

Session 5

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Digital Life/World: Empowering Society

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1st Day

Chair:

Steffen Nerdal, Chief Strategic Officer, Ascella AS, Norway
SmartDok: Smart Digitalization of B&C

Moderator:

Julia Glidden, Managing Director 21c Consultancy, United-Kingdom

Speakers:

Tim Kelly, Lead ICT Policy Specialist, World Bank Group

Eikazu Niwano, Producer and Director of Produce Group, R&D Planning
Department, NTT Corporation, Japan
New e-ID card in Japan ~ cyberspace passport ~

Alfredo Ronchi, Secretary General EC MEDICI Framework, Italy
Citizens in the Digital Age: ICTs safety & security

Paul Wormeli, Executive Director Emeritus, IJIS – Integrated Justice
Information Systems Institute; Innovation Strategist Wormeli Consulting LLP,
USA
Information Safeguarding in the Sharing Environment

Ali Kone, Chief Operating Officer/Co-Founder, Coders4Africa Inc, USA

Nitya Karmakar, Professor MQC – Macquarie University, Australia
*Creating an Environment of Innovation: challenges and opportunities in
Australian context*

Session 5

Day 1 – Afternoon – Parallel Session

Digital Life/World: Empowering Society

The session's moderator, **JULIA GLIDDEN, Managing Director 21c Consultancy**, United-Kingdom, welcomed the participants and briefly set the scene by introducing the focus of the following presentations.

As the topic of the panel was very broad “Digital Life/World: Empowering Society”, the idea was to add some focus to it and link the topic of “the digital life for the digital world” to one of the UN sustainable development goals—17 goals that Member States have been working on for the last two years and that just has been ratified by the General Assembly. IT has a really powerful and critical force in driving sustainable development. One of the areas the panellists will discuss and kick-start some ideas is the relationship between IT, the sharing economy and sustainable development. The notion of sharing that IT facilitates puts a whole new challenge to the consumptive, and to some extent capitalist, focus on acquisition of goods and constantly buying and selling and replacing. It leads us not just towards sharing and having a less material life, but also concepts of the circular economy and not concepts of constantly buying, throwing away, buying, throwing away... but borrowing and sharing in a manner that brings people together.

The chair of the session, **STEFFEN NERDAL, Chief Strategic Officer, Ascella AS**, Norway, [<https://www.smartdok.no/>] presented a real experience of how digitalisation works in a specific industry—a success story:

SmartDok: Smart Digitalization of B&C

SmartDok means smart digitalisation in the building and construction industry. SmartDok is the Nordic leader in this industry.

The company was founded in 2005. Ascella AS is a one-product company (SmartDok). It has a 2.5 million EUR turnover in 2015 with around 700 customers in Norway and Sweden. SmartDok has around 24,000 users. Ascella AS is located in Alta, Norway (14 employees), with a subsidiary opened in Stockholm, Sweden, two years ago (2 employees).

SmartDok was developed in 2005 and has been continuously developed since then. It helps entrepreneurs to build more efficiently in terms of process optimisation. SmartDok supports the entire documentation process from the beginning to the end of the building process through smart digital solutions. It is composed of 9 extensive modules (time hours, machine hours, goods produces, goods used etc).

In terms of strategy, the company is long-term oriented, very knowledge-intensive and fully integrated. Moreover, the company is very specialized and focuses only on one industry. Ascella AS is an expert in the building and construction industry.

The building and construction industry is a very conservative industry. Everything was done with pen and paper and there is very little ICT knowledge in this industry. The challenge of Ascella AS was to succeed in this environment. The solution the company proposed was digitalisation and the IT-solutions have been developed together with their customers.

SmartDok was developed using the right technology and with great market knowledge. SmartDok increases the quality of the work as well as cost efficiency. The use of SmartDok leads to more effective processes and less errors. It is also much more environmental friendly.

By 2019, the global construction industry will have a turnover of \$10,388.6 billion. The European construction industry has 15 million employees. The construction sector contributes about 16 percent to the GDP and the objective is to raise this to 20 percent of the GDP by 2020.

SmartDok's international vision is to empower the society by helping the development of Smart Buildings in Smart Cities in a Smart Industry.

The moderator followed-up with the question, "what are your thoughts in terms of the way a company like SmartDoks and shared and open data can contribute to the shared economy?"

Mr Nerdal stressed that Ascella is still a small company with a large market share in Norway. Once SmartDoc will play on an international stage, they have a lot to contribute. There are so many hidden things in the system in terms of cost estimation or using it for open source for BIM (Building Information Modelling) technology. There are so many unexploited things in the system—and there is so much interesting data in the system. It is captured, but Ascella has not the time to analyse it.

There is much they could contribute with in terms of how a building or construction company should work effectively. It is like a "candy store" for academia because there is so much one can learn from SmartDoc and Ascella AS doesn't have the time, nor the skills to analyse it. However, Ascella AS is very open do this due to the company's a global mindset.

TIM KELLY, Lead ICT Policy Specialist, World Bank Group, gave an inside into how the World Bank is handling the issue of the sharing economy in the upcoming “World Development Report”.

The World Bank is starting a big project, the “World Development Report 2016”, which is this year on the theme of “Internet for development” to be published in a few months.

The World Bank tends to reduce everything down to economics and in this particular case, in trying to understand the way that digital life impacts the sharing economy, the World Bank thought of it in terms of transaction costs and how reduced transaction costs in the digital economy help to create processes of inclusion, processes of innovation and processes of efficiency. Those are the three themes that run throughout the World Development Report.

If you think of a platform as a sharing economy platform like Airbnb or like Uber, it really includes these three mechanisms: on the inclusion side, house owners and car owners that previously were excluded from the sharing economy are included through the platforms that they have created. On the efficiency side, it is much more easier to find a hotel, to find a ride through platforms like Airbnb and Uber. And on the innovation side, we see innovation in platforms like M-Pesa in Kenya or e-commerce platforms. Those are the three mechanisms driving the sharing economy.

But the digital economy very quickly comes into conflicts with the analogue economy. In the last week we have seen, for instance, the streets of São Paulo in Brazil come to a hold as conventional taxi drivers from the analogue economy protest against the advantages given to Uber drivers from the digital economy.

Increasingly there will be areas of regulatory uncertainty where the digital economy and the analogue economy collide. And in all of these areas professional services, universities, bricks and mortar stores, in building and construction, we will increasingly see the sharing economy bring the digital economy into conflicts with the analogue economy.

In the light of the recent survey that the EC has launched on the two-sided nature of the platforms and competition and the survey the UK House of Lords has launched to feed into European survey, Mr Kelly was then asked to give some quick thoughts on that:

Mr Kelly explained that countries are trying to find out what the two-sided economy really means. São Paulo was brought to hold, and in June, Paris was brought to hold by protests over the rise of Uber. As a general principle, there is nothing that special about the Internet. People doing business on the Internet are not that much different from people doing business in the real world. Ultimately, we can have an equilibrium where we have a level playing field between the analogue economy and the digital economy.

EIKAZU NIWANO, Producer and Director of Produce Group, R&D Planning Department, NTT Corporation, Japan, was presenting on behalf of Prof. Nagaaki Ohyama, who could not attend.

New e-ID card in Japan
~ cyberspace passport ~

What happens in the Information Society? Our daily social activities are expanded into the cyberspace in addition to the real space. Since both spaces have different characteristics, the selection of the spaces should be definitely up to the users. From a user-centric point of view, ultimate convenience could be provided by a cyberspace passport that identifies the card holder and any kind of personal information; e.g., certificates of license, membership and secure payment through on-line services.

Examples of social activities in the cyberspace are going shopping, going to a hospital to see a doctor, banking activities, or going to school or to a library.

When we are going to do certain social activities, we take with us cash or a credit card, both for shopping, medical insurance certificate or medical treatment. This means that everything indispensable for social activities should be electronic so that their functions can be digitally performed. We can roughly identify two categories: one is a concrete object, such as money or a signature; the other one is an intangible asset, e.g., a right (election, medical care, ...) or a duty (tax, education, ...). This is the reason why e-ID could be a key device for convenient and secure social activity in the cyberspace.

The new Japanese e-ID card is currently under preparation. This e-ID card (or My Number card) will be issued from January 2016. My Number card will support both digital signature (non-repudiation) and personal authentication services. The certificate of authentication service is anonymous and does not include any personal information.

My Number card will be issued on request without any charge. 15 million cards will be issued for a first deployment, up to 130 million cards will be issued once it is fully used for online validation of medical insurance. Field tests were carried out in February 2015, to show that My Number card can be used for multiple applications: the validation of medical insurance, credit card payment and CATV and a prototype of the cyberspace passport.

In order to enable a concept of multi-application using My Number card, all these applications are linked by making a table of the serial number with insurance certificate ID, customer number or credit card number. Therefore it is not necessary to download any additional application when adding a new a service to the card.

To conclude, the credit card and paper certificate could be recognized as attributes of the card holder. Therefore, the new e-ID card together with PKI service could be a cyberspace passport. The selection of the private sector's services is up to the card holder. Successful field tests of new e-ID card were carried out last February in healthcare, credit card and cable TV areas.

The moderator then wanted to know, how to add new applications to the card.

Mr Niwano clarified that, except of linking the membership number to a serial number, the procedure depends on the services. To take an example: The card holder chooses an application and requests to get a membership number. Then, the service provider may check the status of the card holder and if the status is "yes", it issues the membership number. Then, the card holder sends the certificate of the personal authentication and the service provider makes a linked table of the membership number and the certification number.

ALFREDO RONCHI, Secretary General EC MEDICI Framework, Italy, advocated a broader conception of security and safety.

Citizens in the Digital Age: ICTs safety & security

The idea is to extend the studies and try to create a common umbrella not only for cybersecurity but for any kind of technology solution that will range between security, safety and even disaster prevention or recovery and management.

If we consider safety, we have natural and human disasters but also infrastructure, transportation, safety at working places and our every day life, health, ...

If we speak about security—apart from cybersecurity, we have human security, security of goods, assets and items (including food, drugs, etc.), but also the security of ideas.

Some actions in this field: On the occasion of the 10th World Summit on the Information Society (WSIS) in May 2015 in Geneva, a group has been created in order to support the idea to enlarge the scope of action line C5. Building confidence and security in the use of ICTs. This group will have the possibility to discuss at the Preparatory Meeting of the WSIS in October at the United Nations Secretariat, New York. The hope is that this will lead to a new programme for the follow-up of the WSIS.

To conclude with an example, Grillo is a compact device, a cube, created by a group of young Mexicans, in order to provide citizens with an early warning system in case of an earthquake.

The moderator then followed-up with the question concerning the mentioned four aspects of cybersecurity (safety, security, disaster prevention, recovery and management) taking us away from a more technical aspect to a more human one in terms of the era we live in and how we deal with disasters in these areas. Why those four areas?

In order to be more explanatory, Mr Ronchi referred to an example of the technical university he is teaching at: There are a lot of skills related to security and safety in different departments. However, in each department, people used to work as stand-alone researcher and no one tried to mix up the knowledge, the different skills in order to improve the potential of the group. It took 10 years to put all of them together and to create a cluster of people consisting of chemical engineers, structural engineers, mechanical engineers, people from the information science etc. and to create a small unit of about 50 people that share the same concept of security. During the very first meeting almost every participant declared learning something from a colleague coming from another sector and the usefulness of transferring this to the own sector. Starting from this small nucleus a kind of international group, a joint research group, has been created aggregating additional forces in order to improve this holistic vision about risk assessment in general. This is very closed to what was mentioned in the presentation: the idea to put together things that are usually separated.

PAUL WORMELI, Executive Director Emeritus, IJIS – Integrated Justice Information Systems Institute; Innovation Strategist Wormeli Consulting LLP, USA, took a little different perspective and addressed the intersection of ICT and the sharing economy from the perspective of a CIO and the CSO, whether in a government agency or a private agency, and also from the perspective of law enforcement and criminal justice agencies who have to deal with the violations that occur in cyberspace, which is generally called cyber crime.

Information Safeguarding in the Sharing Environment

When thinking about the sharing economy, we know that the millennial generation stopped buying assets, they don't buy cars, they don't buy bicycles, they don't buy houses and this has enormous economic impacts.

One of the key things that we can understand better in thinking about the opportunities and challenges in applying ICT to this field is reflected in the fact that this is a different model of operation for the economy that requires a very different mindset, particularly if you are concerned about defending yourself against the possible intrusions into those systems that you called upon to protect.

Four truth about this sharing economy were brought up for discussion:

1) The sharing economy is dependent on information technology in a whole new way that we have never seen before. In the early days of the use of computers in our society relative to economy, we used computers to count things. And we are quite happy to automate those processes that we used computers for. But in the sharing economy, IT is the core of what enables the sharing economy to operate. How would Uber even be in business without a mobile App and a smartphone to run it on, not only to recruit passengers but make drivers operate?

2) All of the applications that we see in the sharing economy are so much more dependent on this technology than prior versions of our economy. It takes a little different thought process and it let us understand, and certainly companies like Uber and Airbnb and others, that information is an extremely valuable asset and requires safeguarding, perhaps more than it used to be with simply our financial accounting system.

3) We also know that the growth of the sharing economy is dependent on establishing and upholding trust between the users and the systems that make this economy operate. Without that trust, without people being willing to use the mobile App and putting their credit card through whatever system it is that they are using to rent assets. Without assurance that that data is being safeguarded these elements of the sharing economy would not likely succeed.

4) We also need to be aware of the fact that our ability to respond to the kinds of violations of trust that result in the perpetration of cyber crime is very poor. In fact, one of the key problems in the U.S., and probably in most of the world, is that we don't even know how much there is. We haven't even quantified the amount of cyber crime.

Corresponding to an estimate realised from a number of sources, the cost to society of cyber crime is now nearing U.S.\$ 1 trillion a year—that compared to estimates of narcotics abuse of around 600 million on a global scale. Cyber crime is so much of a mainstream activity and many police agencies throughout the world have no idea how much there really is. This is a problem that many police agencies, including the UN Office on Drugs and Crime, is trying to deal with.

But we are getting better with the technology. It is not a hopeless situation, we are improving considerably in our ability to do things like manage intrusion detections.

The real key that has been well-established by the people in the cybersecurity world is this concept of defence and depth. Any good CIO or CSO is going to make sure that there are a variety of measures that perhaps may fail on their own, but would not fail as a the whole problem that is presented to a potential hacker.

It is clear to all those working in this field, that insiders being careless or intentional are still the largest threat to our collective life. It is people who fail to update, to install the patches on their software, to those who are angry with their employer and decide to take some kind of action involving the computers that are the most difficult to deal with. The threats are migrating and from the law enforcement perspective, one of the biggest concerns people have is that organised crime and nation states are getting involved in this cyber crime business in a huge way—and it is not something that the average police agency, whether it is in the U.S. or any other country, is trained to deal with. This is an enormously difficult problem. And they are finding new targets.

One thing that is most troubling about all this, from a protection perspective and from our ability to deal with this as an national problem, is this enormous exponential growth of data. It is not just the Internet of everything, but the growth in data, just the normal everyday data. We are gaining data at a rate of 2.6 quintillion bytes per day. In the last 18 months we have digitised enough data that's more than the entire Library of Congress in the U.S. has in its entire collection. And this is not getting better, it is getting worse from the standpoint of what we have to protect.

We have to figure out a way to be faster, better and cheaper in dealing with these threats to our security in cyberspace.

The sharing economy is all about the theme of community. The moderator asked how can communities of interest, communities of people, communities where we live/ neighbourhoods work with law enforcement to tackle some of these problems?

Mr Wormeli stressed that there is an aspect of crowd sourcing which applies to dealing with these kinds of problems, just as we talked about in many other aspects of government and civilian working together. And letting the police know about these kinds of problems is important. People have to learn to understand that, without the data about what is happening, the law enforcement can't operate effectively and they can't get the intelligence they need about the methods and operations of the offenders who are attacking our systems. It takes a collaborative effort. It really is co-production, which means a way for us to attack and deal with the enormously fast moving of cyber crime.

NITYA KARMAKAR, Professor MQC – Macquarie University, Australia, presented an academic point of view on

Creating an Environment of Innovation: challenges and opportunities in Australian context

Innovation is not possible without that advanced knowledge of science and technology. Knowledge is the asset. But, how to create this knowledge? Everybody knows data, everybody has the information, but very few know how to utilize that knowledge.

Other aspects to be addressed are: What are the catalysts for the new wave of innovation? Innovation and economic development; both are very much interdependent. And overcoming innovation challenges. Innovation is not easy.

There is this very interesting book of Peter Thiel “Zero to One”. Innovation leads to something new. Ultimately, it will give some sort of the importance to the economy and to the people. And will bring a lot of benefits.

As stated by Sir Ben Lockspeiser, First President of CERN Council, “scientific research lives and flourishes in an atmosphere of freedom-freedom to doubt, freedom to enquire and freedom to discover. These are the conditions under which this new laboratories has been established”.

Innovation is creativity plus commercialisation, but is also proximity plus convergence. Bill Gates once said, “Microsoft ‘s only factory asset is the human imagination”.

Albert Einstein said, “if I had an hour to solve a problem, I’d spend 55 minutes thinking about the problem and 5 minutes thinking about the solution”. “The greatest enemy of knowledge is not ignorance, it is the illusion of knowledge.” (Stephen Hawking). Innovation, creativity and entrepreneurship are about knowledge-creating new possibilities through combining different knowledge sets.

The new wave of innovation is Internet between business opportunities and citizen expectations: New ways of innovation, the development of Social Networks, the impact of the Internet of Things (25 billion connected devices by 2020 to build the Internet of Things—three for every person on the planet), and the creation of business value through trust.

Innovation has been defined by the Business Council of Australia as “the application of knowledge and technology to create additional value. Innovation can be incremental, or it can be transformational. At its core, demand for innovation is driven by the need to find solutions to problems. Innovation is essential to achieve the next wave of growth and investment in the context of significant global forces of change.”

The first electronic calculator for people with vision impairment has been developed in at the Macquarie University, Australia, as well as the wireless Internet technology and the Macquarie Dictionary.

Nobel laureate professor Brian Schmidt has been announced as ANU’s (Australian National University) next vice-chancellor. Schmidt, who most recently made headlines calling for the establishment of a national agency to address Australia’s poor track record in science, technology and innovation, has worked at the university for 20 years. He won the 2011 Nobel Prize for Physics and will be the university’s 12th vice-chancellor.

Australian key inventions that changed the world are: the black box flight recorder(1961), the electronic pacemaker(1926), Google Maps (2003-2004), the medical application of penicillin (1939), polymer bank notes (first circulated in Australia in 1988), cochlear implant (bionic ear, 1978), the electric drill (1889) and gardasil and cervarix cancer vaccines (2006 by Professor Ian Frazer).

Australia’s most recent innovation is “Tribesta”: lets you alert mates and loved ones when you’re in trouble. (Click on the ‘watch me’ function to let flatmate or partner to know where you are and that you’re OK. Click on the ‘alert’ function where you’re feeling vulnerable). The Sydney-based founder of Tribesta Kathleen Kenny, has been working on the app for almost five years.

In his best-selling book “The World is Flat: The Globalised World in the 21st Century”, Thomas Friedman argues that developments in technology and trade, in particular ICTs, are

spreading the benefits of globalisation to the emerging economies, promoting their development and growth.

We have to built on knowledge and reputation (other wise there will be no trust). We have to built on disruptive technology and economy, built on commitment and trust, and, last but not the least, innovation is built around managing risks.

As Bill Gates said, “when you have money in hand, only you forget who are you. But when you do not have any money in your hand, the whole world forgets who you are!” Innovation and creativity are vital to economic growth. Wealth is the by-product of big ideas—for big ideas you need concentration, thus balance mind, body and soul. Technology and knowledge are needed as catalysts for innovation.

ALI KONE, Chief Operating Officer/Co-Founder, Coders4Africa Inc, USA, gave a perspective from Africa on the drivers of the sharing economy and the associated shift in mindset.

Technology is one of the biggest enablers of the sharing economy. We are more connected than ever, we have more data, but most importantly we have more knowledge about the behaviour of the people and the impact of what people are doing. This is a sort of catalyst where people can do things faster than easier.

Another significant driver is the community. Because there is a community actually using and willing to share the information that makes it possible. For instance, in Africa, you can find people in very low positions. Some of these people have Facebook accounts or Viber but they barely know to read or write. They will go to the studio lab and take a nice photoshoped picture and put it in Facebook. Today, People are engaged and are willing to share. If you give them the tool, they will participate.

Another important driver in the context of the sharing economy is the global recession. It placed a lot of burden on people and people have to be very cautious on their purchase and behaviour. They have to think before they buy because money is limited. They have to worry more about practicality instead of just consuming for fun. Most of the people that are low income are upon the sharing economy and share in the field they feel comfortable with.

Moreover, regardless of income, if people know that they will make money out of their goods or their position, they will be upon to share some of it.

Another driver is people thinking about the future—whether it is the future of a society or the future of their environment. They relate all these things to sustainability. If you can do things that are environmentally friendly or better for the economy or for the society, you will feel good about it and a lot of people think that the sharing economy is the mean to do that.

From the perspective of Coders4Africa, there are number of principles that need to be adopted to the sharing economy in the context of the UN Sustainable Development Goals. They present an opportunity, but we cannot change our mindset if we didn't approach these problems.

Simplicity is one of these principles. We have to think about simplicity now—not only simplicity from the point of view of the user, but simplicity in terms of government policies being able to do things easier.

Transparency and traceability in the context of security are another principle.

As regards the innovation front, this is really context based. Whether people are in Europe, in the U.S., in India or somewhere in Africa, they have a different context, therefore one can not think about the challenges in the same way. E.g., there was a Nigerian start-up that Coders4Africa consulted with, called 'Hello Tractor'. What they came up with was a better way to share the tractors that they have. They retrofit tractors with telematics and GPS and give it to farmers to have them increase their yields and give them additional income because this was not accessible to them and what the government provided was not working.

Community is an important aspect. Key here is collaboration. We all need to collaborate, whether it is people working together or sectors or industries sharing. This is what makes it happen. We have this new way of working towards a problem and this belief that this kind of working and change of mindset can help us attain most of the goals of the UN.

Coders4Africa is really community-based. The organization relies on the communities all across Africa and tries to make them ready for the new digital life.

The moderator then asked Mr Kone about his perspective on the difference between the drivers in the developing world and the developed world and the associated concerns with those drivers, e.g., in the context of taxis discussed earlier.

Mr Kone emphasized that the drivers are very similar but the motivation is different. Uber, for instance, is working very well in the developing world for practical reasons—it is cheaper. That is the main motivation. If you go to developing countries, you will negotiate with the taxi-driver to get the best price possible. So, money is not the reason. However, the reason to have an Uber-like system over there is to get more security or reliability. In Kenya, for example, the traffic is very bad and security is an issue. It could be good to have a reliable system informing about the profile of the driver, somebody who is sure, and having a device telling that this taxi is 10 minutes away or is going to be stuck in traffic... There is a slightly different nuance of perspective in how you approach the problem, but the basic drivers are really the same.

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Q&A

The first question from the audience was addressed to **Steffen Nerdal**, Ascella AS, in order to get some more information on SmartDok.

Mr Nerdal explained that SmartDok is a licensed based product, i.e., people buy a license for nine different modules (time, machines, tools, pictures, construction ID card, ...). People pay a start-up fee and then they pay a yearly license fee. The amount they pay is based on the number of users and the number of modules they purchase.

The following comment from **Jeremy Millard**, Danish Technological Institute, addressed the nature of the sharing economy: The sharing economy is largely based on IT but still brings people physically together who wouldn't otherwise get together. This is how trust is installed in the sharing economy.

The example of the Danish peer-to-peer car rental application GoMore was given. People can hire someone's car, who is currently not using it. It's not the same as car sharing, as you are hiring someone's car. You physically meet this person and this is where trust comes from. And looking at most of the applications in the sharing economy, this is what happens.

Is it really “analogue versus digital”? This is just the latest manifestation. Basically, it is people with the new business model fighting the people with the old business model. IT adds a new dimension of course—but it is basically the process of innovation which is creative destruction. People who are loosing don't like it, but people who have got the new idea and the new business model, whether or not the regulations are pulling them back or not, they are the ones that are going to come through—you see this with Uber, with Airbnb etc. It is an old phenomenon but in new clothes. And we shouldn't really think IT is completely different. It is dramatically different in many ways, it is a game changer. But people are basically the same.

Tim Kelly, World Bank, confirmed that there is nothing new in the sharing economy. He gave the example of Kenya, where ovens are rare. If you need to bake a birthday cake, you need to find out who has got an oven and when this oven is free. That system of sharing ovens has worked perfectly well for many years. It doesn't necessarily need the sharing economy to bring that about.

But obviously in the broadest scheme of things, the sharing economy is really facilitated by the information flow and low transaction cost you get with the digital economy. And it raises many important regulatory issues: Is Uber a software company? Is it a taxi company? How are the drivers regulated? What are the liabilities, who picks up the insurance bill?

Paul Wormeli, Wormeli Consulting, recalled those companies who are global in nature and who are building this sharing economy. What really amounts is disruptive technologies, compared to the old way. It might be the new guys fighting the old guys in many ways, but it is disruptive technology. The reason why it is significantly different from the perspective of security and control and maintaining trust, is that IT is at the heart of it. There has always been systems of borrowing in primitive societies in any rural area, but this is something that is enabled—at least the business making model—almost entirely by IT. And it becomes much riskier as a result. If you think about the risk that Uber has about its data being stolen, it is enormous. You can destroy this company in an instant if they lost access to their data; unlike former economies that didn't have that high level of dependency on IT. It is a scarier proposition than the company that would built cars and sold cars and took in money. The life of the company is not dependant on technology in that older model, and now it is. And it becomes a different bargain for the people who care about the system behind it.

Ali Kone, Coders4Africa, added that, besides the technology itself, globalisation is an important aspect. We are living in a new world. With the globalisation, people worry about the different influences coming in. Everybody has to fight on a global, on a larger scale and therefore people have to come up with new business models more frequently. IT is the technical enabler but there is also the global aspect.

People value more in this connected world. People value the societal impact. What you are doing, is it better for the economy? Is it better for the society? Is it better for the environment? That is much more important now because people are so closed to it.

Alan Shark, PTI, commented on the discussion between the good of technology and the bad of technology. The fact is that we have to deal with both of them.

Regarding the mentioned points about the dangers, the example of the online dating service The Ashley Madison Agency (35 million people) was given. These businesses do not necessarily have a social mission involved.

What really has not been discussed is the role of government in all this. In some case you have people doing things that are very much in the consumer interest to certain segments, but the role of government has to be somewhere to be the equalizer. They are the last resort that the public has for both protection, as well as, is it in the public interest and who are being left out? In the U.S. there are 19 percent of the population that are not on the Net for a lot of reasons, part of it is ignorance, part of it is poverty. This is a huge problem and there could be a whole conference on this subject between the ying and the yang of sharing in a knowledge economy.

If you do not have trust, everything falls apart. Today, every country is worrying about their physical borders and no one is really paying attention to our digital borders. We need a digital kind of force that can help restore trust. If we don't protect our digital borders, we won't get this community of trust but a community of distrust.

Regarding the issue of the police mentioned earlier: So many crimes are miniscule to the point the local police can not afford to investigate in a 500 dollar crime. Therefore there needs to be national response and an international response. It can not be solved by local police. They have to cooperate but it requires a much stronger national force. Unfortunately, there is no movement in this direction right now...

The following question was about "cyberspace against the real space". There are a number of countries with eID cards (Estonia, Japan, ...). How do the citizens live this duality of citizenship (digital and physical)?

Jeremy Millard, Danish Technological Institute, answered that in many ways they are complementary. For instance, a study has shown that more than 90 percent of Facebook friends are friends in real life, too. And 80 percent of the people who play war games are friends in real life. It tends to complement rather than substitute, but it certainly affects the way we think about our relationships. We should not think about digital versus physical, but the complementarities of it—although there are also huge problems coming along with this.

Paul Wormeli, Wormeli Consulting, highlighted Singapore as an example of a country that has a digital ID card for a long time. The citizens in Singapore assume that it is just the normal way of living to have a digital ID card. There is a lot of memory, all their medical records, school test scores, credit card information etc., and they price very much having this card as ticket to anything in Singapore. The people just have learned to adopt and deal with this cards like people in other parts of the world would deal with their driver license. It is just part of their being and they take it everywhere. So, there are nations where it works out very well.

There are other nations that are struggling with this. The U.S., for instance, is struggling with this for decades and the political will is not there to allow the government to create a national ID card.

Jeremy Millard, Danish Technological Institute, then mentioned Denmark as one of the leaders concerning digital public services. Digital by default—600 or 700 services are only available digitally. The question they ask is, what is about IT which is better than humans can do. It is managing data, it is applying strict roles to data, it is doing a lot of quick analysis, speed and connectivity. Those services that are subject to that are put online only.

Other services, like teaching or health, where your need people to people, are supported by IT. Denmark is not going to replace nursing or home help services by robots, services where your need "warm hands" or empathy or sympathy and listening to people. But, they will get the robot in the home help to do the cleaning while the visitor, the human being, is taking to the

old person. Denmark has a new sort of understanding about what IT does and what people do. And this is changing all the time, it is in flux.

A participant from the audience added that in Japan, elderly people in homes are now developing emotional connections with robots that are taking these people in their arms. Moreover, robots become more and more human-looking.

The moderator, **Julia Glidden**, 21c Consultancy, thanked the panellists and closed the session with some final thoughts on what has been said.

There have been a lot of discussions about the technical facilitators, the drivers of innovation, the broad meaning of sharing—but the theme that keeps coming through, whether we are talking about the built environment or security, is community and that linkage between people that IT facilitates and can break down. This real interaction that digital technology creates is something important and needs to be more nurtured.

There is a lot of challenges, there is a lot of threats, there is a lot of scary things, but there is also a very positive humanising element. The sharing economy is showing off the way in which technology can actually bring us back to that village-sense of community that urbanization and mass sprawl that was necessitated by a lack of technology created. In a funny way, technology is bringing us back to this village community of sharing assets, and sharing time and connecting each other whether we live in proximity or not.

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