

Intel CES Las Vegas - January 7, 2008

[Beginning of recorded material]

Male Voice: Ladies and gentlemen, please welcome Paul Otellini.

Paul Otellini: Good afternoon. Let me start by extending my welcome to all of you here at CES. The song you just heard was an update to the classic music video by a group called the Buggles. It was called "Video Killed the Radio Star," and it was the first music video ever shown on MTV, and it debuted in 1981. After that debut, the music industry was never the same. Recorded music, which was previously an audio experience, now became the visual experience via television, and the music video became as important as the song itself. MTV changed the music industry forever.

Our updated song lyrics highlight another disruptive force that I think is going to change the consumer electronics and entertainment industry. And that's the Internet. Now, the Internet isn't really new news anymore. It's been part of our lives for many, many years. There's 2 billion videos viewed every day. There's 100,000 blogs created daily. E-commerce has grown from the first CD sold in 1994 to three quarters of a trillion dollars in 2007.

Paul Otellini: The Internet will create an opportunity for those who embrace it. Today we live in the era of the go-to Internet. If you want to find a piece of information, you first go to your PC, then you go to a place that has Internet access, then you go to a search engine, then you go yet to another site, and hopefully you finally find what you wanted in the first place. In this model, the Internet reacts to our requests rather

than anticipating them. The next evolution of the Internet changes that model. Rather than us going to the Internet, the Internet's going to come to us. It will bring us the information and the tools we need at any given time [in] any given personal situation.

You may think you've heard this before, but what I'm talking about is something that's far beyond the concept of push media or RSS news feeds or personal alerts. I'm talking about bringing a new level of capability and usefulness to the Internet. Think about a more personal Internet, one that is proactive, predictive, and context aware. It serves you by delivering what you want, when you want, how you want it, and wherever you are. And rather than talk about this, I thought I'd show you what I mean here. And via the power of staging in Las Vegas, I'd like to have Craig join us now from Beijing for the upcoming Olympics in Beijing next summer. Hello, Craig.

Craig: Paul, welcome to China.

Paul Otellini: Welcome to China. It's nice to be here. Thanks for having me.

Craig: So what we really wanted to show today, and we love all this Las Vegas magic as we roll out our sets here, but as I'm a traveling stranger in a strange land, as this demo comes up we want to show some really amazing things. As a business traveler, like myself and yourself, and how we're going to get around in motherland China.

Paul Otellini: Okay.

Craig: How's your mandarin?

Paul Otellini: Poor.

Craig: Okay. Unfortunately, I'm in the same boat. So wouldn't it be cool if I could have a mobile device, something like this, that would allow me to do something like this?

Paul Otellini: Wow, that's pretty cool. How did you do that?

Craig: [So plug this in here], guys, so we can share this with the audience here, but it's really amazing. So with a mobile Internet device like this, the second I get off the plane into China, GPS and my mobile broadband knows exactly what I'm going to need on my exact trip. So, GPS -- I get all of my navigation as well as I get all of my translation software, so I'll be able to use augmented reality to identify some signs like this.

Paul Otellini: That's very cool. Can you show us something else it does?

Craig: Absolutely. Let's take a look over here. So it looks like we have what looks to be like a restaurant here. Let me go ahead and point this guy out. All right, what have we got there? It says good, good, home-style cooking. Sounds delicious. So why don't we see if we can get a little bit more info? And there, now, I'm using an actual technology from Total Immersion*, and what I'm seeing here is I can actually get a full information download from the restaurant as well as look at video and see some of the great pictures of the dishes.

[Video.]

Craig: Well, apparently this is the place to get Phoenix claws all the way across China, but –

Paul Otellini: Phoenix claw?

Craig: Exactly my question as well. So if I take a look at the menu here. Oh, looks like it's our number one pick at the top, fairly inexpensively priced, and, oh, is that looking familiar?

Paul Otellini: Yeah. You know, I had chicken feet last night in Vegas, so I think we may want to stay away from that today.

Craig: You're good, you're good, okay.

Paul Otellini: But, you know, it's a great use of how this technology would be useful in a foreign land.

Craig: Absolutely.

Paul Otellini: So why don't we go ahead and jump into something else?

Female Voice: [Speaking Mandarin.]

Craig: No problem. Here's where my little friend here comes in to play. So let's go ahead and bring this guy up to the screen. And what I'm going

to do is actually use this as my interpreter. We're going to do some real-time speech-to-speech translation. So, looking good there, and with the processing power of my MID, let's see if we can make this conversation maybe just a little bit smoother. So go ahead and bring this guy up. Can you tell me the way to workers stadium?

Translation: [Speaking Mandarin.]

Female Voice: [Speaking Mandarin.]

Translation: Wow, cool.

Female Voice: [Speaking Mandarin.]

Translation: Workers stadium is about 7,000 kilometers due west of here.

Craig: You're very funny. Thank you so much.

Female Voice: [Speaking Mandarin.]

Craig: All right. So that's going to be one heck of a long walk. All right, so, anyway, let's go ahead and go back here, and I want to show you one more thing that's going to be my amazing friend on my trip through China. We're going to go ahead and bring up here the web application. So I have access to all my broadband, and what I have here is a web application called Everyscape*. And the best part about Everyscape is we're actually going to be taking a full-on walking tour of Beijing, full panoramic views, all at the eye level. So the real gist is we're in

Beijing and I want to get to the Intel office. Now, they told me it's within the Kerry Center.

Paul Otellini: It's in the Kerry Center.

Craig: Yep. So unfortunately it's not quite that easy – left, right. However, with this type of software, I can go ahead and access where I need to go and not only be able to get turn-by-turn directions, but actually see where I'm going before I even put my feet to the street.

Paul Otellini: That will be useful.

Craig: So let's go ahead as I'm actually coming out of the Kerry Center right here. I just absolutely love this program. And now I remember, you had to go through the mall, and we're actually outside of the Intel building right here. So let's go ahead and take a peek inside the lobby. All this augmented reality can be used to identify other leaseholders in the same building, but I have to take it over here to the directory. And there we are. And let's go ahead and take the elevator up. There we are. This is our actual office inside Beijing. So, talk about something really amazing. And by this time, I haven't even left my hotel room yet.

Paul Otellini: You know, Craig, I think this would be a great business tool, but I suspect it would also be even better for vacations and personal use.

Craig: We're not all about work here at Intel, Paul, obviously. So, when we're talking about some great vacations, you can't say vacation, in Beijing, at least, without going to the wall.

Paul Otellini: Go to the Great Wall.

Craig: Let's go and take a look. So you know what I'm a big fan of is when you go to the museums and tours and see all those sort of things, you can get the little headphones and audio, and it's important to have that kind of information ready at your fingertips. Well, we have a little broadband, my private MID device that's right for me, and maybe we can go ahead and get some information on the fly from our virtual terracotta warrior here. Let's see what he has to say.

[Audio plays.]

Craig: Pretty amazing, right? So not only do I have this whole access at my fingertips, I get points of interest, what exactly I'm looking at in the distance, and maybe some of the most pertinent information when you're stranded on the wall.

[Audio plays.]

Craig: So in case you're in a real race, I'm going to go ahead and take a look at something like my real scenery. Now isn't that cool? And just in case I need to pull an actual sprint to get where I'm going, I'll have full directions on how to get there.

Paul Otellini: That's just awesome.

Craig: Yeah.

Paul Otellini: What we just saw is an example of the Internet seamlessly bringing information we need based on our requirements at this point in time independent of the activity and the type of device. We didn't have to be connected to a particular search engine. It was all context-aware. It knew the information and it had access to the databases to understand the context to give me the information. We had what we needed when we needed it. Even better, what you saw was real. What we were able to do here was simultaneous translation, search, and download real data from an Internet visual database. However, there was one minor problem, right, Craig?

Craig: There is one catch. So, while we're using all these usage models and the applications are very, very real on the mobile Internet device, we are using a couple of cycles from two Intel® Core™2 Duo processor-based machines. However, working at Intel, it's not going to be more than a blink before we make that future a reality.

Paul Otellini: I would hope so.

Craig: Thank you very much, Paul.

Paul Otellini: Thanks very much.

Craig: Appreciate it.

Paul Otellini: Thanks, Craig. Craig's last point was really the point of this demo. Doing things like real-time translation, augmented reality, making real-time use of these huge visual databases will require exponentially more powerful processors that also are exponentially using less and less power. When that happens, we can then shrink the devices to be able to have things that you carry around that have the kind of capability you just saw replicated backstage on a much more powerful computer. And that's exactly what Intel plans to deliver in the next three to five years. That was one example of how a more personal proactive Internet is going to benefit us. And while the demonstration was about travel, the same technology will also have applications on the factory floor or even when you go shopping. Though what you saw in the demo will be possible in the not-too-distant future, there are some obstacles standing in our way.

The first obstacle to delivering this experience we just saw is silicon. We need more powerful, more energy-efficient microprocessors. The second obstacle is that we need a ubiquitous, wireless broadband infrastructure. The third obstacle is that the Internet today lacks the context about what we need. And, lastly, we need much more natural user interfaces.

Each obstacle in and of itself is a challenge. Together, they're very, very daunting. At Intel, though, we like challenges. And we're working hard to deliver the solutions. Silicon building blocks, wireless connectivity, and other enabling technologies like visualization and gesture computing that make this vision a reality. But we can't do it

alone, nor are we trying to. Development of the personal Internet requires an ecosystem. We need the smartest minds from multiple industries working together to create new business models. The opportunity for those in this room, in the CE industry, lies in creating this next generation of devices and services that go with them. But first we need to overcome the obstacles I've just listed. Silicon is the foundation of all things that connect to the Internet. Let's start by discussing the progress being made in silicon technology today.

Silicon chips today are really just collections of structures called transistors that do the work of computing. Big things happen when we shrink transistors, and shrinking the transistor is the answer to addressing the silicon needs of tomorrow's personal Internet.

The silicon industry has been shrinking transistors since its founding. The idea framing this progression is called Moore's Law, an observation made about 40 years ago by Gordon Moore, Intel's co-founder. Essentially, Gordon saw that silicon technology was progressing at a very predictable rate. Every 18 to 24 months, we reduced the size of the transistors enough to double the number of transistors on any given chip. Now, let me put this in perspective.

Our first microprocessor was introduced in 1971 and it was called the 4004. It contained 2,250 transistors, each of which was ten microns in size. Our latest quad-core microprocessor has 820 million transistors. If we had used the same size transistor in the original 4004 to build this 820 million transistor quad core machine, the die would be 9 feet by 6 feet, or the actual size of the plot standing behind me. It would

consume the energy of 200 U.S. households. But thanks to Moore's Law and our ability to continually shrink the size of the transistors – the real chip is actually 93,000 times smaller, about the size of your thumbnail, and consumes 2,000 times less energy.

If shrinking is the key to solving our problem, you might wonder how small is small.

As Intel's CEO, I'm proud to say that Intel has led the silicon industry into the nano-world. Our latest manufacturing process builds transistors 45 nanometers in size. So how big is a nanometer? Well, a nanometer is one billionth of a meter. That's really small. To put this in perspective, a nanometer is to a meter as this marble is to the planet Earth – the real Earth, not the image behind me.

Working in this incredibly small world presents extremely difficult problems. Ten years ago, our scientists identified a major problem in shrinking transistors. As we made the transistors smaller, we found that they leaked more current. They created heat and power consumption problems at the die level and at the device level.

Moore's Law might have come to an end by now. However, our engineers found new techniques, a new recipe for making transistors using what we call a high-k metal gate structure. To this structure we added the element Hafnium to our transistor recipe for the first time. This combination gives us a technology that has a very wide range of options. We can deliver 38 percent more performance at the transistor level for the same power as the prior generation, or we can cut the

power in half and have the same performance as the prior generation, giving us the ability to scale our devices for a wide variety of computer and communication needs.

The discovery also allowed us to keep shrinking the transistors and to continue putting more and more die onto a chip. Intel now cranks out transistors at the rate of 2 billion transistors a second. In fact, we have shipped more than 2.4 trillion transistors since I walked out on the stage.

We currently have a roadmap that takes us out five more generations of silicon process technology -- that's ten more years. The path will be marked by numerous other scientific breakthroughs. I can't describe them to you today because we haven't invented them yet. But I have no doubt that we'll make all the breakthroughs necessary to make those five generations happen. Moore's Law will continue to describe the future of silicon technology. Shrinking silicon though, through Moore's law brings another advantage worth discussing. We can use all these transistors to integrate new functions onto the same chip. In the industry that's called system-on-chip technology, or SOC. For the consumer electronics industry, we've designed a specialized SOC chip.

To do this we begin with a dedicated audio and video decode system that allows the chip to play 1080p video and 7.1 surround sound. We added to that chip a high-performance Intel architecture microprocessor core. We added to that a 3-D graphics unit for cool user interfaces and on-line games. And we added to that technologies to enable broadcast and multi-cast television.

We call this chip Canmore. Canmore is our first SOC for consumer electronics devices. Think of this as one single chip that is both a CE system and an Internet computer on a single chip. We have our first Canmore chips out of our fab and they're running here today in this development system.

I'd like to show you what this chip enables. The chip is outputting video to the screen behind me and to the speakers in the room. It's just a very simple demonstration of very, very high-def video with surround sound capability. Remember, this chip is also an Internet computer. So it allows us to be able to access the Internet with devices that many of you in the CE industry are looking at designing – HD TVs, set-top boxes, HD players, stereos and so forth. Anything that needs this kind of capability has a chip -- integrated, full system on a chip, capability.

Thanks for turning the music off. Similarly, we can take those same transistors and use Moore's law and the power of integration to develop solutions for mobile Internet devices as well. Now what's a mobile Internet device? I think a mobile Internet device is something you carry around in your pocket that allows you to deliver the full Internet. No compromises. To do this, we've created a new platform that's called Menlow. Menlow will deliver the same Internet experiences that the consumers have known so well and come to expect – streaming video, flash, Java applications and a whole lot more.

All this happens while drawing less than one watt of power – all in a form factor today that is not much larger than a cell phone and over the next year and two year time frame will shrink down in size by half, and then by half again. I believe this new category of devices creates a prime opportunity for the CE companies in this room. I'd like to show you a Menlow device.

This is one that's not yet been introduced. It's from Toshiba. This happens to be a full Vista* machine using Menlow in a very, very convenient form factor. One of the environments we like with machines like this is Adobe's Air*. Intel's been working with Adobe to port Air to our platform for the next generation of ultra low power, very high performance silicon that we've developed, and it can run on devices like I've shown here.

You'll see again – Air has a wonderful run-time environment that allows developers to develop powerful applications that are rich and engaging, and when it's paired with Intel silicon, Air is a complete platform and OS independent environment. It means that I can get the same experience on my desktop machine or on any mobile device.

The Internet is all that's required and the same high performance silicon underneath it. So silicon was the first challenge standing between us and the personal Internet. I think that wireless broadband connectivity is the second challenge. The good news is that that challenge is being met. Eventually we will blanket the globe with wireless Broadband connectivity.

There're many wireless technologies being evolved and developers are competing to do this – from WiMAX to 3G to 4G. Each technology has its unique set of advantages and business models. Over the next 5 to 10 years, we at Intel believe that WiMAX provides a significant advantage to bring about the personal Internet. Why? Because we think it has the flexibility and coverage of cellular networks. It's combined with that and with the upload and download speed of broadband, making it the best solution for video over the wireless Internet. And it's expanding quickly, with commercial networks, planned deployments and trials now covering 70 countries around the world -- shown in green on the screen behind me.

Once we have silicon and ubiquitous Internet access from anywhere, we still need to deal with this hit-or-miss nature of search today, which does not yet take into account your location, your device, or the context.

Today we can't easily integrate context and personal preferences and recommendations from the various social networks that we're all on. Many companies are trying to solve this problem and technologies are being evolved to work on this. But essentially, we need to move from searching for information to a world where information finds you proactively.

A more personal Internet, though, is a two-way street. To provide more information to you, the Internet needs to know more about you. And therefore the impetus is on us in the industry to make sure that we

can provide the security and the privacy that consumers need to enable this kind of service.

Lastly, the personal Internet needs to have much-improved user interfaces. Intel and many other companies in the industry are looking at things like gestures and motions, facial expressions and other ways to interact with the Internet's vast resources. To picture the transition, though, to a more natural interface, I'd like you to think about the Nintendo Wii*. The popularity of Wii lies with the interface, and not with the graphics. The controller wand is a very deceptively simple innovation. It allows the player to use natural motions. You don't expect to play a game on the Wii; you expect to engage and interact with it.

Experience brings people together in many new ways. As human interfaces to computers have evolved from the keyboard to the mouse to the joystick and now to the wand, we've seen an evolution to a more natural interface. And with each step, we see more active engagement. And this will impact not just gaming. In fact, this will impact things like social networking.

When you look at the social network sites today, the popularity of them suggests the high demand for people to connect, to share things, to share their interests, to make friends. But on the social network sites today, you don't really get a sense of the personal interaction, a sense of the person that you're interacting with. I think that this personal Internet I'm describing has the potential to come up with a better sense of presence on the Internet with a few more technologies.

The result when we do this will be things like Second Life*, and other environments like that will take another step up in terms of the slice of reality that we have in the virtual world.

You know, things like this today, though, need to be able to move forward in terms of gestures, in terms of interactions, in terms of involvement, to bridge the gap with the physical world. So I challenged my team one more time to say "What might a social experience look like as we evolve to the personal Internet?" The parameters for this thought experiment were exactly the same as they were in the Beijing demo earlier. We wanted to use technology that existed today, but that has the potential to be mainstream in just the next few years. And once again, rather than trying to describe this technology, I thought we'd take a look at it.

Using the Internet to connect to friends and family and people who share common interests is a trend that's been growing for a couple of years, as I just talked about. For people interested in sharing music, there are a lot of options, but there hasn't been a good solution for musicians who want to make music in real time over the Internet. Until now. I'd like to bring out Alan J. Glueckman, who's co-founder of a company called eJamming* that was actually created to help musicians get connected live over the Internet.

Alan J. Glueckman: It's great to be here, Paul. Thank you for inviting us. Now, the eJamming system is both a social networking portal for musicians and music lovers, and a downloadable software application. Musicians post their music and their profiles at the eJamming Web site and meet other

musicians to make music together in real time, creating, writing together, and teaching. You can even record with musicians halfway across the world, Beijing to Brazil to Europe, with near-zero latency.

Now, right now we should be hearing some music, but I don't hear it. Ah, there it is! Right now you're hearing musicians playing live over eJamming peer-to-peer networks from multiple locations.

Paul Otellini: From multiple locations?

Alan J. Glueckman: In Las Vegas. You can even see on the interface how they're playing live. Now, I hear they're looking for a singer to front the band. How are your chops, Paul?

Paul Otellini: They're not good. But, I but we have a volunteer in the audience. Is there anyone out there that would like to volunteer for this? You, sir, in the front row?

[applause]

Male Voice: Oh, we have a volunteer. How are you?

Steve Harwell: I'm part of history.

Paul Otellini: All right!

Steve Harwell: Okay.

Male Voice: How you doing, Steve?

Steve Harwell: [not audible]

Paul Otellini: What's your name?

Steve Harwell: Steve Harwell, how are you?

Paul Otellini: Hi, Steve, how are you?

Steve Harwell: I'm doing great.

Paul Otellini: So, do you know anything about music, or can you sing or anything?

Steve Harwell: I've been known to be able to sing a little bit. I've been around for a while. I don't know if you've heard of our band. Have you heard of a band called Smashmouth before?

[applause]

Steve Harwell: Well, you –

Male Voice: You like this idea of jamming over the Internet?

Steve Harwell: Yeah, you know, I really do like the idea of being able to connect with your band over the Internet. But the cool thing is when you're not actually having to be in the same room, you know? I think that's really awesome.

Male Voice: Well, Steve, we've actually made your wish come true. Right now, the members of Smashmouth – your band – are online. And they're connecting over [not audible].

Steve Harwell: I didn't know that.

Alan J. Glueckman: Oh, yeah. We have music, man. That's okay. And they're connecting over eJamming's peer-to-peer network. Now, something you're going to really like. The eJamming software both minimizes latency – which is important – and yet imposes milliseconds of delay to keep you in time and in sync with the other musicians. And I know how important it is to play in the pocket for musicians like yourself.

Steve Harwell: Oh, yeah, definitely.

Alan J. Glueckman: So, eJamming will coordinate all of those audio streams, so you hear each other really tight. So, go ahead, check it out.

Steve Harwell: You guys want to play a little bit? Are you guys ready? Are you guys ready out there?

[applause]

Steve Harwell: One, two, three, four . . . [music] You guys want to sing it? Ha-ha!
[sings]

[Applause. Music playing.]

Paul Otellini: I can't believe how close in time that was, for them to be so far apart. They are actually very far . . .

Steve Harwell: Oh, man.

Alan J. Glueckman: Thank you, so much. You know, it's exactly why we created eJamming. We're all about musicians and music lovers. And we connect all kinds of musicians – professionals like yourself, and amateurs like myself.

Steve Harwell: I heard you sing!

Alan J. Glueckman: Oh, yeah, that's it . . . Anyway, the important thing is, your friends and your fans can also listen in to a live performance over computers, the new mobile Internet devices, and wireless cell phones. Just think, it's over eJamming's new jam session technology. So, live performances from anywhere in the world, 24 hours a day, anytime, right to your ears.

Paul Otellini: Wonderful.

Steve Harwell: You know what I like about that? You have MySpace*, you have all these places where you're meeting people. Myself, I meet my fans. But now, as a musician, I see all these kids on YouTube* posting all their jamming sessions. These kids get to meet each other. Now they get to be able to jam together, and all of a sudden you've got bands that are

being created from all over the place, and they get to come together.
That's just amazing.

Alan J. Glueckman: That's what we hope to do. Thank you very much. Thank you, Paul.

Paul Otellini: Thanks for making this.

[applause]

Paul Otellini: You know, that's a great step forward, but I think as we move towards this visual Internet, do you think it would be helpful for you to be able to see your band mates while you're doing the jamming and playing with them? I'm thinking about something like an avatar?

Steve Harwell: Yeah, that would be cool. You know, I tried some of that stuff out. What I think would be awesome is if you would be able to create, like, a character, and to be able to jam but also have stuff that you could do to yourself...

Paul Otellini: Well, we may have a tool for you.

Steve Harwell: Well I want to check that out.

Paul Otellini: Well I'd like to bring out -- Steve, this is Jonathan Strietzel.

Jonathan Strietzel: How are we going, Steve?

Steve Harwell: [not audible]

Jonathan Strietzel: Going good.

Paul Otellini: And this is Jonathan. Jonathan is from Big Stage*. Jonathan, Steve needs an avatar. But he wants something cool, not a cartoon.

Jonathan Strietzel: That's not a problem. Steve, that's what we do. So Big Stage is all about the personal Internet. The personal Internet is a place where you're going to be able to create the digital version of you. And that version of you will be ported into all sorts of new and exciting entertainment experiences.

Now all this is totally capable, using a standard digital camera right here. We're going to create an avatar, Steve, by taking three simple pictures. And this camera is like all the cameras I see pointing at us right now. So Steve, you're going to look directly at me.

Steve Harwell: Smile or a straight face?

Jonathan Strietzel: Just straight face. And then you're going to turn, look straight ahead. Let me take this picture. Turn a little bit right there. We're going to take the next one right here. And one more. And hold still. Right there. All right. Cool.

So now what we're going to do is we're going to take these three pictures and we're going to bring them right over here to this PC. And to save a little bit of time, we're going to go ahead and we're going to

use some images that we took earlier of Steve. So we'll load them up right here.

So these are the images, three simple face turns, as you guys see. And we're going to go ahead and we're going to build a digital Steve now. So get ready. It will be around 30 seconds to a minute or so, so let's talk about what you guys are about to see.

In a short period of time -- you're going to have to wait. I know you want to see this and you're smiling like crazy. You're going to see the digital Steve fully animated. It's going to be talking. It's going to be winking and blinking and ready for content.

Now what do you do with that avatar once all of you guys have created a digital version of yourself? The digital avatar can then be ported into two forms of content, a still image or a video. And you can take those still images and videos and share them over the amazing social networking technologies we've seen evolve in the past years. So Steve, let's go check you out. Let's see if it's done. It looks like it's done. So ladies and gentlemen, the debut of the digital Steve. And there he is.

[Laughter]

[Applause]

Jonathan Strietzel: Oh, hair? Are you having a problem with that? Well.

Steve Harwell: I like this thing. This is a mohawk and I had a mohawk back in the 80s. So I'm going to have some hair -- a mohawk.

Jonathan Strietzel: Okay. So Paul, he wants some hair. All right. So let's have some fun with some hair.

Paul Otellini: The man wants a mohawk.

Jonathan Strietzel: You sure? Okay. Let's give him a mohawk. Let's have some fun with this here. So there you go. Let's continue this process a little more. What do you think about that?

Steve Harwell: Some shades.

Jonathan Strietzel: Some shades? Maybe some jewelry. I don't see any on your face right now. So we'll add some shades, provided by our friends over at Oakley*. And let's have some fun with this, Paul. What should we give him?

Paul Otellini: I think he needs a nose ring.

Jonathan Strietzel: A nose ring? Okay [not audible].

Steve Harwell: That's a part I don't like because I never had a nose ring.

Jonathan Strietzel: All right. Let's move over here. I like the gold ring. What do you guys think? Is that good?

[Laughter]

Jonathan Strietzel: It looks good. So you come to Bigstage.com, you're going to create the digital avatar, taking those three simple pictures. You're going to identify yourself and then you're going to take it into different content experiences.

Paul Otellini: That's great, Jonathan, but what can you do with the avatar now that you've got it?

Jonathan Strietzel: Right. So you're going to put it directly into a piece of content. Right? The simplest form of content we have at Big Stage is called a Big Stage still image. I'm going to go ahead and open one up. Steve, we heard that you actually really like to go fast. You like fast cars. You like cool bikes, especially choppers.

Steve Harwell: Rock and roll.

Jonathan Strietzel: So the team over at Big Stage has prepared a cool still image for Steve. It's a little surprise. I don't think you've seen this yet. And we're going to load it up here. And it's going to be the digital Steve on a cool bike. Okay?

Steve Harwell: Awesome.

Jonathan Strietzel: Now it's a simple image here, but it's really powerful what this does. So what we're going to do is let's go ahead and personalize this image. We'll go ahead and -- we'll be nice to him [not audible].

Steve Harwell: My bike actually looks like that.

Jonathan Strietzel: Oh you do?

Steve Harwell: Yeah. And that actually is scarily -- that looks so much [not audible].

Jonathan Strietzel: Let me check. Here you go. We're going to go and we're going to be nice to you. We'll give you your normal hair. And then maybe we'll add an expression on your face. Are you surprised in this image?

[Laughter]

Jonathan Strietzel: Right?

Steve Harwell: I look kind of angry.

Jonathan Strietzel: Okay. We'll give you a badder look here because you're on this bike. There you go. There you go. Now this image can be taken. And Steve can take it to social networking pages. He can put it on a blog. He can put it in an e-mail and share it with his friends. He'll get further commentary on this image. And this is the nature of what Big Stage does. Now Paul, I know you have a teenage daughter.

Paul Otellini: I do.

Jonathan Strietzel: What do you think she's going to think about that?

Paul Otellini: I think she and her friends --

Jonathan Strietzel: No problem?

Paul Otellini: -- would really love this.

Jonathan Strietzel: Yeah.

Paul Otellini: It's not the bike, but it's good.

Jonathan Strietzel: Yeah, and if you guys think that's going to be the simplest form, it's going to be a big deal. I mean, imagine what happens when you take this to the limit, when you extend it directly into video. Now, what we've done at Big Stage is we've created an open platform for content creators, directors, and writers all over the world to create a new form of technology that takes each and every one of you and immerses it directly into the entertainment experience that you see. So, it's you, it's your friends, it's Paul, Steve, Jonathan, together in some new, epic Web short, shot specifically for this new medium.

So, we've got a little surprise for Mr. Otellini here. So, Paul, you're on stage with a rock star today.

Steve Harwell: Yeah.

Alan J. Glueckman: And so what we've done is we've grabbed one of your old videos, Steve, where you're rocking out. And we've actually taken Paul's

pictures that we took earlier, and we snuck this one in of Paul. So, we've got a disco ball going.

Steve Harwell: This is my first video, actually.

Jonathan Strietzel: Oh, okay, well, this is Paul's first. This is great, the two of you. All right. So, ladies and gentlemen, Paul Otellini singing "Walking on the Sun."

We've got a little audio issue here. Paul, come on, let's do it, let's do it. Just do it on the audio side for us. He spoke, and he's done! Oh, give him a hand, give him a hand.

[applause]

Steve Harwell: I was going to tell Paul -- and I'll tell you guys this, but keep it a secret. What goes on in this room stays in this room. During that video, Paul had a really good time, actually. They weren't faking it. Especially with that one person.

Paul Otellini: Let's not go there!

Jonathan Strietzel: No, we're not. We're moving on.

Paul Otellini: You know, what I saw there was pretty cool apart from the fact that I couldn't sing. I would, you know, maybe consider switching jobs with you.

Steve Harwell: You mean, I could be the CEO?

Paul Otellini: It has its moments.

Steve Harwell: I'll trade you right now.

Paul Otellini: No...

Steve Harwell: [not audible]

Paul Otellini: Anyway, that's great. So, Jonathan, when is this launching?

Jonathan Strietzel: Okay, so, BigStage.com is launching in Q2 of this year, thanks to all the genius work done by the Big Stage engineers. You're going to be able to come to BigStage.com, upload three simple pictures with your standard digital camera, create the digital you, and put that directly into your entertainment experiences. And it'll improve all of your entertainment in the near future. That's it. Simple.

Paul Otellini: Right.

Jonathan Strietzel: Thank you very much. Thanks, Steve, for your time.

[applause]

Paul Otellini: So, we've got your music, we've got your jamming, we got you an avatar. Are you ready to go?

Steve Harwell: I'm ready to go, you know? It's like they say, you know, all dressed up and nowhere to go. But I think I have somewhere to go.

Paul Otellini: Before you go there, when you and the band used to hang out, where did you go?

Steve Harwell: Well, you know, my dad was just sick of hearing it every day in my bedroom. So, he was like, move the Lincoln Continental out of the garage, and that where you're headed. So, that's where every band -- I think every band started in the garage. That's where we started.

Paul Otellini: Yeah. Maybe, if you look at the screen, maybe this will look familiar to you.

Steve Harwell: That's my neighborhood.

Paul Otellini: And we'll raise the garage door here. We've got your garage band.

Steve Harwell: That's my guitar player. That's my band, right there. Are you guys here?

Male Voice: How you doin'?

Paul Otellini: Steve, Intel works with a company called Virtual Heroes. We created this realistic-looking, crazy practice area for you and your band. And then we integrated the band with their own lifelike avatars, using the Big Stage technology we just saw. So, you know, why don't you talk to the band?

Steve Harwell: Paul?

Paul: Yeah?

Steve Harwell: Do you want to rock and roll a little bit?

Male Voice: I certainly do.

Paul: Greg?

Greg: Yeah.

Steve Harwell: Hey, Mitch?

Paul Otellini: Mitch is quiet.

Steve Harwell: Mitch is quiet. Thank God!

Paul Otellini: Do you think you're ready to sing, now?

Steve Harwell: That's what I do for a living, so...

Paul Otellini: This avatar thing, you know, usually it needs a keyboard and a lot of computer controls. That requires that you put your microphone down to do that.

Steve Harwell: Well, you know, that's the catch, you know, that's what's cool about this thing, you know? To be able to create an avatar. And, you know, to be able to move the avatar around with the keyboard and stuff like that. So, I'm really excited about [not audible].

Paul Otellini: But if we could make it real, so you didn't have to do that -- you would just stand in place.

Steve Harwell: If you made it easier, that would be better.

Paul Otellini: Would you like to give that a try?

Steve Harwell: I would try it.

Paul Otellini: I think we may have solved your problem. Let's close the garage door for a second.

Steve Harwell: Bye, guys.

Paul Otellini: They'll be back, don't worry. And I'd like to bring out Andrew Tschesnok. Andrew, come on out. Andrew's from a company called Organic Motion*.

Andrew Tschesnok: Hi, Paul. Hi, Steve. Nice to meet you.

Steve Harwell: How are you?

Andrew Tschesnok: Hello.

Paul Otellini: Andrew's company specializes in what's called computer vision. And what they develop is a technology that allows the capture of your movement, to be able to put real time into the computer. Andrew, how does that work?

Andrew Tschesnok: Yes, Steve, I think we've got something here that you're going to like. At Organic Motion we've worked on making it easier for computers to see people move and understand what they're doing. You know, a lot of you might be familiar with, you know, the ping-pong ball bodysuits that people put up in special effects in Hollywood, like the behind-the-scenes kind of the digital effects. Well, people had to wear these complicated suits so that computers could track them, whereas, you know, we've done away with the suit. We've had a breakthrough. You, simply in plain clothing, can get the same results. Anyone can just step in front of the cameras.

We've got a system over here set up for you, and we use about 14 cameras. We've streamed the video into our image processor. It gets processed and builds a 3-D model and tracks your precise 3-D movements. We can use that kind of data for many different applications.

Steve Harwell: That's awesome.

Andrew Tschesnok: That's very cool. Steve, do you want to give that a try?

Steve Harwell: I want to try it. I was going to have you do it, but I think I'll handle this.

Andrew Tschesnok: I think you might do it better. Yeah. Why don't you go there?

Steve Harwell: Okay. Thank you. Thank you, guys.

Andrew Tschesnok: We'll finish up here.

[Applause.]

Paul Otellini: So, I understand your system now is targeted for the professional market.

Andrew Tschesnok: That's correct. Our system is used by the entertainment industry. It's used by athletic trainers, by physicians, you know, to generate animations similar to what we're going to do here. Also, to evaluate the range of motion in athletes or to, you know, check out people with injuries and the extent the injuries. We do so because, you know, without the bodysuit, it's natural, especially for patients: it just makes it a lot easier process.

Today we're using Intel quad-core processors. We have a very processor-hungry architecture here, and we can always use more power. If we have more power, we can reduce the number of cameras and we can really see this in the home as an amazing home entertainment system. Or, you know, say, at your local gym or retail store, and you could track your golf swing or [not audible] office.

Paul Otellini: Or Steve's garage.

Andrew Tschesnok: Yes. Yeah.

Paul Otellini: Well, that's great. Well, you can count on us to give you more processing power.

Andrew Tschesnok: Thanks very much.

Paul Otellini: Thank you very much.

[Applause.]

Paul Otellini: So, Steve, are you ready to rejoin your band?

Steve Harwell: I would love to rejoin the band.

Paul Otellini: Okay. So what we're going to do now is take all of these technologies that you've seen one at a time, and combine them into the first-ever live virtual jam session. Ladies and gentlemen, Virtual Smashmouth!

[Applause. Music. Applause.]

Paul Otellini: Yeah. Thank you, guys.

[Applause.]

Steve Harwell: Come on, you can do it louder than that. Let me hear you!

[Applause.]

Paul Otellini: Okay. Thanks, Steve, and thanks to the guys in Smashmouth. I appreciate it. You know, based upon the technology you saw in action today, you can see that we're building up the basis for the personal Internet in real time, in terms of the development. Lots of companies are working on this. I would like to go back and thank Big Stage, Virtual Heroes, and Organic Motion – and, of course, Smashmouth – for making all that possible. That was the leading edge of what's possible in the demo in this area, and a lot of work went into it. And I hope you appreciated it and enjoyed it.

[Applause.]

But more importantly, what we've showed you today was just a glimpse of what we think reality tomorrow is going to be. The personal Internet is not just about entertainment. These same technologies are going to be used to enable better medical care; to be able to coordinate faster disaster response activities; to facilitate distance learning and distance medical care and those kinds of things, for both consumers and enterprises alike.

Many years ago, the computer industry was in a similar situation to the Internet today. When computing became personal, the industry changed. Innovation, collaboration, and standards are what drove the

growth of the PC industry. The PC experience improved and evolved over its 30-year history and created great business opportunities.

I believe that the personal Internet is also following this same path. You may argue over when this will happen, but I believe it's inevitable. As the Internet becomes more powerful, more connected, more context-aware, more natural, more personal, more and more industries are going to be transformed. Why? Very simply, because people are going to demand a seamless experience regardless of the activity, location, or device they're involved with.

Large portions of the CE industry have been focused on personal content up to now, in camcorders and photography in particular. I think that the personal Internet is going to accelerate this change. Increasingly, the consumer will be the generator of content, with the Internet enabling the distribution. This means that new devices, new business models are needed to take advantage of these changes. And the change creates a huge opportunity. We at Intel want to work closely with you as your silicon and computing partner to bring your creativity about, and bring about the personal Internet.

I'd like to leave you with a parting thought from Bob Noyce. Bob was Gordon Moore's partner in the early days of the semiconductor industry and cofounder of Intel Corporation. And his quote deals with embracing change. Bob said, "Don't be encumbered by history. Go out and do something wonderful."

They're very simple words that capture the spirit of the human potential to drive and to invent. At Intel, we take inspiration from them, and we offer them to you in the CE industry. Now it's time to embrace the opportunity before us. Let's go forward and build something wonderful together. Thank you very much.

[End of recorded material]

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