



European Research Cluster on the Internet of Things

Message from Gérald Santucci , Head of Unit, EC



The European Research Cluster on the Internet of Things (IERC) has achieved major milestones since its inception one year ago. A first series of research projects, selected from the 5th call for proposals of ICT in the 7th Research Framework Programme, have started between July and September 2010 with an ambitious scope covering architectures, naming and addressing schemes, governance models, application models, interconnectivity and interoperability, privacy and security, and pre-normative and pre-regulatory aspects. These projects bear testimony to the ethos of the cluster and their own commitment to move steadily forward on a path to a more competitive and dynamic economy as well as a more user-friendly, inclusive, secure, privacy-aware and fairer society. Along the way, there will be setbacks and even perhaps failures, but there will be triumphs too!

A second series of six research projects and two support actions will strengthen the IERC by autumn 2011. Together with the existing members of the IERC, including the growing number of national European initiatives that express the longing for joining and contributing to the cluster,

they are the demonstration that Europe is on track to meet the challenge of Internet of Things (IoT) and that stakeholders in academia and industry will help us all to live up to the goals set in the Digital Agenda.

Looking further ahead, the IERC produced in December 2010 a Position Paper presenting the views of its members with respect to the strategic orientation of the 8th Research Framework Programme now under discussion. The document acknowledges the current leadership of Europe in the IoT but also warns that this leadership will be rapidly lost unless there is a sustained pan-European effort in R&D, in particular to exploit the underlying technologies (nano-electronics, microsystems, embedded systems, wireless sensor networks, cloud computing, software technologies) and address long-term socio-economic challenges such as environmental protection and pollution surveillance, energy efficiency, scarce materials, enterprise production surveillance, public and personalised health, aging population, city management, enhancements to safety and security, and so forth. The ability of Europe to recognise and take up these challenges of the IoT will greatly impact its future. The participation of the IERC in the Expert Group on the IoT,

created by the European Commission in August 2010, promotes the development of a consistent approach mingling technology and public policy. In particular, the governance models provided by the projects of the cluster will be a valuable input to our continuous pursuit to make Europe a world leader in the definition of a robust governance framework for the IoT.

As the next generation of Europeans look back on this time in our history, we want them to know that we had courage and wisdom to meet the challenges of the disruption which the IoT represents, i.e. a world where something like 70 billion machines and 70,000 billion objects, all indexed and connected to information networks, will co-exist with and hopefully serve 7 billion humans and (at least) 70 million enterprises. Let's them know that we strived to defend the European sense of purpose and the ideals, principles and values of Europe. Because IoT applications are ubiquitous and pervasive, because, as the Chinese Premier said in 2009, they point out "the wisdom of the Earth", we bear the moral obligation to design, develop and deploy IoT in a way that Europe gets proud of being the model in the world for putting advanced technology at the service of the economy, the society, and individuals.

Points of interest:

- EU-China collaboration
- IERC project IoT-A
- IERC Cluster Book 2011
- IoT News
- IoT Events
- Contacts

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Feedback on EU-China Advisory and Expert Groups - Peter Friess , EC

The recent involvement of IERC in international co-operation was propelled by two successful Expert Group meetings in Beijing, the EU-China IoT Expert Group with CESI (China Electronics Standardization Institute) on 22nd February and the EU-China IoT Advisory Group with CATR (China Academy of Telecom Research) on 23rd February. The first meeting circulated around future IoT standardisation requirements and bet-

better co-operation on large-scale pilot in the domains of Smart cities, Transportation, logistic, and Public medical & assistant living. The Chinese partners highlighted also the need a common service platform for the IoT service platform which relates to the e-infrastructure in the EU and the FI-PPP core platform. The main purpose of the second meeting was to establish specific fields for Sino-EU cooperation on the IoT and to ad-

advance the development of the IoT in the EU and China, on the basis of a better understanding on the IoT strategies, technology R&D, applications and standardisation. It was also agreed that IoT can play a very positive role in advancing both social and economic development in the EU and China, albeit being still at an initial stage of development.. Follow-up meetings are planned for the second half of 2011 in Brussels .

"the meetings in Wuxi between experts from China and Europe provided an opportunity to share views on IoT development and provide opportunities for future collaboration"

Prof. Jian Ma



"It is an exciting time where the only limits you have are the size of your ideas and the degree of your dedication"



Feedback from the 1st EU-China IOT symposium, WUXI, Ian Smith, CASAGRAS2

In February 2010, Europe met China in Wuxi, where we were guests of the Wuxi SensingNet Industrialization Institute which is leading China's standardization and national mega project initiatives. An educational two day workshop attracted more than

60 delegates and a one-day open workshop drew more than 160 experts from across China. The Chief Scientist of the Institute, Professor Jian Ma said that the meetings in Wuxi between experts from China and Europe provided an opportunity to share views on

IoT development and provide opportunities for future collaboration. The importance of this collaboration is critical and would help the development of the IoT at a speed faster than either party would be able to contemplate if they were working alone.

Cluster Book 2011: IOT - Global Technological and Societal Trends

Dear readers,

We are proud to announce the publication of **IERC Cluster Book 2011** and the release of the **IoT Strategic Research Agenda 2011**.

The IERC aims to catch the realm of IoT technology and applications opening up new research perspectives for this new paradigm.

The rationale for the IERC is to address the large potential for IoT-based capabilities in Europe - coordinate and encourage the convergence of ongoing work addressing the most important challenges - to build a broadly based consensus on the ways to implemen-

tation and adoption of IoT in Europe.

The new **IERC Cluster Book** on IoT is an important step on the long European path to a more competitive, dynamic, inclusive and user-friendly knowledge-based economy. It is a book on how to think about new IoT paradigm and builds on the ideas of the most valuable inputs received from the projects involved in the IERC activities.

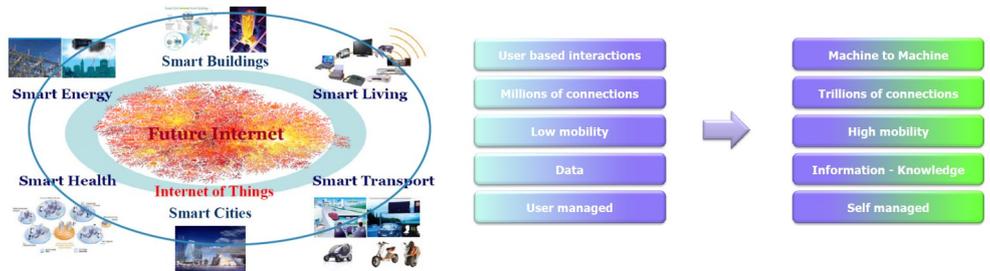
The book includes articles from distinguished contributors from all over the world who have made production of this book a major priority.

One chapter of the book is

dedicated to the IoT Strategic Research Agenda (SRA) a document based on the experiences and the results from the ongoing exchange among European and international experts. The document builds on the 2009 SRA and presents the research fields and an updated roadmap on future R&D until 2015 and beyond 2020.

The IERC Cluster Book 2011 provides a road map for readers to navigate their way into uncovering the research and development challenges in the area of Internet of Things Technology and applications.

Ovidiu Vermesan, IERC



IoT International Forum

IoT-I, CASAGRAS2, CATR and Wuxi SensingNet are pleased to announce the launch of *The IoT International Forum*, with the support of the European Commission.

The IoT International Forum is a place for actors to come together from both the global IoT community and from domains which could benefit from IoT. The exchange of ideas and viewpoints will identify strategic directions for IoT, the related markets and business opportunities, societal impacts and benefits,

and the legal and regulatory framework to enable this in a responsible manner.

By fostering a culture of discussion and collaboration, *The IoT International Forum* will aim to produce outputs representing the views of its membership and participants which will influence standards and regulatory bodies, funding bodies, and the wider IoT related domains, as well as informing and educating its own membership.

The Forum will be a not for profit organisation, open to all actors, and the initial events

will feature free registration. There will be an open Forum information and planning meeting on 6th June 2011, as part of "IoT Week" in Barcelona (<http://www.iiot-week.eu/>). The first full Forum event will take place in Berlin during November 2011, with details to be released in the summer.

To receive details of *The IoT International Forum*, please register your interest via info@iiot-i.eu, or monitor the website at <http://www.iiot-i.eu/>

Bernard Hunt, IoT-I

Focus on IERC projects portfolio: IoT-A

IoT-A, the Internet of Things Architecture, is the European flagship project in the Seventh Framework Program for Research and Technological Development concerning the EU commission's main instrument for funding research in Europe.

The overall goal of the project is the creation of an easy-to-use platform prototype in order to connect any object with a sensor to the Internet, independent of its wireless technology, i.e. Bluetooth, Wifi, WiMAX, or Zigbee or programming language. In consequence of connecting these objects, there will be huge benefits, starting from energy savings to better healthcare, reduced traffic, and more secure supply chains. While the concept is

simple, applying it faces a number of challenges.

First, many of the devices today, from mobile phones to RFID tags, can connect to the Internet but they are point-to-point connections, often closed, similar to corporate intranets that sit behind firewalls. With the IoT-A, a common ground for sensors, similar to crowd sourcing websites like Wikipedia, can be established to which companies, public entities, and individuals could effortlessly connect.

Another challenge addressed in the research project is the ease of use. Configuring these objects to connect to the Internet and to each other is highly complex due to the variety of incompatible wireless technologies. The IoT-A scientists aim at creating a homogene-

ous bridge connecting various sensors independent of their wireless technology, such as Bluetooth, Wifi, WiMAX, or Zigbee.

Finally, an open Internet of Things will inevitably raise security and privacy challenges. To address these, IoT-A will keep the user in control of any data that is produced or that can be traced back to him. Advancements in both hardware and security technology help to avoid that the stored data is used without permission and that individuals can be traced via their sensors.

Project details and public documents can be found online at <http://www.iot-a.eu/>

Laure Quintin, IoT-A

IoT News

- **Internet of Things Week 2011:** Four European projects : IoT-A, IoT-I, SmartSantander and CASAGRAS2 are organising the **IoT Week** in Barcelona from the 6th to the 9th of June 2011, with the support of the European Research Cluster on Internet of Things (IERC). This event will bring the scientific community together for a set of Conference Sessions, Workshops and working meetings of the different projects in the same place. The IoT week is providing a platform for exchange of information and discussions across a variety of EU funded IoT research projects and engagement with the wider IoT research community. Participation is free of charge but registration is mandatory online at www.iot-week.eu/registration/. For more information about the programme of this event go to IoT Week website www.iot-week.eu/2011/
- **IoT-I:** The European Project "Internet of Things Initiative" (IoT-I) released a survey gathering a set of IoT-related scenarios. This survey tries to capture the end users' (private or enterprise), technologists' (ICT or sector specific) and policy makers' opinions on strategically important IoT scenarios. This survey can be answered at <http://www.surveymonkey.com/s/IoT-i-survey>
- **GS1:** Endorsement of the Privacy Impact Assessment Framework for RFID applications. An EC press release and a video are displayed on the DG INFSO website: http://ec.europa.eu/information_society/policy/rfid/index_en.htm The endorsed text can be accessed at http://ec.europa.eu/information_society/policy/rfid/documents/info-2011-00068.pdf
- On behalf of **IoT@Work**, Amine Houyou (Siemens) will organize together with Prof. Atta Badii (on behalf of the EU project Elliot) a stakeholder meeting on IoT Application Scenarios and Exploitation activity chains (AC 10 & AC 14) - in parallel to the Future Internet Assembly in October 24th-26th, 2011, Poznan, Poland.
- **Primelife:** PrimeLife Summit Event to be part of SEC2011 conference in Lucerne. The PrimeLife project will hold its Summit Event on June 7th, 2011 as part of the IFIP SEC2011 conference in Lucerne, Switzerland. The consortium will present its research results contributing to the development in user-centric Identity Management (IdM) inter alia in different areas of privacy. See <http://www.primelife.eu/summit/> for more details about this event. Further events with PrimeLife participation targeting current questions of privacy and identity management are planned until June 2011. Please check <http://www.primelife.eu/workshops/> for respective announcements.
- **IoT day/conference** in Pozdan, Poland on the 28th of October (part of the FIA Week). Please check <http://www.future-internet.eu/home.html/> for further details..





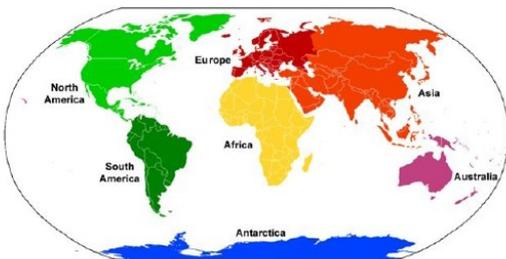
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IoT Events

May

[IST-Africa 2011 Conference & Exhibition](#)

11th - Gaborone, Botswana

[Future Internet week 2011](#)

16th-19th - Budapest, Hungary

[ICT Proposers Day 2011 - Networking for European ICT Research and Development](#)

19th - Budapest, Hungary

June

[IEEE ICC 2011 Workshop on Embedding the Real World into the Future Internet RWFI](#)

5th - Kyoto, Japan

[Internet of Things week 2011](#)

6th-9th - Barcelona, Spain

[2nd International Workshop on the Web of Things \(WoT 2011\)](#)

12th - San Francisco, USA

[Future Network & Mobile Summit 2011](#)

15th - Warsaw, Poland

[IoT China 2011](#)

16th-17th - Shanghai, China

[ICE' 2011 - 17th International Conference on concurrent Enterprising](#)

20th - Aachen, Germany

[IEEE SECON 2011 - Sensor, Mesh and Ad Hoc Communications and Networks](#)

27th - Salt Lake City, USA

[The 3rd Annual Internet of Things Europe 2011 Conference](#)

28th-29th - Brussels, Belgium

September

[ETFA 2011 - Emerging Technologies and Factory Automation 2011](#)

5th - Toulouse, France

[2011 Emerging Wireless Technologies Week](#)

15th - Sitges, Spain

IoTech - IEEE Workshop on IoT Technology and Architectures, <http://iotech-ws.com>

17th - Valencia, Spain

October

[Future Internet Assembly, Poznan](#)

24th-28th - Poznan, Poland

[IoT Day/Conference \(part of the FIA Week\)](#)

28th - Poznan, Poland

ABOUT IERC

IoT European Research Cluster

The aim of European Research Cluster on the Internet of Things is to address the large potential for IoT-based capabilities in Europe and to coordinate the convergence of ongoing activities.

European Dimension

IoT has the potential to enhance Europe's competitiveness and is an important driver for the development of an information based economy and society. A wide range of research and application projects in Europe have been set up in different application fields. Communication between these projects is an essential requirement for a competitive industry and for a secure, safe and privacy preserving deployment of IoT in Europe.

Global Dimension

IERC will facilitate the knowledge sharing at the global level and will encourage and exchange best practice and new business models that are emerging in different parts of the world. In this way, measures accompanying research and innovation efforts are considered to assess the impact of the Internet of Things at global and industrial level, as well as at the organisational level.



The "European Research Cluster on the Internet of Things-IERC" was established by the DG Information Society and Media, as part of Europe's ambition to shape a future Internet of Things for its businesses and citizens.

IERC Newsletter Editor:
IOT-I, University of Surrey