

FIA Poznan: Session on FIA Research Roadmap

Part 1: Research Roadmap Review

The objective of this session was to hold a public review and discussion of the FIA research roadmap document that was developed by the FIA community over the preceding year.

http://fisa.future-Internet.eu/images/0/0c/Future_Internet_Assembly_Research_Roadmap_V1.pdf

Nick Wainwright (HP Labs, EFFECTSPPLUS project) presented an overview of the FIA Research Roadmap. He noted that, in something as complex as the Future Internet, a socio-technical system of interconnected and interdependent systems, we have many overlapping roadmaps and simply combining them would not be a very useful tool. The approach used to bring out some of the cross cutting topics of Future Internet research was discussed, namely, a four-part model comprising changes, vision, challenges, and solutions. Wainwright also noted that the research roadmap was based on a collection of contributions and that it was certainly incomplete.

In a panel session discussing the roadmap, Annika Sällström (TEFIS and FIREBALL projects and the European Network of Living Labs), David Carter (Manchester Digital Development Agency), Amardeo Sarma (NEC and TDL Consortium) were asked to comment on the research roadmap document in its current form.

Annika Sällström commented that the roadmap addresses the entire view of what the Internet is about and highlights the economy, technology, people and societal aspects and the Internet in the future. The roadmap discusses impact and added value. The roadmap presents an Internet everywhere for everyone, where users don't even have to think about technology with at the core data as a natural resource for the future. Like the living labs, which think a lot about innovation, the roadmap addresses the idea of the Internet as a source for experimentation, risk taking and entrepreneurship.

Ms Sällström raised a number of points that she felt that roadmap should address, noting first that the issue of 'control' of the Future Internet implicit in the roadmap but perhaps it should be addressed directly. Control is of course related to security and the more we use and rely on the Internet, the more risk. At the same time, society is built on trust and perhaps we need to combine trust and control which leads to one to question whether there should be only one Internet or several? Perhaps there should be a secure Internet and also some part of Internet with less security and less controlled.

Ms Sällström discussed the Future Internet from perspective of user driven innovation and observed that the Internet is important for empowerment of individual people and users and that the potential for involvement of people in the Internet is vast. The generation that is now 18-20 must be involved in the future of the Internet – these were using the Internet since they were born and don't know life without Internet.

Finally, Ms Sällström raised the issue of governance not just of data (which is covered in the roadmap) but also of the Internet itself (which is not) As Internet become so much more important and as more of society depends upon it then Internet governance becomes crucial – who has right to

take decisions and control it? Ms Sällström looked forward to the “borderless Internet” – a dynamic environment without borders.

Amardeo Sarma supported the idea that the research roadmap should address the need to put people at the centre of the Internet, enabling us to ‘build their own Internet’ with the access rights and the capabilities that we want, mirroring the way in which we separate our private, social, and public lives in the physical world. In a Future Internet, people should be able to retain their own ‘private spaces’ and operate with multiple public identities. Mr Sarma observed that Internet is a complex environment and that there was a strong need in the Future Internet to provide educate users on ‘how to drive the Internet’ in other words – the resources that enable people to understand how to live in an Internet connected world, He noted that in a Future Internet our ‘social infrastructure’ should not have to rely on a particular provider to be part of a community – but that we should allow people to build their infrastructures and communication themselves.

David Carter discussed the research roadmap and smart cities. In cities there is a multiplicity of challenges around poverty, employment and social exclusion which makes them a key challenge to be addressed. The research roadmap recognises the importance of smart cities however Carter observed that in his view we don’t need an ‘urban operating system’ – we have one it’s called –‘people’ suggesting that what is needed is an ‘urban open system’ where people are very much at the centre which for example enables people and communities to set up their own networks. Noting that there is not a natural empathy understanding between the research community and the people who run cities he suggested that it is important to work together to build that trust and understanding between these communities in order that we can build smart cities.

Looking beyond smart cities, Carter called for three topics to be addressed in the roadmap

- The built environment – for example intelligent buildings – low carbon neighbourhoods should be explored further as an aspect of the Future Internet research
- Engaging the younger generation in Future Internet. Carter believes that the curriculum in schools gives no chance of developing the kind of advanced skills needed for in Internet age and that we need to develop a new idea of digital literacy, from the age of 5, that allows young people be creative and innovative with the Internet.
- Future science – looking further ahead than the current thinking for example there is nothing about quantum computing, The roadmap should look further out at of the revolutionary concepts that are out there. For example - what about the ‘cyborg’ ideas – seem fantastic now but by 2020+ people may be implanting digital technology in their bodies and what does this mean? There needs to be some really further out future thinking in the roadmap.

In an interactive session, a number of points were made supporting the idea that the research roadmap should look further out and address some of the new and disruptive technologies, using quantum computing as an example but not limited to that. It was also noted that the future of the Internet will take place against a backdrop of resource constraints and sustainability concerns and that this should be reflected in the research roadmap.

Jonathan Cave observed that It is the superstructures – human and organisational - that are as (or more) important than the infrastructures. We should be concerned that in an Internet that is saturated with information we are we behaviourally profiled (a privacy issue) but also behaviourally ma-

nipulated. Our human and organisation infrastructures need to reflect this, recognising that, for example, security and trust may not be efficiently discharged at the collective level. Secondly, as we think about Future Internet business models we need to recognise that it's not necessarily about making money – perhaps we can find the business models of the future by recognising that the business models of the past didn't set out to be business models - they started out as things that we learned to do together.

Prof. Bolesław Szymański observed that we are not neutral to the technologies that exist and which we use - for example our children who have grown up with new technologies think differently because of new communications systems. People build new cognitive models, new trust models and new defences against manipulation. Noting that it is extremely difficult to predict the development and that there are many feedback loops and interdependencies, but we can be sure that we will see evolution, not just of the Internet but of the types and nature of the interaction which people are willing to engage in. Since we cannot predict it, then what the thing we can do is lay down a strong foundation and rules that make encourage 'good behaviours' that make it difficult to do 'bad behaviour' and to encourage research into how people use and are affected by the Internet.

Finally, Julian Seseña pointed out that as we think about smart cities in the future we should take note of the migrations of populations and the way we people have moved to be closer to economic drivers – transport, jobs, industries, and that if we just focus on smart cities we may not be addressing the needs of people outside the cities - perhaps we should talk about 'smart societies, smart towns, and smart villages' and not just smart cities.

Part 2: Novel Ideas – Competition

The second part of the session consisted of 5 presentations competing for a prize on the basis of novelty; the most 'thought-provoking presentation' was awarded an HP netbook computer. The ideas presented were to be regarded as candidates for possible inclusion in the Future Internet Research Roadmap.

The first presentation was by James Davey (Fraunhofer Institute) on Visual Analytics. In this presentation Davey spoke of various techniques for visualisation of massive data sets. The primary motivation for the techniques he spoke of is the massive scale of data involved in the Future Internet. Two short applications were mentioned: visual text analysis for seeing the development and cross-pollination of news stories, and visualisation of network attacks.

The second presentation was by Rahamatullah Khondoker (University of Kaiserslautern, Germany) on engaging and involving users in the shaping of the Future Internet; this presentation won the competition and was awarded the prize. The speaker's thesis was that developments in FI research should be driven by the needs of the end user, and that there should be a conscious effort to (a) elicit requirements from all classes of Internet user, and (b) educate users as to the possibilities and perils of the Internet.

The third presentation was by Lucy Setian (TCS Digital World) on the creation of innovation in the Information Society. Setian argued that, while the impact of information and communication technologies on the workings of society have been extensively studied, this is not equally true of the converse. In other words, the so-called "Information Society" that we have created has little say in

the direction that ICT development takes. She posed various questions as to the role of the EU citizen in the Information Society, namely whether the citizen is a participant or an observer, an activist or a consumer, a change-driver or a change-demander; furthermore she put forward the fundamental tradeoff between social welfare and profit, as it applies in the ICT context.

Mikko Riepula (Aalto University) gave the fourth presentation, and discussed avenues for future research on development and standardisation of services. He spoke about the notion of service innovation, and how complex it is to design new services that will be profitable. There seems to be not much work on standardising services and, he argued, this would be a key innovation for the Future Internet.

The final presentation was given by Alfredo Sanchez (Spribo). Sanchez presented the Spribo product, a 'social knowledge' platform inspired by social networking sites. The idea behind this product, which is still in beta, is to develop 'knowledge communities'. More information can be found at <http://www.spribo.com>.