



## Editorial

*This year, efforts to shape a European approach towards RTD for the Future Internet picked up momentum. The editor of this month's newsletter, eMobility Steering Board member, Jim Clarke, has brought together a range of articles from the European Commission and eMobility members describing a number of these important activities. Jim aims to provide you with an overview of the Future Internet Assembly achievements as well as the inter-platform initiative (by eMobility, NEM, NESSI, ISI and EPoSS) to develop a joint vision on Future Internet in this issue. We also report on the co-located meetings held in Stockholm, Sweden in October - the 4th eMobility General Assembly and the 21st meeting of the Wireless World Research Forum on the theme of "Sustainability and the Future Internet". Last, but not least, two of the eMobility working groups, Leading-Edge Applications and Security, Trust, Dependability and Privacy, provide you with their latest news.*

### Dr. Fiona Williams

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*Pictured above are some of the contributors to this issue (from left to right): Prof. Jim Clarke, Mr. Bernard Barani, Dr. João Schwarz da Silva, Dr. Erich Zielinski, Mr. Karl Schattauer.*

# Future Internet: A Matter of Trust

Society is increasingly dependent on ubiquitous networks and service infrastructures and the intelligent digital services they deliver to support all aspects of our daily lives. The drivers behind the creation and implementation of these services have been largely business or technology oriented. It is now time to take a more "user-centricity" approach: meaning while still concentrating on the business assets and data, putting the users at the centre of the picture, protecting their data and privacy and providing them with usable and trusted tools to support them in their online interactions. The pervasive nature of new, sometimes critical services and their impact on key elements of the citizen's life such as, work, social, health, government, finances, entertainment and education increases the importance of offering enhanced levels of trust and security, with flexibility, privacy and confidentiality. Undoubtedly, wireless and mobile

accesses to these services will increasingly be the norm. eMobility is developing its Vision and Strategic Research Agenda to deliver the necessary trust and security that we need as users, and the privacy we expect as EU citizens.

Trust must be at the very heart of the Future Internet design. It will be built on the technical measures, but also on user perception and experience. The challenge is to obtain a greater understanding of how to create, obtain, assess, perceive or negotiate trust by taking into account information and context, and to use this understanding to realise a high level of trust by the citizen in the deployment, economic viability and social acceptance of systems and services. In order to create trust, we need to put in place the methods and policies that support transparency, accountability and appropriate use of information, data, processes and practices. For this, we need to understand the link

between trust and context. An other major challenge is scaling trust building and negotiation mechanisms to billions of people, devices, things, components, and virtual constructs that will be present in the Future Internet.

These will require expertise and joint research in a broad set of disciplines that includes sociology, governance, economics and legal, as well as technology. This is the approach being adopted by the DG-INFOS-F5 Coordination Action project Think-Trust (see <http://www.think-trust.eu>) in scoping and proposing future necessary research areas.

The failure to enhance trust and acceptance may result in suspicion and eventual rejection of new technology with the subsequent negative impact on the further economic development of Europe.

*Jim Clarke, Waterford Institute of Technology*



# *The Future Internet: Europe needs to get its act together*

The Future Internet is becoming the focus for ICT research world-wide. Several EU Member States have also started national programmes. At European level, the first work programme of the ICT priority has led to the implementation of some 80 projects covering the multiple facets of a Future Internet (FI). Beyond Europe, initiatives targeting a novel Internet architecture have been launched, such as the US GENI/NetSE and the Japanese AKARI programmes. This theme has been retained as one of the three focus priorities of the next EU ICT work-programme covering the period 2009-2010, with a budget envelope of several hundred million Euro.

The motivations behind the questioning and possible redesign of the Internet architecture are well known: a multiplicity of new usage patterns and a plethora of requirements not foreseen when the Internet was designed, fully justifies a fresh look at the Internet architecture. The need has clearly emerged for more robustness and security, for a better handling of the privacy matters, for improved management capabilities. Looking on the horizon are numerous innovative applications enabled by sensors, 3D media, virtualisation of resources, ultra high end to end throughput, all requiring dynamic service architectures. The inescapable trend towards un-tethered communications on the move is clearly a key requirement to be supported natively. In this field, contributions of the

eMobility ETP are essential to the shaping of the European competitiveness as they will leverage the impressive mobile know how that the European industry has developed over the last two decades.

However, setting-up excellent research projects is not enough to position Europe as a credible player on the FI scene. More coordination and cross fertilisation of the multiple European research activities is a must. Research results need to be placed in the market and require the tackling of non research issues, such as standardisation, regulations and market barriers. To reach this goal, the European Commission organised the FI Conference in Bled, Slovenia on 31 March - 2 April 2008. The purpose of the conference was to bring together the multiple facets emerging from European R&D and European Technology platforms with the goal of coordinating the activities in a more proactive way.

This conference led to the endorsement of the "Bled Declaration", whose purpose was to outline a European Approach to FI and attain backing of eTPs: eMobility, NEM, NESSI, ISI and EP-OSS and 63 EU projects working on FI.

This conference has also led to the creation of the Future Internet Assembly (FIA) now gathering 80 European projects working on cross domain issues to progress towards a European

approach for FI. The second FIA meeting is planned on 9-10 December '08 in Madrid, and will be organised around 7 topical sessions thanks to the on-going projects. It is expected this work will facilitate the confrontation of various approaches towards the definition of FI architectures, such that the optimum trade-offs can emerge. A third FIA meeting is planned on 11-13 May 2009 in conjunction with a high level conference organised by the Czech Presidency. At the time of Prague, it is also our intention to make available a scientific book, with a number of technological papers detailing the results of EU research in the field.

The European support to FI research is un-paralleled, it is an effort with no equivalent in other regions of the world. We hence call on the talent and dedication of the industrial and academic research actors to ensure that Europe, at the end of the day, plays in the Future Internet era a role commensurate to its competence and ambitions.

Additional information on the FIA activities can be found at <http://www.future-internet.eu/>.

*João da Silva and Bernard Barani, European Commission*

## Future Internet: The ETPs Vision

The future of Information and Communication Technologies (ICT) will be based on cognitive communications (anticipating user needs, understanding users life), immersive communications (eliminating distance through virtual presence, enabling very rich audio and video experience, engaging senses) and one-world communications (inexpensive communications available to everyone). The "Future Internet" will be one of the key initiatives to make this future happen. It shall (1) make information and communication available everywhere at any time in any role, (2) evolve the network from a "dumb pipe" to being the users intelligent "partner", (3) enable new vertical applications, some of these relying on networks of "things", (4) guarantee an inherent, non-intrusive security and finally (5) create ways to reduce the stress on our planet ecosystem.

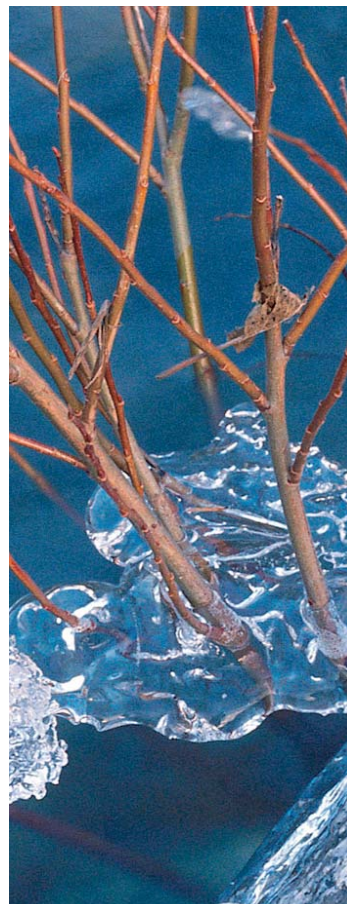
The eMobility ETP is actively engaged in the FP7 Cross-ETPs initiative (eMobility, NEM, NESSI, ISI) for the definition of the Future Internet (FI). One of the recent outcomes of the Cross-ETPs work has been the release of the Vision Document to draw particular attention of decision makers to the primary importance for Europe to actively drive the global definition of the Future Internet. The Vision Document explains the overall objectives and ambitions of the Future Internet (trends and limitations of the current Internet, high-level objectives and key technological challenges of the Future Internet). It also identifies the key opportunities for Europe, and the impacts on ethical, societal, legal, regulatory, standardization,

operational, industrial, economical and environmental domains. Then it introduces the ambitions that the Cross-ETPs pursues and the proposed recommendations to be taken into account for a successful definition of the Future Internet. Two appendixes (working documents) detail the technological challenges and architectural vision. The Future Internet will be based on four pillars (1) Internet by and for People, (2) Internet of Contents and Knowledge, (3) Internet of Services and (4) Internet of Things. The pillars are supported by the Network Infrastructure foundation, which is primarily addressed by the eMobility ETP members.

The Cross-ETPs Future Internet Group strongly recommends to the EU Commission, the Member States and the European stakeholders to actively engage in the design and development of the Future Internet in order to (1) identify the achievable business based on the current ecosystem and based on disruptions brought by the Future Internet developments, (2) develop a dynamic roadmap for the key research challenges to be tackled, and establish the relevant assessment criteria, (3) develop the synchronization between National and European programmes and define most appropriate instruments to minimize fragmentation and (4) develop the cross-domain research fertilization covered by the Future Internet Assembly (FIA). Several actions are currently engaged by different organizations inside eMobility, in order to progress on these recommendations. Future work of the eMobility members of the Cross-ETP FI group is currently

focussing on (1) furthering the identification of the potential business in direct connection to the work initiated in the Vision Document, (2) working on the Strategic Research Agenda (SRA) of the Future Internet, taking into account an up-to-date eMobility SRA and defining (then possibly coordinating) the most relevant set of project proposals in the context of the FP7 Calls 4 and 5, (3) defining the best instruments to develop the FI (reinforcing existing instruments and/or defining new instruments) and (4) encouraging eMobility projects to contribute to the forthcoming Future Internet Assembly events in Madrid and Prague.

*Erich Zielinski and  
Karl Schattauer, Alcatel-Lucent*



## Meetings

### November

25-27 November 2008  
ICT event 2008 „I's to the future  
invention - innovation - impact  
Lyon, France

### December

9-10 December 2008  
Future Internet Assembly meeting  
Madrid, Spain

10-13 December 2008  
Service Wave  
Madrid, Spain

### In 2009

22-23 January 2009  
Paradiso Open International  
Conference  
Brussels, Belgium

26-29 April 2009  
69th IEEE Vehicular Techno-  
logy Conference Spring 2009

5-7 May 2009  
22nd meeting of the  
Wireless World Research Forum  
Paris, France

11-13 May 2009  
Future Internet Conference  
Prague, Czech Republic

10-12 June 2009  
ICT Mobile Summit 2009  
Santander, Spain

## News from the working groups

### Working Group on Leading-Edge Applications

The WG held its 3rd Workshop in Stockholm on Oct. 15th, hosted by Ericsson. Speakers were invited to address topics and questions related to leading-edge applications in mobile and wireless communications areas.

Two speakers addressed issues related to the Future Internet. Dr. Deepak Agrawal (SAP Research) spoke on "Mobile and Wireless Communications in Business Applications", addressing problems associated with the Internet of Things and Internet of Services. Prof. Joe Nandhakumar (Univ. of Warwick) spoke on "Social and Organisational Impact of Mobile Technologies", giving a sociological perspective of the use (current and future) of mobile and wireless communications.

The common aspect to all talks (even to those in other areas, like Health, Transport, or Environment) is that users need to trust technology, and the applications being offered to them, in order to guarantee their acceptance and success. This aspect, together with privacy and security, may be a barrier to the development, deployment, and massive adoption of new applications, which means that the industry will have to address this issue in a coordinated manner.

*Luis M. Correia, WG Chairman, Technical University of Lisbon*

### Working Group on Security, Trust, Dependability and Privacy

A WG was established based on the recommendations of the

eMobility Expert Advisory Group to study the Security, Trust, Dependability and Privacy (STDP) research challenges related to mobile and wireless ICT environments.

STDP issues should be analysed on architectural, service, user and various technical levels and built into the architecture from the beginning. STDP in the Future Internet (FI) should be context-aware, scalable and designed for change, evolution and adaptation to combat unpredictable threats. User's identity and credentials need to be protected and there should be better means of protecting devices and networks against malicious attacks and unintentional dependability problems. Furthermore, robust solutions for trusted application integration mechanisms and trusted execu-

tion environments are needed.

The generation and distribution of information content in the FI should be re-thought with reference to the current philosophy. In particular, the focus should be on secure self-configuration, self-organisation and survivability. Dynamic transition and reconfiguration of devices and services also set challenges.

An important cross-discipline task is to establish generic, widely accepted and unambiguous trust models defining the trust relationships and liability issues, and ensuring sufficient security and privacy. Trust can no longer be assumed; rather, it should be obtained, perceived, assessed, measured, ensured and communicated.

*Reijo Savola, WG Chairman, VTT Technical Research Centre of Finland*

### The 21st Meeting of WWRF

Over 180 representatives met in Stockholm to discuss research progress and future priorities. The overall theme of the event was 'Sustainability and the Future Internet' and the plenary sessions primarily focussed on these aspects.

The impact of sustainability concerns on the wireless world was considered by speakers from Ericsson and Orange, while the launch of large collaborative projects such as CoolSilicon in Germany and Mobile VCE Green Radio in the UK showed that the

research community is already addressing these issues. The 'Future Internet' sessions included reports on the worldwide status of Future Internet, a panel on business models for the Internet, and reports from ongoing projects. As usual, there was a session reporting on regional issues, with

speakers from Korea, Malaysia and Qatar.

The next meeting will be held in Paris on 5-7 May 2009. Further details are available at [www.wireless-world-research.org](http://www.wireless-world-research.org).

*Nigel Jefferies, Chair of WWRF*

## The fourth eMobility General Assembly

*Chairperson Fiona Williams reported about the activities and achievements of the past year. These included activities to facilitate and promote networking, strengthening relationships with other ETPs and the formation of an Interplatform (Cross-ETPs) initiative specifically addressing the Future Internet. In the past year, eMo-*

*bility's membership grew by 20 percent rising to 584 members.*

*Significant progress has been achieved on the technical level by the eMobility working groups. Prof. Djamel Zeglache reported about the progress of the Future Internet WG, whose mission is identifying problems of the current Internet, identify research priorities, and give rec-*

*ommendations. A Whitepaper on the results will be issued in Nov. 2009.*

*eMobility and the other ICT ETPs are working on coordinating Call 4 and 5 proposal preparation activities. A survey was carried out amongst eMobility members on their interest in Call 4 and 5. The survey revealed significant interest in the areas*

*of Network of the Future (topic of FP7 WP) and Ubiquitous Connectivity / Post-IP (topic of eMobility SRA), respectively. The detailed results are available to all eMobility members.*

*For more general information please visit [www.emobility.eu.org/GA4/agenda.html](http://www.emobility.eu.org/GA4/agenda.html).*