and Intel platforms across the full spectrum of production. What you see here is really the animator's view. So this is a work station based work flow where the individual animator—where we lose the lighting, we lose the surfacing—and what's left is really the behavior. And a dragon like this has more than 4,000 controls for the animator to use to essentially craft the performance.

And you can sort of see some of those controls along the wings getting that behavior. Obviously that's a pretty steep compute load, and we've love to be able to actually put more effects and more context, more environment into the work station settings so the animator can produce a performance of greater sensitivity.

Renee James: So I think you're going to let us meet some of your dragons, aren't you?

Lincoln Wallen: That's right.

Renee James: Sneak peek?

Lincoln Wallen: A sneak peek of some of the creative output and what that sort of animation can produce.

Renee James: From "How to Train the Dragon."

Lincoln Wallen: "How to Train Your Dragon."

Renee James: Okay. First ever seen, I think.

[Video]

[Applause]

Renee James: When do we get to see the movie?

Lincoln Wallen: Well, the movie comes out March 26, 2010. And our teams have been working to deliver Intel tools, expertise, and performance, really, across the whole of our pipeline, including the rendering and lighting that you saw in that clip.

Renee James: All being done on Intel?

Lincoln Wallen: All being done on Intel.

Renee James: And it's going to be shown on True 3-D?

Lincoln Wallen: In True 3-D.

Renee James: We didn't bring 3-D, but when we get closer. So thank you for sharing that with us.

Lincoln Wallen: Thank you, Renee.

Renee James: Thanks.

Lincoln Wallen: Bye.

[Applause]

Renee James: I think Dragon's going to be a very fun movie, and, as Lincoln said, all created, from the workflow all the way through the rendering, using Intel Core products.

So we've covered how we use and push the limits of HPC in a very visual way. If you want to see more about DreamWorks, learn more about what we're doing specifically in 3-D, you can stop by our booth.

So I want to switch gears now and focus to the other end of the spectrum and look at small form-factor devices and netbooks and handhelds. We have been talking about, for the last couple of days, the expansive growth, specifically in netbooks and smartphone devices. Growing double digit. There's tremendous excitement about having PC experiences on smaller form factors. Dadi talked about it. Paul talked about it a little bit.

But there is a portion of the market that's focused on consumption-based Internet devices. And I really call these non-PC experiences. They allow users to quickly get into social networks, Twitter feeds, view their email, snack-and-go kind of usage model. And for this non-PC Atom-based experience, Intel has worked in the community – as you heard from some of the folks in the video; we have a big community effort – has worked on a Linux distribution called Moblin.

And what I would like to do is just clarify. Yesterday, Paul talked a little about Moblin and showed you the handheld UI. But Moblin is actually distributed through traditional operating system vendors. And I would like to ask Novell, one of the 17 OSVs that will distribute Moblin to device manufacturers, to introduce Moblin to you.

[Video]

Renee James: Okay, so I would like to move from that to asking a couple partners to talk to you about what they're doing with Moblin, and first introduce the vice president of small consumer devices at Dell, John Thode, and the CEO and founder of Canonical, Mark Shuttleworth, to help me talk about what they're doing. Good morning.

John Thode: Good morning.

Mark Shuttleworth: Hi there, Renee.

John Thode: Hi, Chris.

Renee James: Come on over. Hi, John.

John Thode: Good morning.

Renee James: Hi, Mark.

Mark Shuttleworth: Hi, there.

Renee James: Nice to see you.

Mark Shuttleworth: Oh, it's great to be here.

Renee James: Thanks for joining us. Okay, gentlemen.

Mark Shuttleworth: Renee, you know, over the last two years Dell and Canonical have brought a series of devices running Ubuntu Linux to market.

Renee James: Yup.

Mark Shuttleworth: And we've targeted those devices at developers and Linux enthusiasts. And with NetBox and Intel Atom we've also brought that to the global consumer audience as well.

Renee James: Mm-hmm.

John Thode: It's been a great partnership with Canonical over several years, and we've worked on a lot of exciting projects together, with global teams

working on a lot of different Linux projects. But we believe this is perhaps the most exciting collaboration to date.

Renee James: Great. So, Mark, are you going to show us something?

Mark Shuttleworth: Yeah, yeah. What we have to show you is running right over here.

Renee James: I better back up.

Mark Shuttleworth: You've seen videos, but this is the real thing.

Renee James: The real thing?

Mark Shuttleworth: This is the developer edition of the Ubuntu Moblin remix. As you can see, the interface is all of the goodness of Moblin. It brings together the very best of Moblin with all of the goodness of Ubuntu on Dell's top-selling netbook. I'm just going to –

Renee James: Uh-oh, you're in front of the – okay, there you go.

Mark Shuttleworth: Can you guys see that?

Renee James: Now they can.

Mark Shuttleworth: All right, I'm just going to show you – just firing up the browser.

Renee James: Mark, CEO, founder, and demo-er.

Mark Shuttleworth: Yeah, they send the astronaut out to the demo just in case it blows up.

Renee James: [Laughs] Right.

Mark Shuttleworth: So I'm just showing you this. It's amazingly fast and easy to use. The Moblin team's done a great job. What I'm not showing you is the really fast boot time. Working with the Dell team we've optimized that. And my favorite bit is the suspend and resume times which are blindingly fast, which really changes how you use the device. So this is the developer edition. Developers who are familiar with Ubuntu are going to be immediately comfortable and productive on this Moblin device.

Renee James: Fantastic. John, do you want to add something there?

John Thode: Yeah, absolutely. Hey, you know, we're really excited to be a part of the Moblin 2 project.

Renee James: Thank you.

John Thode: In fact, so much so that I'm proud to announce that we're going to factory-install Moblin 2.0 on Mini 10Ds. And I have my perfect favorite color edition here that I'm showing today, but it comes in multiple colors. And tomorrow, September 24, my son's birthday, will be the first day that Moblin will be available on a Mini 10D exclusively at Dell.com. So please all developers, take a chance and go and see that on the Web site, and please purchase a unit.

Renee James: Fantastic, John. [Laughs]

John Thode: Renee.

Renee James: It was a pitch. Thank you for your support.

John Thode: Renee, I understand Dell is the first OEM that's going to be available.

Renee James: Yes, you are the first. Congratulations.

John Thode: Well, let me tell you, we understand the community and have been working for years with the community to really develop a stable platform to make sure and ensure hardware and software compatibility works well. We've invested a lot of time and effort in the testing of this unit, and we think it will have a stable platform for developers to being application development. And I'd like to also say that Dell's a strong supporter of the Intel Atom application development program.

Renee James: Yes, thank you.

John Thode: It's a great initiative, a great effort. We think it'll add significant opportunities for developers to really kind of share their creativity on the platform, creativity in the framework, and also more importantly to add significant value to consumers. And that's what, after all, we're really looking for is the value proposition to the consumer.

So we, Mark and I, cannot wait to see what you all are going to come up with here as we embark upon this journey. And I encourage you:

go downstairs in the Dell booth. We've got

many, many units running, lots more different colors, and take a look at it. And make sure: Dell.com, tomorrow exclusively, buy a unit. It'll help my P&L. Thank you.

Renee James: Thank you, John, thanks, Mark, for joining us, and thank you for your help on Moblin. We appreciate it. Thank you.

[Applause]

Renee James: Okay, John, that was a good transition into the last topic. So we're going to now spend some time and delve deeply into the Atom Developer program, because I'm sure we all have questions about that and, of course, want to talk about how to make money.

So yesterday you heard that we were launching a major program. The program, I want to clarify, is for Windows as well as Moblin. And we're going to work with developers across platforms and across devices, although the program is starting really focused on netbooks because they're shipping in volume today.

So programming across different environments and different form factors does pose a problem. And you heard Paul talk about yesterday that we're pretty excited because we worked with our partners in the industry to try and solve and ease some of these development problems. Not all of them. They are still refactoring for form factors and things like that, that we have to take into account. But the most exciting thing, I think, that we've accomplished in this short amount of time is working with our partners at Microsoft to get their runtime

Silverlight working across platforms for Windows and for Moblin so that developers can have a single unified development environment across their Atom devices.

So I'd like to invite Ian Ellison-Taylor from Microsoft to come show you what Paul talked about yesterday, Silverlight across multiple platforms. Ian, where are you?

Ian Ellison-Taylor: Hey.

Renee James: There you are. [Laughs] This is your shirt. I love Ian's shirt. Can we get a close-up of that?

Ian Ellison-Taylor: Just in case it wasn't obviously, I'm wearing a jacket today, so I have to explain a little bit.

Renee James: So you have a geek underneath. Okay. Super. I know you have stuff to show us, so why don't we get over here and talk about Silverlight and the cross platform?

Ian Ellison-Taylor: Yeah, so increasingly developers and service providers need to be able to target multiple devices, and so this is really what Silverlight is all about. It's a lightweight runtime that can really target across the different screen types – the PC, mobile, and TV. And it's been available for a little while. We have a version today for PC and Macintosh, and through our partnership with Novell, we have a Linux version as well. And we've announced support upcoming for Windows mobile phones as well as Nokia.

So we just released our Silverlight version 3, which has a number of new enhancements. It has a bunch of new graphics features, in particular pixel shader support, 3D perspective transforms, and HD smooth-streaming video based on the HD64 codec. We've also added a bunch of new application features, a plethora of new controls, rich data [binning], and a whole bunch of new data controls. Finally, we've added support for out-of-browser. So now you can run Silverlight applications directly off the desktop even when disconnected.

Renee James: That's fantastic.

Ian Ellison-Taylor: So I think, taken together, that allows a whole new class of rich applications running across these different devices.

Renee James: It does. Fantastic. So why don't you start going down the line here and show us what you have?

Ian Ellison-Taylor: Yeah. So let's do a little bit of demo. So this is your classic PC showing a Silverlight smooth-streaming movie. This could easily be a Macintosh, it could easily be a different browser. I think you've seen some of that before. A little bit more interesting – so now we have the same experience running on Windows 7, running netbook, and still a great performance, a great experience.

Renee James: We're streaming the credits now. Oh, there we go, there's the video.

Ian Ellison-Taylor: It'll loop again, so we're good.

Renee James: Okay.

Ian Ellison-Taylor: Much more interesting now is Silverlight running on Moblin. So if I Alt-Tab, here we go –

Renee James: Never seen before.

Ian Ellison-Taylor: So this is what we've been announcing or we're introducing here – same experience –

Renee James: So this is the same experience, same –

Ian Ellison-Taylor: Same rich experience. If I click here, I can go –

Renee James: So a developer can write something and run it across all of these Atom-based platforms.

Ian Ellison-Taylor: So we can go full-screen.

Renee James: We should mention, this is actually a core 2, so this is a full-size laptop.

Ian Ellison-Taylor: Yep, exactly.

Renee James: So we can go both directions.

Ian Ellison-Taylor: And with smooth-streaming in Silverlight, you get the ability to browse around without any of the buffering, so you get a great user experience.

Finally we get to what I think is the coolest device. I have to crouch in front of the machine here. So I can just click the little –

Renee James: Little window, there you go.

Ian Ellison-Taylor: Hang on. It's very small. So here we go, here again, is running the same smooth-streaming high-quality video on this little tiny device.

Renee James: On Moblin.

Ian Ellison-Taylor: Running on Moblin, of course. And I don't know whether you can – oh, I'm moving it out of the way. I don't know whether you can see just how tiny that device is.

Renee James: I think they can see it.

Ian Ellison-Taylor: So there you go. So that's the basic demo around Silverlight running on Moblin.

Renee James: Fantastic, thank you.

Ian Ellison-Taylor: Well, I just wanted to say because of Silverlight you get to leverage the same sort of tools and platform experience that's been around for a

while. It's going to be shipping next year, but if you go to Silverlight.net, you can get started right now.

Renee James: Get started right now. Thanks, Ian.

Ian Ellison-Taylor: Thank you very much.

Renee James: I appreciate the demo.

So what Ian showed us is really about bringing the continuum that Paul talked about to life all the way across a variety of Atom devices.

I want to thank Microsoft for that, and I also want to just mention, as Paul did yesterday, that Adobe, in addition to Microsoft, is also going to be supporting Windows and Moblin with Adobe Air, their runtime. And it's important for the community, the Moonlight project that's led by Novell, Intel will be supporting that as well. So we're going to continue with all of the efforts across Windows and Moblin devices on Atom.

All right, so the much anticipated discussion about the developer program. So I'm going to take a few minutes – we have a little bit of time left – thankfully Dadi was on the mark. So we can talk about the developer program here. It is not only designed to help developers innovate around Atom-based platforms and to bring those innovations to consumers, but it's also a way for our developers to make money from those innovations in a very unique way. So what I'd like to do is introduce the director of the Atom Software Developer Program, Peter

Biddle, to come out and talk to you in-depth about his new baby. Good morning, Peter.

Peter Biddle: Hi.

Renee James: Hi. Here they are, developers.

Peter Biddle: I think this is the first time we've ever been onstage together.

Renee James: Okay.

Peter Biddle: And I'm wearing my lucky socks.

Renee James: You're wearing your lucky socks. Why don't you tell them about your new program?

Peter Biddle: Okay. So the Intel Atom Developer Program is a program that we've launched focused specifically at developing for Atom netbooks. We think that netbooks are a phenomenal business opportunity, but we also think that there's this sort of innovation and usability gap on them. There's roughly 35 million netbooks on the market today, and nobody's developing software sort of specifically for their segment. They fit in your purse, they fit in a satchel or a small bag, they're probably the computer you have with you or the computer you're most likely to have with you. In that sense they're really a unique opportunity. As we've talked about, we're focusing on the runtime community, specifically our friends at Adobe and our friends at Microsoft, in order

to have a write-once-run-many model, so single binaries will run across –

Renee James: Many Atom devices.

Peter Biddle: All the panoply of Atom devices.

Renee James: That's right.

Peter Biddle: And another thing that we're doing that we think is actually quite different is most communities currently are thinking about how do they sort of build and monetize applications, so those are things that you would give and sell to end-users. But we're also focusing on components. So this would mean that you can build, let's say, a user experience DLL, you can put it up into our system, other developers can download that, and when they incorporate that into the application, the developer who wrote the component can get paid as part of the revenue share model. So we think that's really cool.

Renee James: From the application.

Peter Biddle: Yeah. And of course we're super happy to have support from the OEM community in the form of Acer, Asus, and Dell.

Renee James: For the stores.

Peter Biddle: For the stores, correct.

Renee James: [Unintelligible] consumers, yeah.

Peter Biddle: The name of the program for components is called D2D – or developer to developer – and we think that's really going to help differentiate what we're doing.

Renee James: Okay. So do you want to talk a little bit about the community and how the program's working and . . .

Peter Biddle: Yeah. You know, we have this great community –

Renee James: And how you get paid.

Peter Biddle: That's right. Getting paid is very important. As it turns out, you know, people want to – like Susie needs her braces, you need a car, you want to go on vacation, you want to get paid.

Renee James: That's right.

Peter Biddle: So we have this thing called the ISN or Intel Software Network that's a great community. We've got a ton of developers there. We have this really cool belt program modeled after Jiu-jitsu. And the belt program is based on sort of people's participation –

Renee James: Reputation –

Peter Biddle: Right. Reputation within the community, you earn reputation points –

Renee James: For technical contributions.

Peter Biddle: Right, for technical contributions and also things like blog postings, comments, support.

Renee James: Supporting the community.

Peter Biddle: Yep. And what we're going to do is we're going to carry that great model over into IADP –

Renee James: The Atom Developer Program –

Peter Biddle: Yep. The Intel Atom Developer Program.

Renee James: Okay. And what happens as you get reputation and points in the Atom Developer Program?

Peter Biddle: That's a really good question. One of the things we're thinking about is this idea that – we're going to be doing validation of all components and applications that are put into the program. And we're thinking wouldn't it be cool if we could use reputation as one of the ways you could essentially cut line. So if you've got five applications, 10,000 five-star ratings, and you're a black belt, you probably don't deserve necessarily as much focus from a validation perspective as someone no one has ever heard of. So we think that's a neat way to reward leadership and participation.

Renee James: Okay.

Peter Biddle: And so black belts – we have a black belt backstage. His name is Gaston Elar.

Renee James: Okay.

Peter Biddle: He's written one of our first applications, and I'd like to invite him out.

Renee James: Okay. Gaston.

Gaston Elar: Hello.

Renee James: Oh, black belt in a black shirt. Welcome. People here probably actually know Gaston because he's one of our major contributors in our forums.

Peter Biddle: Sure. So tell us about what you're doing.

Gaston Elar: You know I have a nephew, he's 5 years old, Nicholas, and he uses my netbook.

Peter Biddle: What are you, nuts? You let him use your computer?

Gaston Elar: No, no, no, let me explain. I developed an application and I've already uploaded it. The application replaces the desktop for both operating systems, Windows and Moblin, so you can use pictures with animations and many nice effects to choose the task you want to do with your netbook. And then it displays extra large icons to show you

the applications you can launch for each task. I could do it because I could use the power off of my Intel Atom processor. I've used Hyperthreading and [streaming instructions].

Here we have two netbooks. This is an Asus netbook. It's using Windows XP. And this is another Asus netbook. It's using Moblin. I'm going to launch this same application. And I need the same binary file in both netbooks at the same time, right now. Go.

Renee James: The compatibility of Intel architecture –

Peter Biddle: That's right.

Renee James: – hard at work.

Gaston Elar: So here it is, your application, the [playground] . . .

Peter Biddle: Ooh. Ah.

[Laughter.]

Gaston Elar: It's replacing the desktop on both operating systems so you can use a common-user interface. And it also runs on mobile Internet devices. So this is very important. Developers can make money with this program. Developers can make money targeting Intel Atom.

So there is an interesting message. You can make small changes to your existing code, and you can target netbooks, a really growing market, as you've already seen.

Peter Biddle: Cool. Thank you very much, Gaston.

Renee James: Thank you, Gaston.

[Applause.]

Renee James: All right, Peter. That was cool. So now tell us how you finish the story.

Peter Biddle: [Laughs.] So Gaston actually said it really well: you write your code your way, take existing code, you can tweak it, you can put it into the Intel Atom developer program –

Renee James: Listed to sell the components to other developers.

Peter Biddle: Listed to sell components, listed –

Renee James: Listed to sell the app.

Peter Biddle: I think the component thing is so cool. [Laughter.] Sorry. You – it's a great market opportunity. We think netbooks are phenomenal. We also think that clearly moving forward there's other great opportunities.

We built the system based on partners in the ecosystem, not just on a one-to-one relationship or a relationship between the ISV community

and Intel. And we're going to be very straightforward and transparent about things like app validation.

We've listened to the developer community. We understand that app validation is super important and that people want to understand what criteria they'll need to follow to get their applications into the system.

Renee James: Okay. And, once they're in the system, you can list for components or you can list for full applications.

Peter Biddle: Correct.

Renee James: Okay.

Peter Biddle: Thanks.

Renee James: Thanks, Peter. Great. [Applause.]

All right. So, as I said, I want to quickly just wrap up by talking about where all of these developer resources are. We have a site, the developer network – Peter mentioned it – at www.software.intel.com.

On that site, it's free of charge. You just can just register to be an Intel developer. If you're not, please join. All of the information about the different developer programs, the sample tools, everything is downloadable, sample code.

You can also access online help for questions you might have. In the Black Belt community, if you post, you're likely to get an answer immediately from somebody. If you have more help needed, people will connect you or you'll get connected to an Intel engineer.

We are very active in those forums across Intel. So it's the quickest way to get a question answered, to get assistance if you're stuck on something. Many of you are beginning to engaged. And I thank you for that.

So check out our booths downstairs. There's more demos. There's additional information about everything that I've talked about. And, as I said at the very beginning, software at Intel is really all about developers. So I want to thank all of you for your attention. Thank you all of you who have been with us and are using our tools and getting involved in our programs. Software is about developers, which means it's about you. So thank you.

[Applause. Music.]

Female Voice: Ladies and gentlemen, that concludes the keynote session. We now invite the press onstage for a brief photo session. Thank you. Have a great morning.

[End of session.]