

(APPLAUSE)

GERD LEONHARD: Is this working? OK, we're trying to figure out how to survive in what the media is doing in the – can you hear from the microphone? I will just keep going. I can cover the room with my voice anyway.

NEW SPEAKER: We need the mic.

NEW SPEAKER: That's probably a good idea. In the meantime, you can Twitter and things – put something on Twitter if you want.

OK, so while the microphone is being switched on, I have a website where you can download all of my stuff. I'm going to publish the slide. I have a pretty intense presentation so I figured you could use it. It the easiest way to remember my name is Gastroesophageal Reflux Disease – GERD. That's the easiest! I also have a public Dropbox folder, so you can download all of my free books and presentations. Are we also getting sound support here?

NEW SPEAKER: Please use the microphone.

NEW SPEAKER: I intend to. I'm not opposed to it. Are we getting this going? Are you getting something? Well, we can stand here behind the – the good old-fashioned way, is that OK?

NEW SPEAKER: Yes.

NEW SPEAKER: OK, good, alright. So I used to be a student of theology, in a different life, so this is very familiar to me, like preaching from the pulpit, so to speak. But I do prefer to move around so we'll see if we get this going again. First of all, what do futurists do? Many people know Ray Tofler, and other futurists, but my work is about looking backwards from the future. So I help my clients – there's about 150 of them worldwide, 25 of them in my company who are also futurists, and we look backwards from the future. So most of what I do is in a five-year time frame. So basically going into the future and saying, "What's going to happen in five years, and what are we to do to get ready for this?" This goes for business models, social structures and legal issues. There's a great saying in China which says, "If you want to know about the future, ask your children" and if you have kids you know what I'm talking about. If you have a 15-year-old kid they know exactly what's going to happen in five years. So, for example, 15 years I was in the music business, I used to be a musician and producer, and I talked to the record companies about the future – this was 1999, the year of Napster, right, and they were completely clear that music was heading spot Cloud. So that's kind of what I do. I try to figure this out and then work backwards. And many of my clients include companies like googol and Vodafone and telcos, just for disclosure. You can see the rest on my website.

So if you look at what happened with technology so far, it is very easy to be fooled how bad it was. For example, using Google Translate, have you ever tried to use Google Translate from German to English? It comes out like a comic. But now it is getting so good, we're only seeing the peak of this, it is the tip of the iceberg. If you are using the iPhone and using the Siri box to ask questions and hit the button two times, you get really funny answers, including if you say you have an alcohol problem it will tell you where to buy more alcohol. So it is not very smart. But let's not be fooled by this. We are moving into a world that is based on artificial intelligence and machines that can think in a way. We are moving into a world to where the data we are giving out creates a really, really powerful picture of who we are and what we're going to do. There's some people who have said "Google knows more about me than my wife" or my husband, depending on who you are. And that is true. If you think about the last 7 years, everything you put into Google or your email, everything you put in creates a digital breadcrumb, a data track. So we will see the exponential technological advance that we're seeing now – and I think Australia with many countries in the developed world, we're at a pivot point. Now, exponentially is very hard to understand because humans are not exponential, you know – machines are and technology is. So there is a thing called Moore's law and Metcalf's law, you may know, which is every 18 months technology doubles. So if we have a language translate or app called Hi, give it a try sometimes – all these things happening around us they actually look like science-fiction sometimes. If you've seen the movie "her", the latest one, where the guy falls in love with the computer system, or The Matrix or the minority report, many of those things are true now and what we're seeing today is we have this exponential technological advance. This is a graph showing how many people

are going to connect to the network using sensors, devices, social media – basically totally exponential. So like the song goes, "You ain't seen nothing yet" and this is going to be our next five years. It is mind-boggling how much we can do and how cheap it is now as well. I mean broadband is very expensive for some of us but in general the amount of power we're getting from a device – like in India you can buy a tablet for \$31, which is a lot of money in India, still, but \$31 for a tablet and you can connect and study and watch movies or whatever, right, for 30 dollars and they're selling 2.7 million of those a week. So, in general, it's pretty mind-boggling what has happened there and it's very important for us to notice that we don't have enough time to wait and see to solve issues that come with connectivity. Or the issues that come with disconnectivity – both, right?

There's also no way back to an analog society. So it's funny, when we are not connected, like not too long ago really, all we wanted is to be connected. Once we are connected and always on, as people are saying, we take luxury in the fact that we are disconnected. In fact, now there's hotels that charge you extra so you cannot connect. It's called – basically being a new kind of luxury. And the other challenge, where I was listening to the speech earlier, is, technology is so seriously faster than politics. I mean, think about downloading laws, for example. Today, you know that kids and most people who are looking to download, they are not actually downloading anymore – they're streaming. They are just clicking and it plays. So the whole discussion about illegal downloading is completely absurd, basically. Because there's a thousand ways of getting this content, apart from BitTorrent. So this is the story and there is a real challenge for us. Basically if you are looking at the future and thinking about the future, you have to think exponentially. The funny thing is, when you count line Arley, 1, 2, 3, 4, 5, that's almost the same as 1, 2, 4, 8, that's really close. But after 8 it takes off. So you think the world is a crazy place today? Give it five years and it will be twice as much. We're going from 4 to 8 and not 4 to 5 and that is true for basically the Snell model of ethics and social contracts. We're still down there in this discussion about how we're going to respond. What happens to our data with all of the stuff we use on the internet? What kind of security do we have? Who can use my information? Can my insurance charge me more once they find out that I like to smoke a cigar or something? Can I make a mistake still in a world that's completely checked out, right, where everything is recorded? And vice versa – when I'm not online, how do I participate, for example, in online education. How did I use technology?

So now we're in a world where about 250 years ago James Watt invented the steam engine and the steam engine, of course, started the industrial revolution and the steam engine gave us more physical power to move things around or use a steam engine to use the railroad and so on, that was a big step. Today, this is the next steam engine. It's technology enhancing our mental capabilities. Up until now, instead of being able to go anywhere, we can know everything. Because the internet allows us to go into a bar and have an argument with a stranger about the capital of Kazakhstan – you just look it up. Or to book a flight while I'm in the taxi. So it is my brain that is being extended. So there's this mental power that's happening and basically the mobile device is our external brain.

And that can be good or bad, quite obviously. But think about that – I do a lot of research on this and when I talk to people and ask them, "Do you know the mobile phone number of our wife or husband"? Most of them in many countries say, "We don't, we just push the button". And you have forgotten phone number – it is outside of your brain. And taxi drivers use their phones to navigate. In many countries they don't know where they're going, they are looking at the box. Not here, I think. The pox has become the brain. There is a great book you can read on this called *The Second Machine Cam age* and it's what people refer to as the third industrial revolution – which is knowledge.

There is a lot of discussion about this – wow. OK. There is a robot making his way in!

There's a lot of people talking about what that means for us and basically in our society there is a great quote from Peter Drucker who says the greatest danger in times of turbulence is not the turbulence or change but to act with yesterday's logic. This is so true for a lot of things – whether it is for media, business models or whether it is how people do stuff on the web. Yesterday's logic – and this is yesterday's logic saying that the internet, cyber-space, what we used to call cyber-space, is not real life. Some people refer to "Real life" as "Meat space", you know – bodies. You could say that as well. It is not the same thing. But you know this isn't true. Being connected is just as normal as going to the bathroom or using water. In many places, yes, of course there are issues about being connected and a lot of people still don't really have that. But it is becoming as normal as electricity. I mean, there's still 1 billion people around the world starving, so they have bigger issues to solve, right,

but being connected is sort of like – it's basically like air. It is becoming like air. In Finland, connectivity is a civil right. If you cannot connect – I think it's quite similar here, it appears – you can sue the government. At least it seems like there's some political recourse, judging from the earlier speech. We'll discuss that later!

But, anyway, it becomes sort of like air. And that's tomorrow's logic. Because now we have what I call "Digital transformation" in every segment of our society. Look at books. I'm an author, I wrote five books. My first one was with a publisher and was printed the good, old way. Now it is all digital and I write a book and a week later you can buy it on Amazon. See what's happening with books? In a very short time we will go electronic all the way and print becomes a relic like a CD. If you gave a CD or DVD to your kids for Christmas, they think you should go and see a therapist, right?! It's like, why are you giving me a CD, it's all there, just click the button. So I worked with the Brazilian government on this. The idea is to connect 60 million students in Brazil with a mobile device that costs \$3 or \$4, like a Kindle type device, a simple device, and not print any more books and the government could save trillions of dollars by digitalising education. That will happen here as well – clearly. It's a huge cultural shift not to have paper. But imagine what you can do on a connected device as a student, or, for example, if you are blind, you can just listen to it, right? Or if you are otherwise disabled, you can use a Google reader type device, a Google Glass type device to control the interface through the internet. None of which you can do with a book. So there are very, very good things happening here and you see basically what we have in the past, this kind of idea of playing paying with our personal information, that has become a standard. Over on the left, you see WhatsApp. Why is it free? There's 600 million users and it is now owned by Facebook, and it is a free message service. If this takes off on a global level, which it is, the telcos are starting to use \$100 million a day in SMS revs. Why would you use SMS if you have WhatsApp right? So you can see here on the right 75% of mobile apps want access to our user data. That's the deal – we use it, they get the data. The funny thing is, before Snowden and the NSA, and what I call "The summer of Snowden", the whole affair of NSA and the prison deals and all of that stuff, right, after that, we started thinking about, "What are they doing with our stuff"? They are building huge data empires based on data. So that has become a standard and if we're looking at the immediate future, the next five years, you would think I'm a science fiction author by using all of those fancy words on this graph. "The internet of things". "The sharing of economy". "Connected health care". "Next generation self-driving cars". Imagine what happens when this stuff comes all down at the same time. Social media and Facebook is old hat, right – now we are connecting the internet to traffic lights and connecting it to the thermostat to check out what our house is doing. The internet of things. We're using robotics. The cheapest robot now is called Baxter and you can teach it stuff like lifting up your grandmother out of the bath and into a bed. You can teach the robot how to do that. As you know, I'm sure, in Japan there's already 1 million robots doing housework. Half of them are electronic dogs that give company to people. That's pretty mind-boggling. If we're looking at the future, that question is not if technology can do it, because the question is always yes, basically, but why we should do that. So after we get connected, the next question is, is this actually a good thing? What we're doing here and what we're able to do? In many cases I think the answer is clearly yes. But the question isn't so much about whether technology can do something, but if we should do it. So the question emerges there about ethics, right, because we're going warp drive into the digital future. If you have kids, you know what I'm talking about, right? Like, even my mother, you know, who is 75, I gave her an iPad and she thinks the iPad is the television. She doesn't know it is the internet. She hits the button and watches TV. So for her it is TV. So this information is changing very quickly. I will play you a short video of this project called Jibo and you think I'm trying to pull a joke on you building society I'm not. It is quite serious.

NEW SPEAKER: This is your house. This is your car. This is your toothbrush, these are your things. But these are the things that matter. Somewhere in between is this guy, introducing Jibo, the world's first family robot, say hi. Jibo.

NEW SPEAKER: Hi, Jibo.

UNKNOWN SPEAKER: He helps the family out all day. He is the world's best cameraman. But independently tracking everything around him he can independently take video and photos so you can put down your camera and be a part of the screen.

NEW SPEAKER: You get this, right? This is a robotic family member. This is serious. These people want to do this – it is being funded and launched. So the question stands, do you need a wife when

you can outsource all of this?! But this is what's happening – technology is getting smarter and cheaper by the minute, basically. I mean, it's mind-boggling to see how behaviour changes when this actually works, right?

So this brings up the key question, if you are in the space of consumer rights and toll or telecom, is what is that transformation to a digital society going to be for us? It means we are connected just like we are usually connected to water or electricity or even air. It becomes completely normal. So offline is a mental state, really. It's not a physical state. And with that comes a huge economic shift and we have to be careful that in this shift we don't repeat history.

The economics of the past ran on fossil fuels, oil, natural resources. Australia is big on that, of course. The economy of the future is based on data. Software, algorithms, technology. Because what is happening when 5 billion people are connected – which is going to happen in the next three to four years – 5 billion people, it's 2.8 right now, is what we do there and how we do this creates a huge amount of data resource that can be used for all kinds of purposes – for surveys, for intelligence, for marketing, for surveillance. I mean, you know as you are walking around with your mobile phone, your mobile phone communicates with other phones, with Bluetooth, with wi-fi, right, all that comes a huge flood of what has been referred to as Big Data. Basically Big Data is just data but much more of it, you know? By order of magnitude, much more of it.

So that questions what is so-called our social contract. What is the social contract of this huge economic shift? What is allowed and what is good? How much information from you can I get? What can you see of me? This brings up lots of issues about how we connect and why we should connect. It brings up lots of questions about our business models, for example. The most suffering industries in this, of course, are clearly music, news, publishing, television. Can we force people to pay for stuff? Is that part of our social contract? Or should we provide more value so that they would actually pay?

I think you can clearly say technology is what has been referred to as HellVen, which is hell and heaven combined. So that means it's kind of like nuclear energy. You can be opposed to nuclear energy but it should be possible for countries to have their own nuclear power plants for energy but it should not be possible for them to make bombs. But the funny part, of course, is that it is the same technology. So we're facing this issue of it can do really good or really bad. So it can be exciting – and technology, in fact, very exciting to many of us, you know, being able to go to Linked In and look me up before you came to this speech, you know, it takes you 10 seconds to figure out if you should go. And it can really be creepy. The concept that your licence plate is being tracked and the policeman is recording you and that information is saved for five years – that is not a good idea. No matter what the benefits of it would be. But how do you – it is the same technology, right? What kind of social rules do we have about this? This is not just about economics.

So the bottom line is, I think that both non-connectivity, or what I call "Under connectivity" which means you can't really do anything because it is too slow and doesn't work, which is still a big issue around the world, as well over-connectivity are big issues. Over-connectivity means constantly looking at your mobile device to figure out what's next. That has been described as FOMO, the fear of missing out. You are always afraid something has happened and you haven't watched it. So we have the digital divide in Australia, especially in the Indigenous community and, of course, for disabled people, that is a huge issue, as was discussed earlier. But then we have a flip-side, right? The addiction to connectivity. Basically, the internet is the new religion. I think both extremes are not good, clearly. Because what happens when you can always be connected is that everything you do has a habit change – creating a whole different way of looking at life. In fact, I found myself the other day standing with Google Maps, trying to figure out how to find the subway in London. I was right on top of it! I didn't look. I looked at the app first. So, I mean, you find yourself doing those things and then you are getting digitally fat, right – what I call "Digital obesity". And you laugh, but this is actually just as serious an issue as real obesity. Because we have this flow of information through us and sometimes we can't do anything but to shut down, right. So this is becoming also a major issue by over-connectivity, because we're now living in this world. We're living in a world of screens. And I wouldn't knock it, because this is really a great accomplishment, all of stuff we can do increases efficiency, for example the key to solving climate change is complete connectivity of all things like monitoring devices, thermal statistics, gas pipelines, all of the information that we have is one of the keys of solving climate change. So what we have here is a world of screens that are connected – mobile, social, low cost, intelligent. That's good. For example, if you run a business and you don't have a

mobile website, the chances are in a few years nobody is ever going to come to your website because we all do it on the mobile. So this is becoming a trend. And of course the opposite trend is this, right, is that the screens are also watching us. It's a two-way thing. So if you buy a Samsung smart TV, to partake in the world of the internet in your living room, which I have, right, the first thing you need to do is put duct tape on top of the camera. Because you know any 14-year-old can hack into your television and watch you in the living room without the green light being on. It's so easy, I tried it myself, to hack my own TV, and I'm not a hacker but with basic instructions I got it and I was able to hack into my own TV. So, there are issues about this two-way connectivity. They can be good and they can be bad.

Then there are issues about what's happening with our connectivity in general. For example, the case is being made that being neutral on the web, which means that I can watch in the same speed that anybody else, regardless of my service or what I want to do – net neutrality, right. That is crucial, but on the flip-side the accountability of the internet companies is also a big deal. This is an illustration showing that essentially the world is now run by four or five large internet companies – Google, Amazon, eBay, Facebook, of course, Ali Babar which has just gone public in China. So it's important to see that it's important to keep the internet open, clearly, because it helps all businesses to develop. But it's also important to take and look and see if those companies who are using it and becoming a default operating system for our lives, they need to be accountable. Much more so than they have been. We can't just say, yes, I know Google is a sponsor, but anybody from Google here? They're just sponsoring in their absence, I suppose. But in this case we have to also say what they are doing is not always positive just because it's possible. We also have to figure out what the side effects of it are. So, it was said by Metcalfe, that the value of a network increases exponentially with the number of nodes. This is very powerful, because when we are all connected, we can do things that were never possible before. We can force politicians to say things that they usually wouldn't want to talk about, because we can do it together. Every month there's over 100 actions on Facebook against banks, insurance companies, governments, to drive for transparency. If you are on Linked In, many of you I'm sure are, but you know what happens, at Linked In there's now 360 million people and what they are doing is creating what they call the "Employment economic graph of the world". Trying to figure out who does what and where they go to that's becoming extremely powerful. So in this world we have to think about the parallel to big oil – that has been referred to as big oil in the past. Basically the fossil fuel economy is now very similar to the data economy. So what we need to think about is the companies who are in the data economy – they have to be similarly accountable as those in the oil economy. By, for practical means, they were not really accountable for a long time! So we have to actually do better. And this is becoming a big issue when people are connecting. So, as you know, most consumers don't really have a choice but to connect. I mean, imagine if you can't connect, you can't actually get your email, you can't do your banking, you couldn't buy tickets – it would not be a good thing. So because of that, we can't really go to the consumer and say, "You know what? If you don't like this, why don't you just not use it". That is a black-or-white, yes-or-no answer. We can't really do that. We don't have that choice. That's like moving to Amish country in the US or the Swiss mountains where I live. You can do that but most people don't have the luxury. Many of us cannot work without being connected. It's not really like air, but it gets to be pretty close, sometimes. When you can't connect you are in trouble, you can't communicate. We depend on this for our livelihood and we don't have the technical skills to protect ourselves against abuse. Most people who are regular users, if I tell them that I would use encryption on my own private email servers, they don't even know what that is. So government and companies alike have to make sure that we are using this in a way that can be safe and secure with how we use it. This is now, of course, questioned in this whole debate about whether the internet really means empowerment of the users, as the fish is showing here, right. It's funny, when I started using the internet and did my first few start-ups in digital music, this was the symbol of what we wanted to accomplish. Not the big fish chasing the small, but the small chasing the big, so to speak. That was the concept of the internet – empowerment of the consumer.

And we have that. Let's not forget we do have that. We can give people a hard time on Trip Adviser, we can compare prices, we can go to a bookstore and then buy the book on Amazon using the mobile app. We can do all of these things. That is definitely empowerment. But the internet isn't a magic wand. The internet doesn't solve our social problems, it doesn't take care of politics and we shouldn't outsource politics to the internet. So rather than doing anything, we do a Facebook action and we think that is meaningful, right? I doubt it. I think we need to think about what that means. A lot of people are saying that the model of the internet, which essentially is based on advertising, right, and

you know how advertising is close to surveillance – that's really the same thing, relying? Because martyrs are watching us, what we have done, where we have gone to, who we are and they're using that information. That is not a bad thing in itself but it certainly isn't going to be a solution where we can say, "You know what, where we have an issue, we can make an app. There's no appear app for inequality. There is no app for disability. There is no app for social problems. We shouldn't use technology to try and solve social problems. I will give you some examples of that later.

So, I worked in the music business for quite some time. I was a musician and producer and then around 2000, I wrote a book called "The Future of Music" and I worked with the big record labels globally on trying to help them to figure out how to use the internet to do new business. When I worked the record labels, I remember the one thing that I heard from them was to say "We will not have a good business if we cannot prevent people from getting our music for free". It is kind of an obvious lodge, right? But the logic was completely flawed, because, (a) you cannot really prevent it no matter what you do, because we're talking about technology here – the internet is a giant copy machine. That is what it does. So it's like preventing a horse from walking, right? And, second, there are new business models where you can monetise that. Which we're seeing now on Spotify and YouTube and others. So while we hear from the recording industry this basic thing about piracy, here is the fact, right – that we've seen in the graph of how they've done, the policy of the music industry has resulted in a 71% rev decline in recorded music by basically saying we will not give the consumer what they want.

Everybody wants to listen to music anywhere, any time. That's finally becoming legal.

This is an important point when you're talking about cultural policy, licensing and content. This is the point – you can't fax a cat.

(LAUGHTER)

You cannot have a digital society and allow people to connect, and be empowered, and at the same time force them to buy a DVD. Because once we're empowered, we change our behaviour. This goes for industry, as well as for government, as well as for us – what we need to do is find a solution to the change of how people have changed our behaviour. It's interesting to see, for example in music, it's quite clear that most people are not criminals pie intent trying to rip off poor artists by not paying, right? I mean, if I did some research, there'd be 1 in 10,000 people who has criminal intent to not pay the artist, right? It's not that we don't like music – we just don't like the economic system. That, we need to solve. That brings me to the movie business, and the current debate in Australia about Netflix – you may have seen some of this, right? On the left, you have a website called PopcornTime, which of course is illegal. It had 30 million movies and TV shows and, a huge streaming apparatus using BitTorrent. This was the first time ever you could watch any TV show or movie online whenever you want. That's what everybody wants. The reason we don't have this is not because we wouldn't pay – it's because the legal nightmare of making this work is incredible. As I'm sure you know. There's a thousand reasons why this can't work. So up comes Netflix and solves this problem, and now we have here this debate – reminds me of the faxed-cat debate. In Australia, there's 200,000 people who are using Netflix through what is called an IP tunnel, which means you can pretend to be in America. Which is not illegal – this is just a violation of the user agreement. It's not illegal. 200,000 people. Now we're having this debate, and basically the guy who runs Fox Studios says he's opposed to Netflix because they don't have the right to sell these shows in Australia. That's interesting. Yes, I agree, that is probably a problem, but you have millions of people who are willing to pay! So what is the problem with making this available? I know what they are, but this reminded me a lot of the New York Times. I've been reading the New York Times for 25 years. I love the writers. I know many people there. The New York Times, in their wisdom, decided they would put a pay wall – if you go to them 10 times, it would say, "It's been nice seeing you, but now for the 11th time, it's \$250" to read our content. Many people here in Australia use the same idea, right – forcing me to pay. In the case of the New York Times, I don't mind. I stopped doing it, but \$350 basically led to this, right? This is their home page traffic of the New York Times, as a result of this policy. If it goes on like this, next year they'll pay us to come to their home page, right? This is the result of their commercial record – the total disaster of a policy of forcing people to pay. Advertising has declined, which is most of their money. The whole business model doesn't work. So basically, the lesson from this, from both of those, is reason to buy beats forcing to pay. This is good for consumers. You cannot force consumers to pay for something that they perceive has little value or is a prison, like iTunes. You watch a movie for \$8, fall asleep,

next day you have to buy again. You have to be a fool to do that! I did it for years. There was little alternative. That is what some people refer to as managed dissatisfaction – not a good idea. Take Netflix versus the New York Times. Netflix has 51 million subscribers, out of which at least 2 million or 3 million are using an IP tunnel because they don't have a choice. I'm paying more for the tunnel to be American, so to speak, on the Web than I pay for Netflix! I mean, that is not a good way forward into the future, right? Let's talk about this thing that I mentioned at the beginning called Big Data. Are you familiar with what it means? Basically, a giant fire hose of data that we're sharing. "Nothing vast enters the lives of mortals without a curse," it was once said. That is so true for the internet. It's vast. It's powerful. But it also has a curse. And that's something we have to think about when we talk about connected cars, which is now a standard – all luxury cars are connected to the internet. Every city in the world is trying to connect the traffic lights – like 4,700 lights are connected in Los Angeles because of the energy saving. Everybody is trying to connect the network at home. We can save 50% of energy by connecting our energy network at home with mobile apps and to each other. For example, you turn on the air-conditioner on the way home from your car with an app, rather than leaving it running all day. That creates a lot of possibilities – connected devices, connected screens, of course. In a way, what we're looking at here is the fact that we are all connected creates a huge cloud of data, of information. Things like Google Now, which you have on your mobile phone – you should give it a try some time – they are using that information to actually give you advice. If you use Google Now – part of the Google app, Google will say, "OK, you're logged into Google. Your airplane is next. Your meeting will be delayed. Do you want me to send a message?" It will also recommend things like meeting points, who you should marry, things like that. Just kidding.

(LAUGHTER)

This tweet the other day kind of said it all. "Google 2004 – don't be evil. 2010 – 'evil' is tricky to define. 2013 – we make military robots." They just purchased several companies making military robots. The great thing about Google – in this dichotomy, they'll find a way to be innovative and move forward, I'm sure. This certainly is a scary development, when you think about what can be done with all that data and this artificial intelligence. As you can see here on the left, every single internet company in the world certainly has one goal, which is to buy every data scientist and every artificial intelligence company in the world to make their systems intelligent. So in a few years, you're no longer going to sit here and Google "best social place in Sydney," typing it in – you speak to the computer. That's already possible – you should give it a try. If you use Google's browser, called Google Chrome, you speak to the browser. This is not news for people who are digital natives. The interface is moving to speaking. Basically, because of that, the computer knows us intimately because, when you speak, they also can detect whether you're anxious or hungry or male or female – it's all part of the same intelligence. I hope I'm not scaring you too much here. It's actually, I think, a lot of these things have a dual side. I'll talk about that in a second. If you're looking at what's happening on the Web – interconnectivity – you see a fake scene here from a connected living room, where the refrigerator is broadcasting, the mobile device is broadcasting – they're all interconnected. That's kind of where things are going. I use a connected thermostat at home. When I'm travelling, I can see how warm it is at home or cold, and I can change that. It's saved me, already, 25% energy. But at the same time, I'm worried about my neighbour being able to see the same thing, if he just tries. I mean, it's an interesting thing – it has a huge amount of impact on our lives. If we're looking at our lives on a commercial level, you may be aware of the fact that online advertising – which is roughly one-third of total advertising, \$100 billion a year – it's now run by Facebook and Google and Microsoft. Basically by three companies.

The question is, are we getting to a world where the company with the biggest servers wins, ultimately? That would also not be a good idea. It would be worse than before! I think this is actually a good thing – that we are all becoming a source of data – because that data, for example, for a civic community, can be very powerful. You can say there's a pothole here, you can register that through an app. That's already possible. You can connect with others, you can find out information, you can use public data to figure out where the safe places are in cities, and all these kind of things using public APIs. It's very powerful. At the same time, if you see in this cartoon, on the left, this was 14 years ago when it said, "On the internet, nobody knows you're a dog." On the right, "On the internet, everybody knows you're a dog."

(LAUGHTER)

Ideally speaking, we'd like it to be in the middle so we can switch back and forth between being known and not being known, right? But anyway, we're moving into this future – that's quite clear. There's little way to avoid it. I mean, again, if you said that you don't want this, you have to disconnect. And to disconnect, you have to be very rich or very stupid – one of the two. It's impossible to not be connected at some time, at least. I mean, of course many are privileged enough, in parentheses, to not be connected in the first place, so they don't have this problem. As you can effect, this becomes a major issue. Then this is the next issue – that our data is being used. That's something we have to think about.

Last year was the whole year of "Yes, we scan. We can do this." This is a major challenge, I think, for Telecoms and big internet companies – to figure out how to use our information without collecting it all and becoming a creepy service. Telecom companies, of course, have a huge challenge here – they have to connect us for a lower price. But at the same time, we want them to keep our stuff secure and not give it away to anybody who's asking, including the government, if there's no warrant.

There are issues coming up. What we need here is a certain amount of self-regulation. This is, of course, hard to do, because it's so powerful – how do you regulate something that's so powerful when you have the power? I mean, Google, in Europe, is now being asked to allow people the right to be forgotten. That means you can go...

(BING)

Yes, hello.

You can say, "I want my information to be changed." Because to be forgotten is human – this is a human function of saying, essentially, something went wrong, and you want that wiped out, because you can't always be subject to something wrong from 50 years ago, depending on the wrong, of course. In an avid world, you can see this going up – Google is spending a lot of money lobbying exactly against this. I wouldn't estimate that Google actually wants this to be not the case, but of course for them, it's better if we have everything out in the open.

Here's an issue that we have to look at, which we'll discuss later on the panel. We're moving from Big Oil to Big Data. That's a good thing. 'Cause using big data, we have extremely powerful advances – energy savings, education, lowering the cost of connectivity, voting, public discourse, online education, online learning – that's all good stuff. There's nothing wrong with that. But there's a flip side of this that we may need to look at in terms of regulation and social contracts. 'Cause we don't want this, right? This is the BP oil disaster. We don't want that to happen to our data. And I promise you, it's going to happen. We'll have what I call the data Fukushima, which basically means you will not get insurance because they've found out what you buy in the grocery store, for example. We're just about there. At that point, it becomes a perversity of this – we want our data to be forgotten because omniscience is a delusion – this idea that everything should be transparent. Transparency is good, but taken to the extreme, it becomes a tyranny. We need serendipity, mistakes. We need something to say, "We're not part of a giant memory machine." That will be quite a tough mission. We've seen this idea before – "It's free," but they sell you information. This has been the entire last 10 years on the internet. You know what? That's OK. I was quite happy with this. But again, if you take this to the extreme, that's not OK. To some level, yes, that's kind of the deal we made with Google and Facebook and others. That's OK. But when you take it to the extreme – here's the quote from Google's executive chairman. "It's not about hardware and software, it's about the mining and use of this enormous data "to make the world a better."

That's what it comes down to. You don't pay – you are the content. You find yourself on Facebook – we are the content, on Facebook. We are the show, on Facebook. Again, nothing wrong with that, as long as we are aware of it and it's not being abused.

Here's the bottom line – connectivity will make a much bigger pie for everybody. That's a good thing, especially for the underprivileged, for the disabled, for those that don't have access. Imagine you are able to learn something without being able to speak or to move. You can do that now. That's going to happen. This is wonderful, of course. So a bigger pie – we have to ensure that we are inclusive, we have a low cost, we have an open network, we have safeguards against data abuse, and we have to

prevent digital obesity. This is the next step after connecting is to figure out how to disconnect, so we can remain human.

You've seen this 10 years ago, right? This is a commercial by the, I think, movie industry, that you had to endure every single time you went to the theatre, right? Piracy – it's a crime. You've seen this, I'm sure. You know what the next thing it is? The next thing is this: "Privacy – it's a crime...?" This is a great book you should read on this topic – sort of a comedy on one of the big internet companies called The Circle. This is a quote from a book where he talks about, just five years from today, "Secrets are lies. Caring is sharing. Privacy is theft." That the kind of world that we really don't want – we don't want a world that everything that we do is being observed. Just an example from yesterday – there was a guy who signed up for a newsletter about diabetes, and it turns out that his data was sold, and it turns out this company called Axiom has information – this is a US case – about close to 30 million people who have interest in diabetes, and sells this information to others, so that you are being flagged as having diabetes or having a relative of diabetes without actually knowing it. So this is becoming a huge issue – should the buying or selling of data, and this concept of "all that happens must be known." I would say that some of what happens must be known – especially if you're a politician, for example! But everything – privacy should not be limited to the wealthy. This is a Swiss company called Blackphone. You can pay a lot of extra money to have a secure mobile phone and secure email. That is not a good idea if we're going to end up in this world. In my view, Big Data is great, but Big Brother is not. I think this is something we're going to discuss here later – how can we find that balance between being connected and being overconnected or abused in that connectivity? This is becoming a major discussion point

This leads me to the final point, then we'll take some questions. As you know, this was the cover from The Economist just a few months ago. It's becoming entirely possible now to replace many jobs with robots and software. As you know, the Google car drives itself. It's poised to do away with taxidrivens. Maybe not here for a while because of the spread of the country, but in a big city like Los Angeles or Singapore, those cars can drive themselves. And software can do bookkeeping now. There's a company called Xero – their goal is to make 10 million bookkeepers unemployed, basically, because the software scans all your receipts and automatically puts it into a folder and does all these things. Software is getting pretty smart. We're moving into a hybrid world. Again, I think this is actually good news. When you look at it, you say – an Oxford study says there's going to be 45% of people unemployed because of automation and software. This includes, for example, manufacturing or mining or data analysis or checkout clerks in stores. Machines can handle this. This is something we're going to see around the world. Again, I think what's happening here is that you have this concept of machines thinking, essentially – there's a company called Narrative Science that writes articles for newspapers. If you read Forbes magazine, 10% of Forbes is written by a computer. You tell the article to go out and say, "Write something about Telstra." It will get all the information – 14 seconds to write an article. Of course, it doesn't have an opinion, but it's just writing sort of a fact-driven article. Here's some jobs that will be lost – the probability of losing a job, just the bottom of the job – telemarketers, accountants, retail people, word processors, machinists, commercial pilots. Very top of the chain – therapists, dentists, clergy, editors, firefighters – complex jobs. If you're looking at this, basically, the answer is – this is the Google self-driving car – everything that can be automated will be automated. That's kind of the law of technology. This is a good thing. You just have to talk to your kids about this. Don't let your kids become bookkeepers! Not a good idea, at least not simple bookkeepers. The answer is really this – what Kevin Kelly from Wired magazine said. "Machines are for answers. Humans are for questions." Machines can look at the facts and say, "Clearly, we should do X, Y, Z." But they cannot question information. They cannot read between the lines. They can't look at people and figure out what's actually going on, what is unsaid. We're moving back, in our jobs, to this right-brain, subjective reasoning, negotiation – those are the jobs of the future. And of course, creativity, storytelling. I think this is going to be very important to use that connectivity. I want to skip through these because we're kind of moving towards the end.

I think it's very important that we have to think about this and say, "OK. Efficiency and convenience should not become more important than humanity." This is important to remember – when we are connecting, it's not all about that process of algorithms and numbers. I'll do a summary, then we'll have some questions. Again, you can download this pretty complex presentation afterwards at [futuristGerd.com](http://futuristGerd.com). Technology doesn't have ethics. This is not news to anybody who works in technology, because machines are machines, right? So if you have a robot and you allow the robot to open up his chest and put in more CPUs, more processing power, they will certainly do so. If you give

them 5,000, they'll put in all 5,000 – because they can. Because they're there. The issue that we're facing now, because we're connecting, is we have to reinsert ethics and social contracts, and our thinking as humans, into this chain of technology. This is very important when we talk about connectivity – human society can't be without this. I think a healthy digital society requires digital native content and licensing rules are actually digital. We need to have those rules for today, not for yesterday – the discussion about Netflix and music. Secure, fair and ubiquitous digital networks that prevent this kind of hypermarketing and abuse. Every telecom company should also be concerned with what happens when I actually use it – what is the next step? And we need a global digital wired standard – that's your job in this organisation, I'm sure – to think about what happens with my rights on the Web, because right now we have no standard on this whatsoever, as I'm sure you're aware of.

Bottom line is I think, for our future, we need awesome and affordable services, and empowering but not enslaving technologies. Empowering is one thing, but enslaving is another. Great people we can trust – those could even be politicians. Social contracts and laws that are fit for a digital world. We need those three things. Not just one of them. This is something we have to debate later on the panel. This is what it comes down to, right? Trust and technology are completely connected. They're not separate things. Our social contract determines what we do with this technology – what is OK and what's not OK. Would it be OK if I connected with an implant to Wikipedia, which people are proposing? So I could look up Wikipedia while I'm speaking to you, without wearing Google Glass. Is that a good thing or a bad thing? I don't have it, so I can't tell you.

OK, quick summary – Big Data is a great, Big Brother is not. So we take the benefit of Big Data, but we shouldn't become a slave to the Big Data, because data is saying that we should do X, Y, Z and not do X, Y and Z. There's something else in Big Data. Technology is becoming a lot less about how, which we discussed earlier how – connecting – but more about why. Because once you are connected, the question is, "What do you do there? And why do you do this? Who should see your stuff?" In Australia today, or pretty much all the developed world, we're at four, and the next step is eight. 18 months – twice the computing power, twice of the issues. So we don't have time to sit here and say, "OK, we'll observe." That's what we do in Switzerland, but we can't do that in general.

To the media companies, I think the message is quite clear – don't design our future based on yesterday's logic. Nobody will accept it. It won't work. You won't make any money. That's the way it is. We cannot go back to the past just because there's a better business model there. I understand the problem – and there are serious issues – but it is what it is. Technology has changed the game. So, clearly, better to find a way to make it legal. Technology has no ethics – machines are for answers, humans are for questions. Next time you talk to your kids about what they should be doing in the future, don't – don't become a machine. Do you know how many jobs were essentially machine-based in the past? If you're looking at what businesspeople have been doing for a long time – it's to function better, more efficiently, and do more work in a shorter time, right? That's a machine. The future will be the opposite.

Finally, establish global digital rights standards, as has been proposed by many people, including Tim Berners-Lee and Vint Cerf, the creators of the internet, to find the right standard. You can make a power plant but not a bomb – it's called non-proliferation. We have that. We need the same for data. This is clearly going to be the road map of what we do and who's supposed to do what, right? Just because of the fact that we like these tools and that we are connected should not be to the fact that we become enslaved to them – there's a significant chance that we could. On this positive note...

(LAUGHTER)

..I want to thank you for your time and for your attention. We'll have a debate about this later if. You want to know more about my stuff, I have a TV show called The Future Show. There are five episodes for free at future.TV. All my books are free on the internet. My presentations and everything are on this Dropbox folder called Gerdcloud. You can waste your weekend looking at my information.

(LAUGHTER)

Thank you very much for listening. I'm open to some questions. Thanks.

(APPLAUSE)

Any comments, questions, rebuttals? Yes?

MARCUS WIGAN, ACCAN BOARD: It's nice to hear a review of current events. I'm writing a paper on Big Data ethics at the moment. Let's be positive about it. The law is always behind, but legal principles can be ahead. There are four legal principles we are missing, all of which intersect with these issues and have massive effect on communication. The first one is contestability – something that is honoured in the breach rather than the observance – it makes breach policy work. Contestability – the first example is data forgetting – there are many others. The principle of contestability of data is needed for a second reason. Big Data works because you don't have time or need to get the data accurate, and because you can use problematic methods. Consequently, contestability in the normal sense is not possible. We need to find new ways dependent must be an objective. The second one is the personal data commons – an issue I (inaudible) in Tripoli last year. The point of that is, we can only live in a space in which we are able to make our own mistakes, make our own learning and, call ourself. That is what I term the private data commons instead of the environmental commons of Brookline. Again, a reasonable response as a concept. It's what Google is eating. So we need to establish it as a principle. The third one is the right to own your own identity – I've also written on that. You don't. You don't even have the rights to have multiple identity. Full stop. We need those principles established – that you do have a form of ownership in your own identity. This is critical when you use digital tokens. The third one is the one that bears on your social commentary, and one I hospital thought that I would be saying today – the principle of population rating is, in a different term, the social contract. It is what every insurance company wishes to undermine by differential rating and what Big Data makes absolutely delightfully impossible for us to contest, as you gave the example. So in summary, whilst what you've said is fine, while we pointed out that ethics are needed – that's fine – we know the law is slow. What we now need are legal principles for areas that people are not focusing around to anticipate the need and to focus the responses. I've suggested four.

UNKNOWN SPEAKER: Sounds good. This is public information. People know where to find this? I totally agree with you. The challenge really is quite obvious. We have a huge momentum in technology. We don't have a lot of momentum on the other part of it, which you just described, and because we're behind. I mean, in Europe, we're having a lot of debates about this, in some good ways and some bad ways. There's also a bit of a culture clash, given that 94% of the US, of the internet resources, are based in the US. And of course, Australia being a strategic partner of the US, you're sort of by extension in the same boat, as opposed to Europe. So there are lots and lots of issues about this. I think, ultimately, if this sort of digital world is to materialise positively for us, we also need to spend lots of time on things that aren't technical. So far, 98% of that has been on technology – building better infrastructure, engines, apps, interfaces, devices. That has been good. I agree with you, totally.

Any other questions or comments? Don't be shy. It's OK. Otherwise, I'll ramble on for the next two hours. You want that?

(LAUGHTER)

Darren McLelened from the ACMA:

In a future where no-one's prepared to pay for content, do you think some of the business models emerging now, such as crowdsourcing, will evolve further? For example, a television producer looking to make a show would not just crowdsource, but actually build into that a profit, rather than trying to sell the right? An actor here in Australia is currently trying to crowdsource a TV program.

UNKNOWN SPEAKER: I hope I didn't come across wrong – I think people are willing to pay for content, absolutely. They are just willing to pay under different terms than the people selling it would agree to. I mean, if you're looking at what happens – Netflix is the best possible example. You used to pay \$25 or \$30 for a DVD. Now it's \$10 for all of Netflix unlimited. So the price has gone down a lot. But if you can get a billion people connected to Netflix for \$10, that's a lot of money. This is every month – that's \$100 billion a year, or \$120 billion a year. More or less.

The assumption that people don't want to pay is, in my view, not correct. It's just how they pay and what they want in return has become tougher because now we can observe what's going on. For example, I have done many times in the music business, I've done the example – if we would just pay \$1 a month for digital music, we wouldn't actually have to pay, because it can be raised with advertising, for example, the industry would make \$40 billion a year, with all connected consumers, rather than the \$8 billion they make now. So the question is not so much about the payment model – I think it's digitally efficient till the price goes down. That's just the way it is. For example, you pay \$150,000 for a one-page ad in the New York Times, and those were the golden days of the New York Times. Now they have an app and they get \$3,000 for a page on the app. But is it impossible to make a business of it? I don't think so. It's just painful to transition. And the business model you mention – crowdsourcing – is certainly a great model. I don't believe it's the answer for all media – it can't be. I've funded, I don't know, 25 crowdsourcing campaigns myself. I'm not going to fund 400. We need public media for this, clearly, because we can't go with every problem that we have, to the crowd – whether it's political or media or something. In Switzerland, we vote every three months on a public issue. Everybody gets to vote whether how much taxes they should pay in a sausage or something, right, all the way to the immigration laws. And 24% of people participate. It's a good system for Switzerland but, in general, I think this direct thing through technology can be rather cumbersome. We need a public structure, we need a collective internet, not just a private internet. That certainly is part of it. I agree – I think the future of media is tough, because we are more empowered and we have more options. That is obvious. But there is a great business model, once we are connected to, give us services that we paid for. It's their job to figure that out, not to make us liable for getting something for free, in my view. Another question or comment?

UNKNOWN SPEAKER: You mentioned where people are putting information about diabetes being sold...

You mentioned the story about Axiom selling people's personal data. This is obviously a massive issue moving forward. In the business that we're in, which is helping people owning their own private information, we often talk about, "What the event that's going to stop people's apathy? What's going to motivate people to want to take back control?" We internally call it the Data 9/11 or the Data GFC. What type of cataclysmic or catastrophic event – or will it be a slow boil where people eventually go, "I need to look for something else." What's it going to take?

UNKNOWN SPEAKER: Technology, as you all know, is so convenient, right? You're using the iPhone, and now you can pay, very soon, with the iPhone – that's extremely convenient. You don't have to carry a card, you just hold it up and, boom, you can pay. It is becoming very addictive, because it's so convenient. That is good for the consumer, by and large. But the trait of saying that, as you get involved in this technology, you are getting sucked into the system to be a part of the system – at that point, it becomes something that people will only change when they realise what that means. For example, by using information that all of a sudden – I looked at my Gmail account before. I closed it a little while ago. I realised the advertising in my Gmail account was so close to my feelings about products. I looked at this and said, "How do they know that I like this kind of brand and would immediately click?" Because they have pegged me down better than anybody else in the world. Is that a good thing or a bad thing? I think it's sort of – it can be creepy, it can be useful. But I guarantee you, we will have very serious data Fukushimas in the very near future if we don't solve this issue, and then people will pull back from being connected, because they don't see the benefit that much. That wouldn't be good for the economy, or for people. That would derail the whole purpose of it. While we are getting connected, we have to look at those unintended consequences. That really what we're here for, also, to discuss, I suppose, right? I think I've been asked to stop. Take a short question? No? OK. One short question. Sorry.

UNKNOWN SPEAKER: Hi. Tegan from Infoxchange. We're all about including, trying to include, the 4 million people in Australia who don't have access to the internet, and others with limited access, through digital inclusion initiatives. The future you've laid out – is that based on an assumption that everyone will be connected? And if everyone's not connected, how do you envisage that happening? I'd like to hear your futurist opinion.

UNKNOWN SPEAKER: Disconnectivity is a major problem, but it's a temporary problem. There are so many initiatives to connect people, and most of them are vastly successful. And the business of being connected is clearly a business. The GDP growth is about 1% for each 10% of connectivity.

That's a proven fact. Everybody knows that, right? You can assume we're going to solve this problem. That's my view. Yes, if you live somewhere really way, way out – maybe it's going to be slow for quite some time. But, you know, it's going to be solved, and that's a good thing.

UNKNOWN SPEAKER: I'm glad you assume that! That's really great news.

UNKNOWN SPEAKER: We should get everyone connected. But let's not assume, just because we are connected, we have the Holy Grail of solving our problems, right? This is just one first step in the digital world. After we get connected, we have to figure out what the purpose of what we do there is, and how we do it and why we do it, and so on. Because it can go both ways. Imagine a global network of connected people that is not secure or safe. That would completely backfire with the intent of it, right? Sorry, I think we have to stop. Do you have another urgent question? You're just holding the microphone, OK. Good. I'm going to be here for the break. You can ask me for questions. And we have a panel later – we can discuss more.

UNKNOWN SPEAKER: Thank you very much. That's fantastic.

(APPLAUSE)

I really encourage people to go and look at Gerd's stuff online. Every time I watch Gerd, and I've seen him speak a couple of times now, and also I've watched a lot of his things online, I learn something. Even if it makes you think of some of the new ideas that are out there, and then help us think about what the new consumer issues will be coming forward into the future. Thank you very much, Gerd. We have morning tea now, and we'll see everybody back, and Gerd will be joining the next panel.