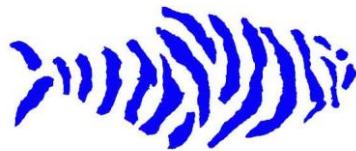


Renee James



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Renee James

[Beginning of recorded material]

[video/music plays]

Female Voice: Ladies and gentlemen, please welcome Renee James. [speaking Chinese][Applause]

Renee James: Good morning. Welcome to day two of IDF. The developer's hands tell a story. And like all good stories, it sparks our imagination. Software is like that for hardware. It creates an opportunity to spark the imagination of what developers can do within Intel hardware and Intel platforms.

Today, I'm going to talk about the rapidly changing effects in the software development ecosystem and highlight some of the work that Intel's been doing with developers here, in China.

You heard yesterday from my colleagues Pat, Dadi, and Anand about a lot of exciting new platforms from Intel, some that we announced yesterday and some that are still to come. I will build on what you've heard today and give you more details on how the software efforts are unlocking the features and the performance that you're hearing about in the keynotes and in the sessions that you're attending.

All of our new focus areas -- that would be mobility, multi-core, as well as visual computing -- have one thing in common. They all require an increased effort in software and, in some cases, some breakthroughs in how we develop software for our products. The role of the software and solutions group, as [Wen Han] just mentioned, is to work with developers worldwide on how to get the best advances, best

optimization, performance, feature use of Intel hardware. We create software tools, software developer kits, and developer programs to work with companies in all markets to move forward with Intel. And I'm going to tell you some of that today and we're going to share with you from some of our partners here today as well.

The software world is changing. We are experiencing perhaps one of the greatest changes that I've seen in the last decade in software. And this change is really precipitated by three key elements that I want to talk about briefly this morning. The first one is where software is being developed, and I'm going to share some data on that. The second change element is how software is being developed. And finally, there is a rapid and evolving change in what the user's expectation is for what they want to do with computing. And we'll talk a little bit about that.

First, let's start with some data on where software's being developed. This chart behind me is circa 1996, showing you where the prominence of individual developers were, by geography. And what you see is, developers have historically been concentrated in North America and Europe. I'm sure that doesn't surprise anyone. What has happened in the last decade-plus, as you look at the slide, this is an estimate of the 2011 [mapping of] where software developers are today. What you see is that the predominance of software developers are actually in Asia-Pacific and other emerging geographies.

And inside of Asia-Pacific, the largest concentration of software developers graduating from universities and entering into the workforce is actually in China. It's estimated that the number of developers in China will triple by the latter part of this decade. China

is outpacing the growth of overall Asia, as well as central Europe and other markets. So China is very well positioned, from a manpower perspective, to be a leader in software development.

Manpower, however, is not the only indicator of leadership. The other is a healthy IT industry, a healthy market for local consumption and local development. So what we see is the growth rate in IT spending in China, very healthy growth rate. But more importantly, what you see is a significant change in the amount of software for revenue that's being sold inside of China by Chinese companies. So there's a growing software economy in China, which is the second necessary element for aggressive growth to begin.

The other element is the support infrastructure. And what we've seen in the last few years here is growth in the support needed to have a healthy software environment. And by the way, I should take a minute and point out, a healthy software environment, of course, is one of the pillars required to have a healthy IT industry. The other, of course, is a very healthy and vibrant hardware industry, which we have in China, and many of our OEM partners are here today as sponsors. So having a local, healthy software market, both in China and in Asia, is of course very important to all of our partners, as well as Intel.

The elements that have changed that Intel has participated in, is the increased university training and vocational programs, as well as a very important piece, which is a dedicated focus on nurturing small start-up companies. Several years ago, we started a focused effort here in China to partner with local and provincial governments around software development. And we have a three-part plan, which I'm going to share with you briefly.

The first leg of the plan is education and training. So the first thing that Intel has done is we've spent a tremendous amount of effort -- and I'm going to speak to this later -- with the Ministry of Education, developing curriculum around technology topics like multi-core, threading, mobility, to train developers early in their careers while they're still in university programs.

The second piece is we've engaged very strongly to nurture local software companies, specifically through the government-sponsored Software Park program. We've created a developer program for companies that are in software parks, to train them, to give them development units, and to help nurture them as they begin to start their entrepreneurial phase of their companies.

And last, but not least, is what [Wen Han] mentioned to you, Intel's own R&D efforts in software in China. Intel Research Party Limited in China is our largest software development site in the world. Shanghai, specifically, is the largest site of our advanced software development team, located very close nearby here, building world-class software for a global market as well as engaging with local companies and universities to train and create new opportunities here in China.

I'd like to spend a minute and highlight some of the programs in the software park to give you an idea of how things are changing quickly in the Chinese market.

The National Software Park program was sponsored by the Chinese government, as well as the local and provincial governments, is something that Intel started to engage with two years ago. In 2006, we

started very small development opportunities in [Hangzhou] and Nanjing, and we've grown to eight other sites in the last couple of years. And what we've done is we've started out by training developers. We've trained over 6,000 developers -- many of them face-to-face, but even more using online training -- on how to use Intel hardware, how to develop software using modern technology, how to write threaded code -- which, as you know from the presentations from Pat and Dadi, is the future of how to use multi-core computing -- and how to write for power management, which is absolutely critical for building embedded and mobile devices.

So what I'd like to do is I'd like to take an example from the Chengdu Software Park and talk about what we've done with a company named [Sobe]. And some of you may know Sobe. They're the market leader in China for non-linear entity tools, as well as IT services for broadcast companies. They are the IT supplier to CCTV and will be helping to broadcast the Beijing Olympics. Sobe has been in the Chengdu Software Park and engaged with Intel, and I'd like to invite the senior vice president and CTO, [Oh Yang], to show us how they've worked with Intel. Good morning.

Oh Yang: Good morning.

Oh Yang: Thank you for coming all the way from Chengdu. Let's come down a little bit further.

Oh Yang: Than you very much for inviting me to join this forum. I will introduce our new achievement by making use of Intel's latest quad core CPU technology. I will introduce in Chinese?

Renee James: Yes, please. We invite you to please speak in Mandarin.

Oh Yang: [Speaking Mandarin]

Renee James: This is excellent. Thank you very much

Oh Yang: Thank you.

Renee James: Okay. Thank you for sharing that with us. Okay, goodbye. So you can see, one of the direct benefits that a local software company has had out of our efforts with them in multi-core in the Chengdu region. What we've developed is an advanced multi-core curriculum that is available in 37 universities across China, which we will be expanding to an additional 100 universities this year. Parallelism and the ability to write threaded code is one of the most important areas for developers to learn about as they study in computer science today.

We've been very, very happy to cooperate with the Ministry of Education to develop a model curriculum, which is now going to be put online -- actually, it was put online earlier last year -- and it will be available as electronic training, more broadly, in China.

The Ministry of Education has been a great partner of Intel's. And I would like to invite one of the very esteemed visionaries from the Ministry of Education, Professor [Zhang], who is also the director of the Higher Education Bureau and a member of the Chinese Academy of Engineering, and a great friend of Intel, to talk to us about what we've been doing. Thank you for coming.

Professor Zhang: Thank you.

Renee James: Professor Zhang will, of course, speak in Mandarin, and I will listen. But we're very, very happy to have him here today.

Professor Zhang: [Speaking Mandarin]

Renee James: Can you explain how Intel has helped you with this project?

Professor Zhang: Good question. [Speaking Mandarin]

Renee James: Thank you. The audience might not understand how the hardware was used here in virtualization. So can you explain for them how the hardware was used?

Professor Zhang: [Speaking Mandarin]

Renee James: Thank you for sharing the transparent computing with us. And mostly, thank you for your help on the Ministry of Education, your vision for moving education forward in China. We appreciate it.

Professor Zhang: Thank you.

Renee James: Thank you for joining us. That was an example of a project that we sponsored with Professor Zhang and some students as well as some engineers from Intel, the kind of collaborative R&D work that we're doing with local people.

So in summary, our three-level plan has been around training developers, developer interaction and sponsorship, and our own development in China.

What I'd like to do now is transition and talk about how software is being developed and the changes that are going on around software development. There has been a transformational change in the last [two] years, and underlying that has been open source. Open source is a key trend in software development. It has changed, fundamentally, how developers are able to think about their developing methodology, the community collaboration in development, what kind of tools and open modules they might use to create new applications or services.

If we look at the number of open source companies -- and what's up here on the slide is just some data around how much VC money has been raised around open source in the last few years and the number of new companies that have come to market; new services and software companies around open source -- we see a significant momentum. But what's very exciting about open source, for us, is the amount of creativity that it's unlocked in the industry, the ability for rapid development and prototyping using scripting languages and simplified reuse of different open source modules into a new product or service. The trend is to rapidly develop, to test your idea with the community, and then go back and continue to move forward.

Gartner estimates have said that by 2011, 80 percent of all software will have some use of open source modules in it. We have a long history at Intel in open source work. Many people know that we are maintainers and contributors of many of the key projects listed here. In my previous IDF speech, I talked a lot about some of our new work. I'm going to spend some time talking about [Moblin], which is an open source project that Anand mentioned yesterday.

But I want to make a key point that's important here. OSS does not equal Linux. Open source, and in fact many of the projects on open source, are actually on top of the Windows platform. And there is a very vibrant community of people building new service offerings and new software modules using the open source development methodology of collaborative work and reusable modules and the community feedback process on Windows. So we need to understand that it's a broad ecosystem.

One of the things that has been missing from the open source development environment, however, is a test and validation service, some means by which we can test bug-fixing, interoperability, and validate what's going on with the complete stack against other people's software in the community. To-date, no such service has existed. And I'm very happy to announce this morning that Intel, in collaboration with our partner, SpikeSource, is going to launch a new certified solutions program, which is a service that will be available this year, starting actually immediately and then ramping in the second half of this year, for open source developers. They enroll into the Intel Software Partner Program, which is free of charge, and as part of the program, they will be able to subscribe to this solutions service that's delivered to you by our partner, SpikeSource. And I'd like to invite the CEO of SpikeSource, Kim Polese, to stand up. I invite all of you to get to know Kim. She's a well-known force in the open source community, and we're very pleased to be doing business with her. Thank you, Kim.

SpikeSource's technology allows the vendors to test their applications. And you can learn more about this by going to the Intel

Web site, both at IDF and the Intel developer Web site. But SpikeSource is well known for their work in the open source software stack, and they're expanding their toolset to create this new service offering. And it will be available for Linux and for Windows, as I said. So look forward to more information and an even bigger launch in the second half of this year.

Another example of how services investments are moving forward in China is another announcement that we'll be making later today. I'm pleased to announce that Intel will be signing an MOU today with [Tongfang] Computer, China Netcom, and the Heilongjiang MII, to create a new service piloting for small and medium businesses to be able to have remote IT fixes to the computers. This is a very exciting new opportunity, based on Intel's AMT feature in our silicon, Tongfang Computers, and then the collaboration with MII and China Netcom.

Intel will continue to further provide training for the service providers and will run a pilot that we'll talk about more in our MOU signing later today. We think that this effort actually is the beginning of unlocking new service opportunities and new ways of using Intel technology to access further into the market in China.

Okay, so we've talked about where developers are, and we see this enormous shift from mature markets and proprietary software environment to the new model based on open source, a lot of new excitement in the industry, a lot of development in Asia, China specifically. But the other leg of change in the software world is how people are interacting with computing. There is a change in the expectation. We have a lot of new users -- and Andrew's going to talk about how we reach even more users, and Anand talked about new

categories in mobility. But increasingly, what we see is that the expectation from users is that they will have mobile access. Both Dadi and Anand talked about this and I want to talk about it a little bit more in a second.

The other vector of user expectation change is what appears, the visual interaction with the machine. And while gaming and entertainment come to mind as the first usage models, it is in fact, as Pat said, there are many other uses of visual computing -- in medical imaging, scientific computing, gas exploration, etcetera -- where the expectation from the user is that they'll have a much, much richer visual experience with the data.

Both of these trends give us a significant challenge and raise the bar on what we need to do in software development. So I'm first going to focus on mobility.

You heard from my colleague, Anand, yesterday that we are announcing mobile internet devices based on the Atom processor. And this is a new category. And we think it has huge potential. But the new category requires a new software environment. There isn't a built-in ecosystem of developers who have been doing this, because it's brand new. And prior devices, or phone devices, have their own proprietary, vertically-integrated environments, and each one is different. So one of the most important elements of helping to make sure this market takes off is to unlock developers' ease and ability to build applications, move applications, and support a variety of different MID devices. And in absence of an established ecosystem, you require a developer to have to go and figure all of these pieces

out themselves. It wastes time, it slows down adoption, and it definitely poses problems of compatibility.

For MIDs, we at Intel are establishing that ecosystem. We launched it in September. It's called Moblin.org; it's an open source project. Intel has contributed the foundational stack, if you will, to it. We have many other partners who are contributing in. And this is a key piece of how we believe we're going to build collaboration and application support for the MID device.

Moblin is rapidly gaining success. We have more than 500 member companies that are contributing code into Moblin, as I said, but it's particularly strong in Asia. And Intel, as the Moblin maintainer of the project, has worked with our partners in Asia to put together an offering, an actual product offering, called [MIDinux]. And I want to invite our friends from [Asianux] to talk about what we've done together in the Asianux company, to create this new offering for mobile devices. So let me introduce the chairman of -- I hope he's out there -- the chairman and president of Asianux, [Jia Dong]. And he's also the president of Red Flag in China. Good morning, Jia Dong.

Jia Dong: [Speaking Mandarin] Hi, Renee.

Renee James: Good morning. I think you were back there --

Jia Dong: Good to see you again in China.

Renee James: You guys were back there having tea.

Jia Dong: Yeah.

Renee James: Come down here so that they can take your picture. I was just explaining, we are getting going with MID, and Asianux has been a fantastic partner of Intel, helping us to get the first real operating environment offering for MIDs, called MIDinux. I'd like you to take a minute in Mandarin and explain to the audience what Asianux company is doing. And then we'll invite the other members of Asianux on.

Jia Dong: Okay.

Renee James: Thank you.

Jia Dong: [Speaking Mandarin] Hey, Larry.

Renee James: Yes.

Respondent: Larry from [Chinese]. [unintelligible] from Korea.

Renee James: Good morning. Nice to see you.

Jia Dong: And [Kadama-san] from Korea. Hey, where is Kadama-san?

Male Voice: Kadama-san is missing.

Renee James: Where's Kadama-san?

Jia Dong: Okay, let me call him. I can open this [unintelligible] and start call.

[phone ringing]

Jia Dong: Hello, Kadama-san? Where are you?

Kadama-san: Yes, I am away.

Jia Dong: Yeah, we are all waiting for you.

Kadama-san: Hi, good morning.

Renee James: Good morning, Kadama-san. Nice to see you again.

Kadama-san: Sorry to wait everyone.

Renee James: That's okay.

Kadama-san: Thank you for calling me [JK]. Okay, I heard that one part of your keynote is talking about [Amari] and MobileIN.

Renee James: That's right. Right now that's what we're doing, the demo.

Kadama-san: Yes, Did you notice what [unintelligible] just called me?

Renee James: I saw that. He called you on Skype, which is a great example of popular application on the MID.

Kadama-san: Yeah. I think, yeah, you know, so I have an [I go] MID with me. And I just watched something about MobileIN onto the Web site.

Renee James: Oh, really?

Kadama-san: I guess that might interest you.

Renee James: Are you going to show us?

Kadama-san: Okay, can I show you?

Renee James: Yes, please.

Kadama-san: Okay, to play this video, I'll show you.

[Video]

Kadama-san: How's that? That's the MobileIN video on the Tudou Web site.

Renee James: So this is just playing a regular video off the Web site?

Kadama-san: Yeah.

Renee James: Wonderful.

Kadama-san: Tudou is a very famous Web site like YouTube in China.

Renee James: That's really cool. That's great, thank you. So how have you guys been? I haven't seen you in a while?

Kadama-san: We are doing well.

Renee James: Doing well?

Kadama-san: In fact, recently I'm always using my MID to check the stock market.

Renee James: Good.

Kadama-san: [unintelligible] country where a very famous [unintelligible] with wisdom, a local Chinese company. In this you can almost do everything, just like, you know, a PC. But there's great mobility, you know? Let's try it. And you can see that we can view the home screen [unintelligible]. And this is, you know, the stock application. And we can use it to check the stock index anytime and see the history trend. You see it?

Renee James: I can.

Kadama-san: And also we can check the individual stock price just like this. It's easy, you see? And also the history trend.

Renee James: That's great. Well, I hope you make a fortune in the stock market. That's great. Thank you. [unintelligible]

Kadama-san: No, not all.

Renee James: There's more?

Kadama-san: We have lots of applications on the MID. One thing is for the very popular application called GPS, which is developed by our partners [Ling tu]. And we can use it in here. I'll demo for you. Do you like Chinese food?

Renee James: I do like Chinese food, thank you.

Kadama-san: Okay, we'll try to use this device to find the closest Chinese restaurants, which is [unintelligible]. This is to show where we are. And okay, this map you can see. Grab this and all the things we can [unintelligible] in the online menu, okay? Grab that one, and there are a lot of menus online, so you can order your food. And I think after [this speech] for you, you can enjoy your meal.

Renee James: We can go to lunch.

Kadama-san: Yes, okay.

Renee James: Well, thank you. That's a wonderful demonstration of multiple Internet, full Internet access applications on the MID. So are you guys ready to go with Asianux, MIDINUX? Yeah? Okay, well, this is very cool, and I'm very excited to get my hands on one of these devices. Anything else you guys want to add there? No? You're done?

Jia Dong: Yeah, I think it's for --

Renee James: You can turn to Chinese if you want.

Jia Dong: No. Without Intel support, we couldn't get the successful shipment.

Renee James: Oh, thank you.

Jia Dong: And I hope in the near future we can cooperate very closely together and do our best to build new products for the whole world.

Renee James: We will be continuing.

Jia Dong: Thank you.

Renee James: But I'm very excited that you guys are showing so much leadership in having a product ready with MIDINUX for MIDs as Anand talked about yesterday, first support from the Asianux team. So thank you all very much.

Jia Dong: Okay, thank you.

Renee James: Thank you [unintelligible]. Thanks. It's nice to see you guys, Kadamasan. Yeah, thank you. Bye.

Okay, as you saw from the demo, the Asianux team has worked very hard with a variety of local software applications to give the full Internet experience on the MID device, as Anand spoke about yesterday. The Asianux team, of course, started with the open source project, MobileIN.org and then built their product off of that.

So, our desire to roam and be mobile is only one piece, as I said, of the changing user experience. The other is the ability to actually see and interact with the computer in a more visual way. And like mobility, visual computing is changing and driving the usages in how Intel is working with software developers going forward.

Pat talked yesterday about four pillars of visual computing, and I'm not going to spend a lot of time today, but in the Fall IDF, Pat and I both will speak more about visual computing as this is a big focus effort for Intel going forward. But the four pillars as you see are realistic images, or photo-realistic images, high-quality audio and visual, as you would expect, and interactive user interface, which is going to

take us years of continual work, and then some computational modeling.

All of these pillars are critical. But one of the key driving usages of visual computing today is actually gaming and the online gaming experience which is very, very popular worldwide and especially, of course, in the Asian market. High-performance gaming is an excellent metaphor from a performance perspective of what the overall expectation is from an experience and a requirement on the machine for compute.

As Pat illustrated, performance for these kinds of applications is almost insatiable at the high end. And, of course, that's great news for Intel, because we build and deliver performance. But there's a small problem. There's a tremendous amount of software development effort that has to take place there. And I want to talk about some of the beginning work that we've done to help existing game software developers get full advantage of the existing multi-core products, and then I'm going to talk afterwards a little bit about the future and where we're going there.

One of the software companies we've worked a lot with is, of course, Kingsoft and in their online game network. And I'd like to invite [Chen Fa Jo] who is the vice president of Kingsoft onstage to show us a demo of the work we've been doing together. Good morning. Nice to see you.

[Applause]

Chen Fa Jo: Good morning. [unintelligible] today, and I have something I want to show you of our Kingsoft games.

Renee James: Please speak to our guests in Mandarin.

Chen Fa Jo: Okay, please allow me to use Chinese?

Renee James: Yeah.

Chen Fa Jo: Okay. [Chinese] Okay, that's all.

Renee James: Thank you for sharing that with the audience. This is a perfect example of taking today's fantastic game and taking advantage of the immediate performance available with quad core. Thank you for coming and sharing that with us.

Chen Fa Jo: I also want to thank Intel for our [unintelligible].

Renee James: We thank you. Thank you. So this is a simple example.

[Applause]

Renee James: Thank you. A simple example that is an immediate performance improvement with some changes, necessary changes, to help better thread the application. And as I said much earlier in this speech, parallel programming and threaded programming is a huge focus for developer trainings because, as you can see, the improved performance and experience that we can deliver immediately is improved by being able to thread.

But that's just the beginning. The next generation of visual computing, and the expectation for that kind of experience is going to require a little bit more than just threading the applications. We believe that visual computing will be more than a great GPU, although if Pat were here, he would tell you he will deliver great GPU. It starts with a vision of how people are going to actually use computing through the Web on their game console, on their PC, what have you.

What we plan to do is to develop a slightly different approach to high-performance visual computing. We want to use our experience in multi-core and apply it to graphics workloads and have a breakthrough in what programmers are able to do with the underlying silicon. So what you're going to see from Intel, and we'll talk about this much more at our next IDF, is a world-class developer program with support, as Pat mentioned yesterday, through tools, developer kits, and training to enable a new approach to visual computing.

We are committed to delivering leadership in this area, and we're made several key investments in the past six months from my group, which I'm going to talk about in a second. But what you're seeing on the screen actually is a result of the Havok Physics applied to a game -- and this is one of the companies that we've acquired -- which gives the algorithmically generated smoke and fire and photorealism and really brings visual computing to life. It is currently used in games technology, but it's the underlying technology for visual experiences across the board.

So I'll just share with you that we've made several key investments -- they're on this slide -- in companies that are dedicated to the very important key building block elements of visual computing, not only

physics, which of course is the underlying key piece, but also rendering and some of the work that's necessary in the core game engine. All of these companies will combine together around Intel silicon to deliver a breakthrough SDK for developers in the next year plus where we can really start moving on visual computing.

So, we have a complete line of developer tools today for parallel programming. We will deliver an equally complete line for visual computing based off of the tools we have today that our developers know and love. It will be a much simplified transition for developers to be able to program and take advantage of our silicon. And really what we want to do is take our knowledge of parallel computing and apply it to graphics and visual computing. So I will be back at the next IDF, as will Pat, to talk about more what we're doing in this space. But I wanted to give you a glimpse of how the beginnings of visual computing with multi-core and online gaming today is going to grow into a much bigger trend across many markets in the future.

So as I've said, the world of software is changing. It's changing at a rapid pace in a fundamental way. We have incredible change and creativity going on in software development. And as the impact of the trends that I've talked about and the technologies that you're going to hear here in the last two days, we are very excited about the approach to software development that Intel's taking and the increasing globalization of our efforts.

Our strategy is pretty simple. It's engage developers around the world to get the biggest advantage and unlock the potential of Intel hardware and Intel platforms. So together we look forward to work with you going forward. I invite you to visit the Intel software

developers' site, enroll in the software developer program. Your companies can get trained on all of these things. You can learn a lot more about what's going on. It is all free of charge. It's all so that we can work together to unlock the power of Intel hardware. Thank you.

[Applause]

[End of recorded material]