Office of the Information Commissioner
Queensland

Solomon Lecture 2014 – Presented by Anni Rowland-Campbell

ANNI ROWLAND-CAMPBELL

I would like to thank Rachel Rangihaeata, Queensland Information Commissioner, for the opportunity to present the 2014 Solomon lecture. I've always had a great interest in technology, government and society. And for me it's been a marvellous opportunity to reflect on what the Right to Know actually means. The Solomon Lecture is a key component of Right to Know day. In Queensland, it's Right to Information Day. But what it is, is an important event on the global information calendar which promotes the rights of individuals to access information, coupled with the demands and expectations of government to be open and transparent. These twin themes are what is going to inform the lecture I give to you today. And some of the ideas which I will explore relate to both of them.

I'm actually going to start by asking a question. It was T.S. Eliot who asked where is the knowledge that we have lost in information? This is a critical question and one that I'd like to think about in the next 40 to 45 minutes as we have this lecture. 2014 is a huge year in terms of information and information management. It celebrates 300 years since the British Government passed the Longitude Act in 1714. The Longitude problem was hugely important for all European nations as they were exploring the world. And it quite literally meant life and death, for sailors and explorers at sea. There were a number of solutions which were proposed. And they all involved the painstaking gathering of information, which was then meticulously transcribed and recorded. At the minute, the National Maritime Museum has an exhibition called Ships, Clocks and Stars which I recently visited. And as I wandered around, I was absolutely gobsmacked at the amount of effort that went into recording this information for so big a problem. It was also in stark contrast to checking my Google Maps and my GPS to find the nearest pub on the way home, let alone the time of the next Thames Clipper to get me down the river.

1814, 200 years ago, was the introduction of Australia's first currency. Governor Lachlan Macquarie came up with a very ingenious solution of punching a hole in the middle of 40,000 Spanish reales, to create double the currency. And we ended up getting then what is called the holey dollar. The outside was actually valued at a

shilling, the inside was 15 pence and was called quite appropriately a dump. As with navigation, for the new colony the importance of a currency of information was absolutely critical in terms of being able to govern.

1914, 100 years ago was the commencement of the first world war. Which led to the second world war and the bloodiest century in recent memory. In London, the celebrations for 1914 are quite spectacular and very moving. And this image is of spectra, which is 49 searchlights which were mounted for a period of two weeks just to the western side of the Houses of Parliament. The shone into the sky and were able to be seen all over the city. At the Tower of London there are some 888,246 ceramic poppies which have been planted. One for every British and Commonwealth soldier who died in the conflict. It is said in terms of remembrance that those who forget the mistakes of the past are doomed to repeat them. This is painfully obvious. This is an image of the Western Front, which was at the time one of the largest man made constructs that had ever been conceived. Over 450 miles of trenches from the Swiss border to the English Channel. And of course for us 1914 was the birth of Anzac. And the beginning of our own search for identity.

25 years ago a young physicist called Tim Berners-Lee penned a paper called Information Management, a Proposal. Which actually led to the creation of the worldwide web. The web is the largest information construct in human history and we are only just beginning to understand it, how it works and the implications that it's having. 1914, 2014, another year. In that 100 years the whole idea of information had changed. And this year the European Parliament and the European Court of Justice has passed the Right to be Forgotten legislation. The mechanics of these are a hugely complex but the principle is actually at the core of the relationship between Governments, informations and citizens. Finally, 2014 the UK Government has mandated that all children between the ages of five and 16 will be taught to code in schools. The year of code has launched and a number of organisations like Decoded, which is a company in Shoreditch, also have programs where they literally teach code in a day and data in a day. I was very lucky to be able to do both of these in the UK recently. And Decoded are actually coming out and launching in Australia next week. At the heart of all of this is information. Information for

navigation and survival, for currency, for power and conflict, as a way to connect, as empowerment for individuals and as a fundamental literacy. Something I'm going to explore a little bit in a minute. When it comes to all the technologies that we are using, it could be said that they are actually quite magical. And if you'd ask somebody 300 years ago, 200 years ago, 100 years ago to describe the world of information that they would see now in 2014, they would actually say it was magic. It was actually Arthur C. Clarke who said any sufficiently advanced technology is in fact indistinguishable from magic. And we forget how far we've come. This slide shows the growth of the internet, since the 1970's up until the present time. What is really interesting to note about this, is how rapidly technologies are becoming what's called socialised. The printing press took at least 200 years to actually have the adoption in society. We're talking about something that is less than 30 years old. We're also talking about huge companies that are emerging. Google is actually just over 10 years old. Facebook, again, not even 10 years old, maybe just, this year. And these companies are now coming to dominate the information landscape and governments are struggling in terms of coming to terms of what to do with them. Not only that, we have the emergence of new embedded technologies, such as the internet of things. Which are now connecting the physical world to the digital world. And all of a sudden, boundaries are actually being blurred. Tim Berners-Lee in his 1989 book, Weaving the Web, actually described something very, very simple which was actually not humanity on the web, but humanity as the web. And Tim basically said real life is and must be full of the kinds of social constraint, the very processes from which society arises. Computers can help, if we can help them, to create abstract, social machines on the web. Processes in which the people do the creative work and the machine does the administration.

The stage is set for an evolutionary growth in a new social engine. This notion of the social machine is something I'm going to explore. And Tim's definition has attracted a degree of contradiction in some areas and others who've changed that definition. But this was the first one where the idea was posited and put out there. A social machine is in fact a sociotechnical construct which most of us use on an everyday basis, without thinking about how it works. But what it does is dissolve the boundaries between the human as a user and the machine as a tool. The humans

and the machines become symbiotically connected. The more we use the machine, the more the machine learns. The more the machine learns, the more it gives us a response. The more that response is tailored to what we're trying to do, the more we use the machine. It's actually powerfully addictive. And there is a range of research now coming out of psychology and anthropology and sociology to actually talk about the impact these machines are happening, not on us as individuals only but on how we actually interact with each other.

Social machines are also increasing as the power of computing is increasing. And we're now moving into this area where we've got what's called big data as well as social networking, convening together. Social machine has a number of quite clear characteristics. Firstly, problems are solved by very large scale human participation. Secondly, there is the access to and the ability to generate large amounts of relevant data, using open data standards. There is a confidence in the quality of the data and hugely intuitive interfaces. The social machine actually came out of the Kenyan Revolution in 2007. And the use of a platform called Ushahidi, which I'm sure you might have heard of, to actually be able to alert local observers and allow them to submit reports. The idea really was that nobody knows everything, but everybody knows something.

Social machines are evolving and this slide gives an overview of what we would describe as very early social machines. Some of them you'll be familiar with. Wikipedia, LinkedIn, Facebook. The latest craze, certainly when I was in the US recently, was Yo. I don't know how many people Yo, but the idea is it gets all your connections and you send a Yo to another person. That's it, just a Yo. But there are negotiations at the minute for buying Yo, the sum of which is just ridiculous. Speaking of ridiculous sums, some of these, this morning I just read about Microsoft is looking to buy Minecraft, which is a game, for two billion dollars because the game is a social machine. WhatsApp has recently been bought by Facebook for 19 billion dollars. And Snapchat has been recently valued at 10 billion dollars. So that should be screaming out somewhere that there's huge amounts of valuable information that isn't part of this currency.

A simple tweet generates over 39 different bits of metadata. That is the data about the data that you're using, that gives ideas of geolocation, user and sender and a host and myriad of other pieces of information, as well as the actual content of the tweet itself. In fact, we are data. This slide is actually taken from an online application which I would encourage everybody to go and look at, called wearedata.org. And it gives live tracking of every data piece which is in a specific geographic area. I spend part of my time living in London and this is my local burrow. And I could actually see where all the CCTV cameras were, any live tweets that are publishable I can read the text of, people connecting with each other via Facebook and a range of other apps that I can choose to get into. All of this data is in fact publicly available. And anybody who thinks that it's not, is fooling themselves. Data as such is feeding these machines. And at the minute we're seeing three types of data in the public space. Big data and there's a lot of buzz around big data. Big data mining, it's just huge amounts of data, shared between the silos around the world. Open Government and the push for open data in terms of the public space. And those two combining are actually feeding a lot of what private companies and private entities are doing to actually make our lives better. I spend a lot of time catching public transport when I travel. And I love being in countries where I can look up my app and find out when the next bus is coming.

But these datas actually sit in silos, they're not connected. Which means that if Facebook doesn't want to share its data with Google or with LinkedIn, then you're only getting part of the story. The future, which Tim Berners-Lee did envisage and imagine, is what's called the Semantic Web. And the Semantic Web is where all of the data sets are in fact interoperable and shared. Once we get to that point, we are actually going into the panopticon. And any idea of privacy can be forgotten. Even the recently leaving Secretary of the Federal Attorney General's Department, Roger Wilkins, said just get used to losing your privacy. Eric Schmidt recently was interviewed and in an article said he believed that a lot of young people were going to have to change their names in order to be able to erase their cyber pasts. This actually is very scary. But this is the world that we are lurching towards, unless we start thinking about it.

This brings me to Web Science. I came across Web Science because of work I was doing in the metadata space. I'm not a technologist, I'm much more of a social scientist and I love working in Government and policy. But you cannot do that now without understanding the technical sciences as well, at least to an extent. So Web Science was founded by a number of individuals, including Tim Berners-Lee, Wendy Hall and Nigel Shadbolt. And began as a cross jurisdictional approach to the web from MIT, the University of Southampton, Oxford and a number of universities. Its aim is to develop theory and practice of the social machines that are the web. Before we can actually start actively designing machines or even regulating them, we actually have to understand what they do. So Web Science brings together quite deliberately all the disciplines of the social and technical sciences. You can imagine this is quite a challenge. I've said in many a meeting where I've got demographers and ethnographers and then I've got technical people and I've got people from government and even getting them on the same page with common language is a challenge. Web Science is really about developing a community and there are four leading organisations. There's the website's trust, to whom I have been recently appointed to the board, which is a great privilege. There is the Open Data Institute which has been launched in the UK and has now got chapters all around the world. There's the Worldwide Web Foundation, W3C, which actually looks at governance and accountability principles around the web. And then finally, then the Worldwide Web Foundation which Tim Berners-Lee has created in order to protect and defend the web and to try to describe the web we want. How do we want the web to evolve.

One of the biggest projects that the Web Science community are involved in at the minute, is the SOCIAM Project. The Social Machine Project. This is actually a cross disciplinary research challenge and brings together researches from numerous different organisations. It's funded by up to six million pounds by the UK Government and a number of grants, but also private companies. And what it's looking to do is to understand how the social machines evolve in the wild and what factors are influencing their success and evolution. Its aim is to develop both a theory and practice, so that we can create the next generation of social machines. I've become involved in Web Science not as a researcher or an academic but actually as a practitioner. The work I do with ANZSOG, I repeatedly stand in front of

groups of public sector managers who do not understand the technologies that they work with. The best example I can give is in fact working with a police department very recently. And I actually had to teach them how to turn off the applications on their mobile phones. Because none of them knew how to do it. Not only that, they had been tracked for months by Google Apps and Google Maps and everything else and they had no idea that that was going on. This is really basic stuff. But what they're doing is they're part of the social machine but they're not conscious of it.

So being conscious about something, the first thing we need to do is to observe. The major project that we are now launching in websites is the idea of the web observatory. The web observatory or web of observatories is a little bit like the square kilometre array and physical telescopes. In physics, physicists use various different telescopes to take measurements of the stars and then they share and collect that data so that they can come up with insights. We're trying to do the same thing with the web observatory. We actually have a number of different observatories which we're looking to connect. At the minute, we've got four up and running. We have got one in India, we've got one in Singapore, one in the US and the University of Southampton has also got one as well. But we've got two or three who are also coming on board. And the idea of that is to facilitate sharing. Firstly, the sharing of open data and open information. Stuff that is available out on the web. A lot of it initially is Twitter data and I'm sure you've all heard lots of presentation where there's the Twitter analytics going on. Twitter's fine because it's quite shareable and it's relatively open. But there's lots of other stuff out there, like Wikipedia data, there's also Ushahidi data. There are lots of other, as you could see from the we are data app, lots of other things there that can be brought together into an observatory. The second thing that is being shared is obviously shareable databases. Things where they might be closed but they can be shared. And then obviously the private databases. Often these can be held by companies and there is a big move in order to get companies to make our data a lot more open and shareable. Finally, it's all very well having the data but one of the most important tools is to be able to make sense of it. One of the ways you do that, is you develop visualisation tools. And those visualisation tools are coupled with analytics engines which enable you to create insights. Those insights really are what should be driving

policy, they should be driving decisions. But first of all, we need to actually understand what we're playing with.

Australian Anthropologist Genevieve Bell is heading up Intel in terms of a lot of their research into this area. And at a conference a couple of years ago, Genevieve asked what if data were a person. What if we designed for data the way that we designed for people. In fact, that's what we need to do. If humans are actually going to manifest as the web, we have got the web as a way of seeing human participation, human interaction, human living as we've never seen it before. As the web increasingly reflects that humanity, through the data that is shared and published, we need to consider how that is actually shaping government itself. And how government is actually interacting with people and the information systems. At a conference a couple of years ago I went to, a number of years ago probably, cause Brendan O'Connor was the Minister. But he actually made this point, which is that governments need information to govern. Citizens need information to hold government to account. And this is absolutely at the core of what the Right to Know Day is all about. Governments are actually increasingly using social media and social tools to help decision making. There was an article I saw not that long ago, where the UK Government was looking at allowing people to log in via Facebook. The Indonesian Prime Minister has actually announced he's going to be crowd sourcing his cabinet. And governments all over the world are increasingly trying to use these tools. But do I really want Facebook to be actually looking at all the interactions to my government services? Actually, I don't. And I was rather surprised that the UK Government made that announcement. I think it has been fairly quickly scuttled. But the idea is actually something we need to consider very carefully. Tim O'Reilly is being, if you like, credited with creating the Web 2.0 and at a conference and a book he wrote, he says Government is at bottom a mechanism for collective action. Government 2.0 is the use of technology to better solve collective problems at a day to day state, national and international level. So Tim is not talking about Government 2.0 as being some newfangled tool, it is in fact a new mindset. It is government mindset in the digital age. Government can be seen, rather than having to row and actually do all the hard work and heavy lifting, as moving towards steering. As being, if you like, manager of the marketplace. Rather

than vending machine. We'd put our money in the slot, we expect to get the service back. And if you like the idea of a thriving bazaar is beginning to be introduced, rather than just a shop.

Governments around the world are trying to actually work proactively on this. The UK is probably leading the world. They've been involved in this for many, many years and particularly having Tim Berners-Lee as the greatest living Brit and Nigel Shadbolt and Wendy Hall all sitting at Southampton has probably been very influential in making those changes on both sides of politics. The idea of gov.uk is that there is a single portal that any citizen can get access to. That actually means that they can get availability of government information and services. But the Brits aren't the only ones. The Indonesian Government has just opened up a data government portal. And here in Queensland, you're actually leading the way as well, in terms of some of the initiatives that you've been putting. But let's just think about how this is actually impacting on governments. And let's think about social machines as being much more than just data portals. Social machine is the integrative, integrated and interaction of human and those machines. So as Marshall McLuhan stated, we shape our technologies and forever they shape us. Depending on how we actually access information influences how we respond.

I'm going to give you, and just look at a few examples. The first one is Coursera. Coursera, one of the leaders, in fact the leader in terms of massive online open learning communities, MOOCs. Which are revolutionising the education world. You might think that interacting with Coursera is easy, you do your little lessons, but start thinking about it in terms of the amount of data and information that Coursera are actually gathering on you every key stroke, every behaviour, whether you log out or not, how long you're on each page. And then what they do is they change the experience and feed it back to you. Traditional university systems just can't do this. And where does Government sit, when it comes to deciding what sort of education it should actually legitimate when it comes to the community. The second one which is much more of a Government social machine, is an initiative in the UK called Casserole, the Casserole Club. This was born out of a recognition that the old idea of meals on wheels is just not working anymore. There are just not sufficient women

particularly who are in that age that my mother was when she did it, of actually cooking meals or taking meals to people in need. So what Casserole does, is it uses a social machine, it is a social machine, it matches people in need together with someone who might just be happy to cook an extra family meal and take it to them. Casserole is an initiative of a company called FutureGov which is in fact a social enterprise in London that do a number of things. And Dom Campbell who heads it up is spending a lot of time in Australia because the Victorian Government or particularly the Municipal Association down in Victoria are about to adopt Casserole. As is a local jurisdiction in New South Wales. So this is coming to Australia very rapidly. The other one which is a very, very interesting one that I thought of presenting as part of this lecture is in Singapore. The Punggol Northshore District. Pardon my pronunciation, people from Singapore, if I've got that wrong. But what they're doing is there's an entire new suburb which is being built as a smart city. It's integrating the internet of things together with social technologies in order to meter and monitor human behaviours via energy usage, water usage, traffic and then via smart apps. Deliver that information back to the humans in order to modify behaviour. Now that is a real social machine.

So what happens with all of this stuff going on, firstly we've got SOCIAM in the UK who are doing their work around studying social machines. And two years ago, a group of us, funded by ANZSOG, the Australian New Zealand School of Government, decided that we really needed to bring some of these ideas here to Australia. Particularly because so much of what happens in the UK tends to find itself to Australia fairly quickly. So we actually undertook some initial rework, which was really describing government as a social machine itself. We asked what this meant, we defined what a social machine was and we came up with a number of examples. As a result of this first round of research, ANZSOG has now funded us to do a second round. And we're doing that with the Government of South Australia, who are also giving us funding and support. And what we're going to do, is actually build a government web observatory. The idea is to work with the South Australian Government and look at the types of ideas that are coming out in initiatives, such as Casserole, such as Singapore and ask a number of questions. Firstly, how do we build a social machine to better observe the workings of government. Secondly, how

can this government web observatory better inform the creation of public policy. And thirdly, what are some of the key challenges which government will face as a result of being armed with a web observatory. There are lots of panoptic and like questions which come out of this. But far better that we proactively ask them than we suddenly find that it's too late. What we're doing is building a social machine in order to observe the social machines. One of the most important things that we found in the work we did with ANZSOG, the work that I've done with Web Science and SOCIAM and talking to people as I do, is that people simply don't understand. They interact with these machines, they don't necessarily think about where the data's going and not only that, they often feel powerless in terms of what to do with it. For those who have been following this debate, really, it's going to be up to governments to start making decisions.

This slide which actually comes from a tweet, which to me says it all. And this is the UK House of Commons debating metadata retention. This is how many people were there. And yet, retaining data and information is one of the most important decisions that any government is going to have to make. In a democracy, any information is a core community need. And in 2009, the Knight Commission in the US came out with a report that basically said people with digital tools and skills have distinct political, social and economic advantage over those without. People with digital access have a new attitude towards information. Instead of passively receiving it, digital users expect to own the information, actively engaging with it, responding, connecting, in some, they expect to be able to act on and with the information that they had. This raises the point of what we're describing as digital literacy. The idea of digital literacy is actually the ability to effectively and critically navigate, evaluate and create information using a range of digital tools.

So if we think about the images on this particular slide, we're talking functional skills, how do I work with it. Creativity, how do I create. Critical thinking and evaluation, how do I actually interrogate the information I have. Cultural and social understanding. Just because something works in one jurisdiction or one instance, doesn't mean it'll work in another. Collaboration. One thing that social technologies have actually really sped up in terms of global interactivity. Search, the ability to find

information and select it. But also not just search and find but actually evaluate and authenticate. Finally, effective communication and e-safety, risk and privacy. All of these aspects in terms of some sort of literacy are absolutely crucial and each of them links back to how governments understand and manage the information with which they are charged to actually develop, put out into the open or actually regulate.

Clay Shirky is a noted commentator on government and technology. And this comment a revolution doesn't happen when a society adopts new tools, it happens when a society adopts new behaviours. I think he's critical. Because new behaviours are emerging because we are developing new kinds of currency and exchange, which drive more and more commercial value. Somebody who's seen this for a long time ago is Tim Berners-Lee. Part of the charter of the web foundation is in fact to develop a digital bill of rights. And the other thing that Tim's trying to do and has been pushing very hard with the UK is the notion of a personal data store. The idea of a data store is very interesting. It means that I would own my data and I would decide with whom to share it. Not I would have to go into Mr Facebook or Mr Google and actually request my data back. All of these ideas are coming. But they are now about to be sped up. Yesterday Apple announced the watch, the Apple watch. The interesting thing around the Apple watch is its capabilities. It actually completely feeds into the quantified self. It monitors heartbeat, it monitors exercise, plus it gives you complete access to the web, plus it's attached to GPS and I saw a beautiful tweet which basically said that it's going to be fascinating to see how all the CIOs deal with the fact that people are coming in with iWatches, in terms of businesses when it comes to information management. But what it's going to do is even take this notion of a digital currency to the next level. Because the information on many of these devices is in fact being farmed. I wear a little polar wristwatch, I wear a polar cause it's waterproof and I swim. But there are people in parks, I particular the US and the UK and I'm sure they're doing it here, and they sit with little devices and they farm all the data that these little devices are actually broadcasting. I bought a wallet the other day and it's got protective technologies in it so that people can't scan the chips on my credit cards. All of the data that I am now personally generating is actually a currency that's mine. But most of it, I don't actually have any

say over. And not only that, the whole notion of privacy versus its relation to health insurance, who uses my data, is something that most people don't even begin to think about. The other thing is as we're wearing watches, we're also beginning to enhance our bodies in other ways. This is a photograph of Hugho Herr. You may recall he lost both of his legs in a rock climbing accident and he then went on to study bionics and he's now at MIT heading up the cybernetics lab. Some of the work that they are doing in augmenting humans. Not just with physical devices but physical devices connected to the web, becoming the internet of things, is actually truly exciting on one hand and a little bit scary on the other. The divide and the blurring between humans and technologies is coming upon us very, very quickly. And most of us don't actually sit back and think about what this might mean. What sort of rights are we going to give a human who is augmented by technologies. But then there's another one which is on the horizon and that is something like Watson. IBM's Watson actually beat three world champions in a game of jeopardy a couple of years ago. And I heard Chris Welty, who is part of the Web Science community, do a presentation on this which was quite exciting and actually quite amazing in terms of the process they went to. But Watson is now being employed in areas of health, in areas of finance, in areas of telecom services. And Watson is evolving to what could be called the sentient being. What some people have called the singularity. When it comes to something like Watson, how long will it be before Watson actually demands rights as a sentient being, before Watson wants to become a member of the community as well. Not only that, Watson's going to be a very, very busy boy. Because a lot of the jobs that have traditionally been in society, certainly in the last 100, 200 years since the industrial revolution are being taken over by smart machines. These jobs range from design, they actually range from accounting, legal services. There are huge areas where young people emerging today are simply not going to have the skills that they're going to need in five or 10 years' time, let alone older ones who have been in the traditional workforce. So what does this mean in terms of how governments are going to have to frame education systems. Are going to have to actually put policies in, in terms of where government spending is going to be spent, where priorities are. And obviously, this is different for every jurisdiction. We live in a country where government takes a very active role in education. Other countries not so much. But at the end of the day, what is going to matter most is

learning and knowledge. And I personally am absolutely passionate about this. Eric Hoffer made this statement. In a time of drastic change, it is the learners who inherit the future. The learned usually find themselves beautifully prepared and equipped to live in a world which simply doesn't exist. This is what worries me about governments. It worries me because many people are in positions of developing policy and they don't have these skills. This is one reason why I went to Decoded and I spent the time with them, learning to code. Actually it was fantastic, at the end of the day I'd created my own app, it was all GPS enabled and I could have gone on and done more but what it did, was it actually demystified the process. But the key is the education. This is why the UK Government is putting the coding in schools, to teach a language and a literacy in order to make conscious choices. And this is also what we've been doing in Web Science. Let me just come up with one example which I think is really going to make a lot of people think. And that is the driverless car. The UK Government has actually legislated that driverless cars will be allowed on the road as of early next year. So when I talk to people, and particularly my children who are now both driving, I say will my children be driving when they're my age. I think probably they won't. And I think probably they won't because governments will legislate that taking humans off the road is probably going to reduce car accidents, it's going to increase in terms of energy efficiency, it's going to do all sorts of things. But what does this actually mean about human abilities. As I watch the film WALL-E which many of you, I'm sure, will have seen. A WALL-E future does look actually somewhat possible for humans. Because we are getting to the point where we may not be able to change a light bulb.

When it comes to information, government is at the centre. Government is actually got a role in linking society, technology, culture and how we actually make decisions for ourselves. But society will always lag, there are little bungee ropes between these. Technology will always rush ahead, culture will always rush ahead. Society actually needs to slow down and think in human time. And this is why personally I believe that the EU and its Right to be Forgotten legislation, whilst it is clunky, whilst it is hugely erroneous for making decisions and hugely cumbersome for companies like Google and Facebook, I actually don't disagree with. Because I think it's going to buy time. Of all the areas in the world who understands the link between

information and conflict, Europe is it. It's been through two big wars. And putting that legislation out there in terms of buying time, is something I personally think is a very good idea. Regardless of what these other companies have to do. The idea in going back to T.S. Eliot's question about wisdom and about information and about knowledge is something to consider.

In closing, what I really just want to say is I want to point out that we've still got a long, long way to go. Whenever I give these presentations, I usually end up with this slide. And the slide really says that we've got a long way to go but we largely don't understand what's going on. We don't understand the implications of where these decisions will lead. But whatever we do now will determine who and what we are in the generations to come. I put that as a challenge to you and I hope that you will take something from this and go out and actively play your part. Thank you.