Renee James; VP, Software and Solutions Group

[Beginning of recorded material]

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

[Applause]

Renee James: Good morning. At Intel, we've spent the past 40 years delivering the digital revolution. And like ink and vellum were to the early animators, today computers, monitors and mice are for modern storytellers. Today, the single voices that we saw in early films, we now have Dolby surround. And from the early color that you just saw in that opening video, we now can deliver full HD-quality playback on our PCs.

In the early days of Disney, thousands of animators would labor for years to deliver a single film. And today, digitally animated films can be done, full feature, in as little as 18 months.

Industries evolve and grow through technical advancement. At Intel, it's our heartbeat, technical advancement. And from the Pentium processor's ushering in of multimedia, to the Centrino platform bringing us wireless mobility, and today, Multi-Core unlocks and makes imaginable new things on the PC.

Today, I have a jam-packed 45 minutes for you. I'm going to pick up on the presentations that you've heard in the last couple of days, yesterday and this morning. I'm going to work with some of our partners. We have a lot of things to show you, some surprises, some

announcements. And we're going to share with you what developers are doing today with Multi-Core and some of the new programs we have to help developers work on Intel platforms.

So, jumping right in, we all know the basic calculus of computing, at least I'm sure most of the IDF attendees do. More processing power means more possibilities for software, from early Word documents to graphical GUIs and now to complex drawings and visualizations.

Single-core Pentium ushered in multimedia, as I said. But if you remember, they were very small 160-by-140 five-frame-per-second videos. We were all very excited about that. And today, with Multi-Core, we can do full HD quality, complex digital representations, 3-D worlds, and many other things. Multi-Core, more importantly, isn't just available at the high end. IDC's own estimates are that Multi-Core will be in all platforms by 2010.

So instead of me continuing to tell you, since this is a presentation about developers and software, I'm going to show you two examples of applications that were developed specifically for Multi-Core. Both of the applications you're going to see use the same underlying compute technology. They're very, very different ends of the spectrum. I'm going to start with a game.

Many of you probably know Far Cry. It's a very popular game from Ubisoft. Today, we're going to have the pleasure of seeing a preview of a game that's going to be released in November, Far Cry 2. It's set in

Africa. It's a wide-ranging terrain of savanna to jungle. I'm going to speak over the video and point some things out to you as we go.

But the key challenge the developers at Ubisoft were trying to solve was the illusion of being there, of being part of the game. And part of that is making sure that that illusion isn't broken and that things seems true and real, because that's how our brains work. They want things that look real and act real. So what you'll see is the Multi-core architecture being used for the combination of the physics and other AI effects, and I'll point those out. So let's go ahead and take a look at the game, and I'll give you some of the pointers as we go.

[Video plays]

Renee James: Okay, so in the opening, you'll notice the detailed landscaping. First, I want to point out that this game was tailored for interactive game play. So this isn't a level-based game. This is a wide-open streaming game with multiple different open worlds. And you'll see very realistic environmental elements right here.

These are actually procedurally generated on the CPU in real time. The clouds are not drawn. These are effects that are calculated in real time. You see the grass blowing, the leaves blowing in the wind. And, again, here the AI is automatic, you can see the deer running. So animals behave differently every time you play this game. And, of course, everything is destructible, which is, for the gamers in the audience, a really great thing.

Far Cry 2, which as I said, will be out in November from Ubisoft, uses Havok Physics. And it allows real-time interaction with the game, which really brings game play to a new level. The Physics is running on the CPU, and everything you're seeing is interactive game play instead of movies. And as you went through the game, if we continued, you would see that the game play changed every time you took a different direction. So, unfortunately, we can't do the whole game now.

But I want to go to the other end of the spectrum, literally, and talk about how Multi-Core has been applied to medicine. Cardiologists want to be able to visualize the heart, obviously pumping blood and see if there's any dysfunction or disease, preferably before they have to cut a patient open. And yesterday, Pat talked about embedded computing. And one of the most dramatic uses of embedded computing is what I'm going to show you this morning.

This is Philips Medical using a Quad-Core embedded processor to capture and analyze in 3D, in almost near real-time, allowing the doctors to interact with the data of a true pumping, beating heart. So I'm going to let you listen to Dr. Yaacov Sussna from the Hadassah Medical Center in Haifa to describe this experience.

[Video plays]

Renee James: So, as I said, this is a real revolution in medical treatment. And this is part of what the Balance Platform gives us. The Quad-Core processor

is allowing the doctors to interact with the large data sets, not only visualize it, but to interact with the data in near real time.

Both of the experiences that I just showed you were examples of parallel applications. And, of course, as many of you as developers know, the key to getting performance out of Multi-Core is parallel programming.

Exploiting parallel programming is not a new idea. A high-performance computing segment, or scientific computing, or throughput computing as you may have heard Pat refer to it, is in that industry we've worked for years to squeeze every ounce of parallel performance out of our products.

We introduced the first toolset and compilers over a decade ago for that market. But with the increasing adoption of Multi-Core into client-based machines, one of the questions that's being asked is not when we adopt parallel programming, but how. And it's undisputed, and I'm sure many of you have seen a lot of recent articles about the difficulties of writing parallel applications.

We have spent the greater part of the last five years working with our tools customers and our own work in helping our partners, some of whom you've just seen and you will see this morning, parallelize their applications. And from that we have developed a set of tools.

So one of the things that we've learned is, there's four basic things that these developers really ask us. One is where is the best place for me to

actually insert parallel code? If I don't want to rewrite everything, how do I get insight into the best place to work on my code?

The second thing is how do I do it? How do I write it so it's highly optimized, and it's safe code that scales? How do I check the code for bugs so I'm not inducing any race condition or deadlocks? And then finally, how do I optimize for performance and, of course, deliver that performance today, but ensure that it's going to scale in the future as Intel delivers more and more processing power up to and including products like Larrabee?

So today, I'm happy to announce a new step forward in parallel programming, the Intel Parallel Studio. This is a suite of four new tools that we'll be delivering in 2009. They will beta in November. These tools are each aimed at the core questions that Multi-Core developers have been asking us, and questions that we've worked very diligently to solve, in a set of tools that plug directly into Microsoft Visual Studio. This will become the ultimate all-in-one suite for parallelism, and we believe addressing a much broader range of developers, the Microsoft Visual Studio developer, through these tools. As I said, we're working very closely with Microsoft.

And one of the other elements of parallelism is, of course, that you need to have concurrency and a managed system resource. So the other element of our announcement today is not only our tools, but that all of the tools that we're building will work with the Microsoft concurrent runtime. And we're working with Microsoft such that applications that

are built using these tools will work seamlessly in the Windows environment.

So yesterday, you heard Pat talk about Larrabee and the new architecture for visual computing. And I know many of you probably had questions about what the tools and software support would be, or at least your should be because it's a many-core product. So today, I want to assure that the same level of tool support that I just announced for Dual- and Quad-Core will in the future have a tool set that will support Larrabee for both visual computing and throughput computing, which is a slightly different usage.

We are going to continue our advanced development and data parallelism. We, of course, support both task- and data-level parallelism in our tools. And we're working with our research team. Many of you have probably heard about some of the language work we're doing. We're going to continue that research and ensure that the work we do will plug into standard programming environments and the Intel tools.

So that's all I'm going to say on parallel tools today. But we have a site. You can go to Intel.com/go/parallel. And there are blogs. We have early "what-if" sites talking about some of the different tools. And, of course, all these tools will beta in November.

Okay, we saw in Philips and Ubisoft the Multi-Core transition through visual experience and what parallel MIPs can do in applications. A few weeks ago we announced a new relationship, an alliance with

DreamWorks, to revolutionize 3D animated film technology. Together, we hope to usher in a new era of 3D digital animation based on DreamWorks' exquisite storytelling and technology from Intel and a lot of software work between us.

Our focus is to shorten the time it takes to create and display the work for the animators in their real-time workflow. And then, of course, to greatly reduce the rendering time required for the final films. Performance improvement is not easy in this market segment, and we're very pleased to be working with DreamWorks. We can work together to learn new things here.

So here are some examples, historically, from DreamWorks on the data for Shrek. The data shows that the third adventure of Shrek took four times as many rendering hours as the first Shrek did. And if you look at the forward projection for Shrek Goes Fourth, you'll see that it'll take another two times again more rendering hours. And, remember, this is in the same period of time that compute power continues on Moore's Law.

At the same time, however, because of the incredible amount of compute power that we're able to put towards this, a single rendering task has actually improved 15x in performance, which is good news.

So with that, remember the video that I opened on. I actually stopped it in the middle of the digital revolution. I want to play it again and show you where the digital revolution is going to take us.

[Video plays]

Renee James: So today with DreamWorks, we're unveiling this new mark In-tru 3D. This will be used in conjunction with a new generation of 3D animated movies created by DreamWorks using Intel technologies.

At its core, DreamWorks animation is really a storytelling company. It uses animation as a means to tell its stories. And the man I'm about to introduce has been, for three decades, getting wonderful stories told. Beginning at Paramount Pictures, then at Disney, he oversaw a string of classic movies, but most memorably of all, he was deeply involved with the renaissance of animated film.

With landmark films such as The Little Mermaid, Beauty and the Beast, Aladdin, and The Lion King, it was then his turn to follow in the footsteps of the great Walt Disney and start his own animation company, telling stories like Shrek, Madagascar, and this year's hit, Kung Fu Panda.

Ladies and gentlemen, it is my great pleasure to introduce the cofounder and CEO of DreamWorks Animation Studios, Jeffrey Katzenberg, to show you the next step in 3D animated movies in true 3D. [Applause]

Jeffrey Katzenberg: Hey, everybody. You having a great conference? Yeah? Come on. Let's have some fun. All right. There we go.

So I'm excited to have the opportunity to share with you today what I believe is the greatest innovation to occur in the movie business in 70 years. I believe it will reinvent, redefine, and completely transform not only how we make movies, but even more excitingly, how audiences experience them. And thanks to the leadership of our new partners at Intel, we expect this experience will one day be available to consumers in many facets of their everyday life.

To my mind, there have been two great revolutions that have occurred in the history of films -- the transition from silent movies to synchronized sound, and from black-and-white to color. And I believe that the film industry is now entering the third period of revolutionary change. The first two, sound and color, were about bringing a better film experience to the audience. This one will be about bringing audiences into the film experience itself.

The breakthrough I'm talking about is 3D, but this is not your father's 3D, which used these kind of goofy cardboard red-and-blue anaglyph glasses, and it was pretty terrible. The technology was primitive; the film was dark and blurry. People got headaches and some nauseous. It really wasn't much more than a cheap exploitation gimmick. Also, I think it's generally a bad idea to market a product that makes people hurl. I think.

But just as new digital technology has drastically altered special effects, allowing audiences to feel like they're sailing on the Titanic or leaping buildings with Spider-Man, so, too, has it completely changed

3D into a medium that can replicate the most remarkable human sense of all, the sense of sight.

To appreciate the magnitude of this accomplishment, consider what has been achieved with the sense of hearing. In just a few decades, we've gone from vinyl to 8-track to cassette to CD to digital. Today we can capture, store, and replay sound with near perfect fidelity to our ears. Current 2D movies are still in the visual equivalent of the vinyl era. Many of them are outstanding works of entertainment and even art, but they do not capture the essence of being there, which 3D does.

At DreamWorks animation, we're so excited about the potential of this new technology, that beginning next year in 2009, all of our films will be authored and offered in 3D.

So what has changed? First is what happens in the movie theatre itself. Two film projectors that had to impossibly run in synchronicity with one another have been replaced with a single, very powerful digital projector that perfectly delivers the image for right and left eyes. So many of the imperfections in the past were caused by this cumbersome process.

Next are the glasses. These old red-and-blue glasses, anaglyph, have actually been replaced by the next generation which are polarized lenses. This eliminates most of the color distortion and sitting through a movie wearing them is actually comfortable and, for most of us, we won't feel like a dweeb doing it.

Most importantly, filmmakers now have a whole new set of very, very powerful authoring tools. For CG animation, this has dramatically expanded our creative canvas in many amazing ways. Now digital technology is taking us into the third dimension. This requires us to be state of the art in a business where state of the art lasts for about 10 minutes, which is why we turn to a state of the art partner, Intel.

Working with Intel, we've already begun developing 3D tools that will open up fantastic new creative possibilities. Bob Zemeckis, Jim Cameron, Steven Spielberg, Peter Jackson, George Lucas, all of these filmmakers are working today in 3D. They all see 3D as the next great frontier. And, in a word, these filmmakers are the very best. In the next few years, they will be making some of the best films, written by some of the best authors, crafted by some of the best production teams.

At DreamWorks, to further acquaint ourselves with these new storytelling tools, for our R&D, we took a scene from Kung Fu Panda and went all the way back to the storyboards and started from scratch and made this sequence in 3D using these new tools.

And we chose the most challenging scene in the film, which features rapid cuts, fast change of focus, blurred motion, and quick zooms and pans, all of which used to be difficult, if not impossible, to do in 3D. Let me show you what the end result of that was.

But there's a problem. Since I can't bring all 3,000 of you across the street to a great movie theatre, I'm going to do the very next best thing, which is we're going to bring the movie theatre here to you. So I think

if we -- there we go. Watch this. All right, here we go. That's pretty cool.

Renee James: That is pretty cool.

Jeffrey Katzenberg: While that's making its way over here, what you're about to see will actually never be publicly exhibited, but I do hope it will give you some idea of what digital 3D is all about.

For those of you who have not seen the movie Kung Fu Panda, let me first say shame on you. So for the handful of you there, the scene I'm going to show you introduces the villain of our story. His name is Tai Lung, and he is an evil Kung Fu master. And he's been locked away for 20 years in a high-security prison, and he is about to make his escape.

So I believe under your seats, you'll find a pair of these glasses. You will notice that when I put them on, like Will Smith, I look pretty damn cool. And so do you. So you put these glasses on, and remember that old great Life Magazine picture of people wearing these glasses and how ridiculous they looked? I just want to assure you, you do not look that ridiculous.

By the way, if you can't find those glasses under your seats, there are some people moving up and down the aisles here that have some extras. So if you'll throw your hand up in the air real quick and we'll try and get them to you. It seems like most everybody -- anybody missing? Okay.

So we're in good shape. So before we actually play the film, I just want to say a big, big, big call-out and a thank you to the company, Real D -- you'll see their logo come on at the start of this. They are really the guys that are doing some great pioneering in terms of the in-theatre experience. These are their glasses. This is a next-generation, newest-generation silver screen. And what's going on back there in the projector -- this is all part of their system.

And right now of the 1,200 theatres in the world that have 3D, probably 1,150 of them are Real D, and they've got another 5,000 or 6,000 on order. So they're a great company doing wonderful work. They've been very generous in helping us make the impossible happen here today. So with that, let's play this clip from Kung Fu Panda.

[Video plays]

Jeffrey Katzenberg: Okay. As I think you all know, theatrical films have always really defined the visual high-end. They've been something really of a living laboratory, if you will, for new effects that eventually become pervasive on everything from TVs to computers to video games. We believe that in the years to come, 3D will experience a similar journey.

As Renee is going to tell you, Intel is leading the charge to ultimately take 3D to everywhere that consumers touch visual content. The implications are tremendous and very, very exciting for the entertainment industry, for many of you in this room, and most of all for all of our customers.

But before turning it back to Renee to tell you how Intel is going to take us into that next decade, I'd like to give you a sneak peak at what we're going to be offering next year.

Our first CG-animated film, which has been authored in 3D, will be Monsters vs. Aliens, which will be released on March 27th. March 27th. [Laughter] Okay. Good, there we go. [Applause]

So, let me set the stage here. There's an alien force that is about to invade Earth, and it has sent ahead of it a giant robot. The president of the United States, very appropriately played by Stephen Colbert, has decided that he should personally come out for the meet-and-greet of the robot.

Put your glasses back on. We'll run a little piece from Monsters vs. Aliens.

[Video plays]

Thank you. So, in order for 3D really to have its best affect and impact, and for you to really be able to enjoy it in the super, super, high-end quality, premium experience that we can offer, the screen really needs to hit your peripheral vision. And obviously in a room of this size with 3,000 seats, that's an impossible thing to do.

But what we're going to do is, at 11:15, for about a half hour or so, I think twice, if anybody who's sort of been on the edges of this thing or

at the back of the room, we're actually going to set this up and play it again here, and you can kind of come sit where I think will be the more common experience, the sort of hot-spot of where this stuff plays at its best. So, you can come back in the room at 11:15 today and get a look at it.

I do hope this gives you a good idea why working with our partners at Intel we're really making just such a gigantic commitment to 3D. We've already begun to experience an incredibly productive relationship with Intel that is dramatically improving the way that we're actually making our films today.

The word "creativity" is a very special one, and it's generally associated with what goes up on the screen. We've been very impressed with the exceptional creativity that is happening behind the scenes at Intel. The tomorrow that they're actually working on today will be a fully dimensional one, and this is something that we frankly could not be more enthusiastic about, and we look forward to with both eyes wide open. So, thanks very much, appreciate the time to be here today. Thank you. [Applause]

Renee James: Thank you, Jeffrey.

Jeffrey Katzenberg: Renee.

Renee James: Thank you. Thank you, Jeffrey. As difficult as it is to follow Jeffrey, I'm going to ask you to stay. We have a few more surprises for you. Our job at Intel, as Jeffrey mentioned, is to bring this magic to the rest

of us. Following Anand this morning, it's only fitting that we shift gears and talk about what's happening with the explosive growth of mobile computing and mobile devices.

What we've seen have been examples of the high-end multimedia and high-end Multi-Core performance experiences. Our vision is that this kind of an experience, appropriately scaled, can be had across multiple different types of devices. As you see in the slide behind me -- I think many of you know that there will be over six billion devices that are all connected to the Internet in some way by 2013.

Small screens are certainly influenced by the wow factor of what you've just seen. The major challenge is for developers to be able to develop compelling experiences that move between laptops and mobile devices such as the ones that Anand spoke of this morning. And while that's a great vision for consumers, it's a really big challenge for developers.

So, fortunately we're starting to see tools that are emerging in the software development community that allow you to take visually stunning content and make it easier and accessible on a variety of platforms. The first of such tools is called Silverlight. It comes from our partners at Microsoft. I'd like you to please help me in welcoming Jason Zander, the general manager of Visual Studio. [Applause] Hi, Jason.

Jason Zander: Hi, Renee.

Renee James: Good morning.

Jason Zander: You're right. That is a tough act to follow.

Renee James: I know. I'm sorry. [Laughter] He's great.

Jason Zander: But we're going to try. Yeah. My kids are going to be jealous when they find out that I get to see cartoons that aren't even coming out until March.

Renee James: That's right.

Jason Zander: Yep. I'm Jason Zander from Microsoft. We've seen some very great entertainment experiences here today. One of the things I wanted to share with you is what we're doing with Microsoft Silverlight.

Renee James: Fantastic.

Jason Zander: We've been working with a number of different partners with Silverlight. One of those I want to showcase today is NBC.

On August 8th, NBC launched NBCOlympics.com. Right now they're streaming over 3,000 hours of high quality video from the summer games in Beijing, China. In fact, right here we're actually streaming live on this laptop as well as this MID device the running games themselves. You can see like the four kind of picture-in-picture sort of thing happening. This is actually live content since the games are going on right now. In addition, overhead what you're seeing is a demo

with some of the features that NBC has built into the system using Silverlight itself.

Now, NBC chose Silverlight for a couple of different reasons. The first is to give very high-quality video. It's what you would expect if you were watching television, for example, and it's [what I'd want to do] in order to see all of the medal races going on right now.

The second one was to enable more than just the video coming through. But in addition to that, allow NBC to incorporate their own brand of storytelling and analysis. For example, I can watch Michael Phelps win that eighth medal, which is very cool. But in addition to that, I can go back and look at things like what is the medal count, and what other sports are there, and how do I explore the games themselves? We think that that gives you a very immersive and interactive experience that people will expect to see in their browser.

Renee James: Can you tell us a little bit about Silverlight and how developers can work with it?

Jason Zander: Yeah. Silverlight itself -- exactly what is Silverlight?

Renee James: Yeah.

Jason Zander: Silverlight is a cross-platform, cross-device plug-in that allows me to write [rich-unit] applications. With the plug-in, we actually support industry-standard codecs. We give you the high quality video that you see. In addition to high-definition, we do adaptive [streaming] so you

can control your cost. And we allow you to integrate business models including advertising, as well.

In addition to supporting JavaScript for developers, we're also .NET-based, which means that we support all the common programming libraries that you would expect to use as a .NET developer, as well as the common programming languages like C Sharp, and Python, and Ruby, and things like that, as well.

Renee James: Right.

Jason Zander: And we run on all the form-factors you would care about. So, we have Internet Explorer, Firefox, Safari, the Macintosh, Windows, and very soon Linux.

Renee James: Fantastic.

Jason Zander: My team is also enabling a wide variety of mobile devices, as well. So, when you target the platform you can get ubiquitous coverage, and you'll be able to use these kind of interactive experiences.

Renee James: Okay, fantastic.

Jason Zander: So, I hope everyone will go ahead and try out NBCOlympics.com so you can kind of see what's possible. Wait until after the keynotes get done. But I think you'll enjoy the content that you see there.

Renee James: Okay.

Jason Zander: [Crosstalk] Silverlight.

Renee James: Well, thank you for joining us and giving us a view of Silverlight.

Jason Zander: Thank you. [Applause]

Renee James: Okay. Moving on to talk a little bit more about mobile devices. At last IDF, we gave you an update about Moblin. Moblin is an open-source project at Moblin.org that is a piece of work that Intel is working on, but many other partners have joined. It's focused on bringing this rich Internet experience to our Atom-based platforms.

Since IDF, we've had a massive expansion of the number of partners and developers who've joined into Moblin. I'd like to have Doug Fisher, the Vice President of Systems Software in my group at Intel come out and give us an update of what's been going on with Moblin. Hi, Doug.

Doug Fisher: Hi, Renee. [Applause]

Renee James: How are you?

Doug Fisher: Good to see you. Good.

Renee James: So, what's all the buzz about Moblin?

Doug Fisher: Well, we launched Moblin in 2007. And working with the open-source community, we developed an optimized operating environment for the mobile Internet devices. You've seen a lot of that at the show.

Renee James: [On Atom].

Doug Fisher: On Atom? Well, it's coming.

Renee James: Okay.

Doug Fisher: In addition, we added the application framework and the UI framework so that ISVs and application developers could take advantage of the capabilities in the optimized environment. You saw earlier NewSoft demonstrate their navigation system taking advantage of that. What was unique is that their application UI was completely customized. So, with this open source capability, they're able to go in and customize their user interface to meet the needs of their customers.

We launched Atom earlier this year. Now Moblin has expanded to be the optimized operating environment for Atom-based platforms. So not only MIDs is it optimized for, but now for other devices. You saw the in-car infotainment system where it's going to be optimized for that; netbook, netops, held devices, all sorts of devices that are built on Atom-based platforms. You see up above here a list of the OEMs that are delivering platforms based on Atom.

You also see a list of OSVs who are incorporating Moblin technology and capabilities, and aligning with that roadmap to be compliant with

Mobiln to take full advantage of the Atom-based platform. So, this is an optimized operating environment from the platform through the operating system.

What's really nice for the ISVs is now they have a broader set of solutions to develop to for their application. So, it's really completing that ecosystem stack very nicely, Renee.

Renee James: So, Moblin was originally focused on Internet and a rich experience. Can you tell us where it's going from here?

Doug Fisher: That's right. Well, the focus now is visual. There was a lot of visual discussion in Ray's talk. We're focusing on the visual experience on these devices. In order to do that and take full advantage of the Atom platform, we're adding 3D capabilities and physics capabilities to Moblin so you can take full advantage of that.

I have in my pocket a Moblin Internet device. We [use in] this type of device -- [is prototyping] what we can do on a solution of this size with the physics and 3D graphics capabilities. I can't show everybody in the audience from this, so I've captured what I can do on this device. If we could show it upon the screen here and I could talk through it.

Now, watch as my finger moves across. You see the motion of the pictures taking advantage of the physics capabilities; much more natural, organic movements on those devices, as you work on the device. We're also continuing to support the full Internet experience. So, Flash capability is natively supported.

Look at this simple game. Any developer, any ISV can take advantage of the physics that we put in as those little objects move and shift. It doesn't have to be a complex game; it can be a very simple game.

We're going to take a phone call on this device, as well. As that phone call is answered, you'll see in a minute that's not compelling in itself. What is compelling is the fact that as that phone call is being taken, all those applications continue to run. So, with Atom and Moblin, you can actually deliver a full multitasking environment, which is unique to Intel.

Renee James: That's very impressive, Doug. Are these devices available today?

Doug Fisher: The devices today on Moblin are available today, lots of them shipping. You see the showcase out there. In 2009, you'll start seeing much more visually compelling solutions being delivered. So, you'll see this stuff being deployed in 2009.

Renee James: Okay. Thank you for the update.

Doug Fisher: All right. Thanks, Renee.

Renee James: Thanks. Okay. [Applause] So, we hold conferences like this not to just get you to sit in these seats for two and a half or three hours without a break, but to really have a dialogue about the trends and where we're going in the future. For my part, we're really interested in making sure

that you have all the information accessible not just at the conferences, but also through our developer programs.

I just want to spend a moment and just remind you about the online developer programs that Intel has available for blogging, questions, getting answers with experts interactively through the Intel software network. Again, that's all free of charge, and all of the information about the different programs that I've talked about today, including how to get engaged with parallel tools, and what we're doing on Moblin is all available through the Intel software network.

We're going beyond just online developer support. At the Shanghai IDF, I talked about the introduction of a certification program. That certification program is called the Intel Certified Solutions. It's delivered with our partner, Spike Source. We've really grown since the spring, and now we have over 100 applications that are being certified for Multi-Core and tested to make sure that they really run the way that they're advertised and fully scaled on Intel processors, in addition to some of the security test services available.

So, we plan to add Moblin compatibility testing for Atom platforms in the future, and continue to evolve the certification to ensure that as developers, as you make investments in the Intel platform, you're able to share with your customers the value add of having done that work.

Finally, I want to end today on an extension to our developer programs. It's only fitting that at this conference, given all that we've talked about in visual computing, and all the wonderful things you've

seen from Philips and Ubisoft and Jeffery, of course, that we talk about how Intel's going to engage visual computing developers.

I'd like to invite a long-term partner of Intel who's worked with us from the Pentium days on developing. Many of you know him as the inventor of Wolfenstein, and Doom, and Quake. I want to welcome the gaming industry legend from id Software, John Carmack. [Applause] Rockstars today. Hi, John.

John Carmack: Hi.

Renee James: Good morning. Thanks for coming.

John Carmack: Yep.

Renee James: What are you going to share with us today? I know you've been a partner with us for how many years?

John Carmack: It's been over 12 years that we've been working with Intel, from all the way back in the DOS games days. It's taken us through a lot of revolutions -- the move to 32-bit, the move to Floating Point -- which way back then Intel was the only X86 vendor that took Floating Point seriously -- the addition of MMX and SSE instructions, the rise of the GPU, to where we are today with multiprocessing and 64-bit being the frontiers that we're looking at now.

Renee James: So, maybe talk to us a little bit about what you're working on right now and how you're using Multi-Core today.

John Carmack: Yeah. We're going to be playing a little demo here of our current id Tech 5-based technology platform, which is designed from the very ground-up to be Multi-Core compatible, to use a lot of different processor technologies. We've supported Multi-Core in some sense for a long time. Early titles we had dual processor acceleration when it was really just a novelty for people who had exotic systems. But nowadays, we're looking at it as most of our customers will be playing this on multi-processor systems.

Renee James: Okay, great. Should we take a look?

John Carmack: Sure. This is Rage, our upcoming title. Now, the early generations of SNP accelerations were basically off-loading driver work that we would do so that the driver could run in a separate processor. Since then, a natural progression's been to move the entire rending system onto a separate core. That balances pretty nicely for most games, where you can run your game logic and simulation in one thread, and your rendering system in another thread.

But we do several things in addition to that here where one of the core technical aspects of what we have here is what we call mega-texturing, where the entire world is uniquely textured rather than repeating any textures anywhere. So, we have a whole separate thread that winds up running analysis over what's being rendered, managing the streaming of information from DVDs and hard drives, decompressing all of it, transcoding the formats that are useful for the GPUs, and so on.

That sucks up a pretty good amount of processing power just to do that, but that's one of the key things that lets us do this level of detail that really is beyond anything that you've seen before.

We also have additional threads running. The high-level AI determinations that go on in the game logic runs asynchronously with the sort of tick-based stuff that handles the moving and bouncing into things on the game logic. Collision detection is also pulled off into a more fine-grain system that can handle offline contingent stuff going on separate from the main game frames analysis.

This has been a lot of work to take us through all of this, but we have gotten great support from Intel over the years. And as this becomes really what we have to target for consumers, it's more and more important that everything that we do be built around not a simple processor, not the straightforward algorithms that we all grew up with and developed for so long, but start thinking in terms of communicating processors and all the different things that are happening simultaneously. It is a big challenge for us as we move forward.

Renee James: The game, it looks visually stunning. I'm sure it's going to be a hit.

John Carmack: Well, thank you. Again, we've had great support from Intel for so many years here, but I understand it's going to be getting even better now.

Renee James: Well, that's why we asked you to come today. It seems only fitting. That's right, we've worked with John and several developers for years, and we've kind of taken your feedback about where we're at. So, today we're going to make an announcement about a new visual computing activity. So, thank you for the demo.

John Carmack: All right. Thank you. Yeah.

Renee James: It looks great.

As John mentioned, we're announcing a new developer program today really targeted at the kind of visually stunning game play and visual computing activities that we've shown here this morning. It's a program for visual computing experts to really get into the know. You want to -- there we go.

[Video plays]

Renee James: Today, I'm announcing our newest developer program at Intel, as I said, focused on visual computing and gaming developers, for Multi-Core and for Larrabee, Visual Adrenaline.

We're excited to extend our world-class developer program for a whole new category of developers. Very focused content, online activities, training, as well as of course SDKs and tools specifically designed at using Intel platforms and future platforms, as Pat spoke of yesterday, for visual computing and gaming.

I'm going to try and wrap it up because I know you've been sitting here a long time. As we've seen today, the digital revolution is changing the way that we tell stories, the way that we look at the human heart and build mobile applications. But as I said at the beginning, at Intel it's our mission to continue technical progress. It makes all the things you've seen here today and yesterday at IDF, and even will see tomorrow, possible.

I'd like to edit the words of the great Walt Disney and say that technical progress will never come to a full stop, so we should all prepare for the future of computing. Thank you.

[End of recorded material]