Vision and challenges
Quick tour on IoT European Research Cluster (IERC)
What next?– Horizon 2020
Cooperation with Taiwan
Internet of Things –
Why the objects need to understand themselves better
The Internet of Things has finally arrived

Attention of many governments
Industrial stakeholder are treating the subject seriously
End-users get more used to smart devices
Powerful combination with various approaches – Cloud, Future Internet, Big Data, robotics…
Major Internet of Things application areas for the moment

- Smart Cities (and regions)
- Smart Car and mobility
- Smart Home and assisted living
- Smart Industries
- Public safety
- Energy & environmental protection
- Agriculture
- Tourism
- ….
Vertical applications
Little technical interoperability
No semantic interoperability
Mainly static approach
Need to boost creativity for the new
Why does the Internet of Things not really work today?

- No forward approach towards universal numbering
- Not enough push on multi purpose sensor network
- Rapidly developed architectures without grounding
- Missing semantic interoperability
- Not sufficiently developed user-centric data handling
- Shortness of augmented and rich interfaces
- Too much focus on existing technology approaches
Cross domain benefits
Real-world awareness
Infinite problem solving possible

The real potential
Getting better connected

Orientation on IOT Architectures
- Models (domain, information, communication)
- Dynamic views

Semantic interoperability
- Interfaces and translators
- Ontologies and soft-ontologies
Towards the IOT universe…

Identification and semantic interoperability

Connect application silos

Master the virtual

Explore new worlds
IERC - IoT European Research Cluster - Role

- Bring together the EU-funded projects and policy activities with the aim of:

  Sustaining Europe’s leading position in the future Internet of Things within a global context
Portfolio of IERC projects: about 20 running projects +70 M€

Support Action: +1 new to come (Smart Action)
The IERC projects are not stand alone but part of the activity chains in the Cluster (existing and developing).

Activity chains are a method used by the projects to address European approach in different research areas.

Strategy
Common Activities
Responsibilities
Cooperation
Deliverables
Innovation
IERC Activities Chains

Projects Involvement – Cooperation Matrix

**- IoT-A**
- BUTLER
- iCore
- IoT@Work
- PROBE-IT

**AC1**
Architecture approaches and models

**AC2**
Naming and addressing schemes. Means of search and discovery

**AC3**
Application scenarios, Pilots and Innovation

**AC4**
Service openness and inter-operability issues/semantic interoperability

**AC5**
Governance, Privacy and Security issues

**AC6**
Standardisation and pre-regulatory research

**AC7**
IoT Enabling technologies

**AC8**
Cognitive Technologies for IoT
Cluster Book 2012 - SRA

- The findings are included in Chapter 2 of Cluster Book 2012 and issued to develop research programs and projects in the future.

"The future has already arrived. It's just not evenly distributed yet."

William Gibson
IERC – Strategic Research

- Internet of Things Vision
  - Internet of Things Common Definition

- IoT Strategic Research Directions
  - Applications and Scenarios of Relevance
  - IoT Functional View
  - Application Areas

- IoT Applications
  - Smart cities
  - Participatory sensing
  - Social networks and IoT
IERC – Strategic Research

- IoT Applications
  - Smart Energy and the Smart Grid
  - Smart Mobility
  - Food and water tracking and security

- Internet of Things and related Future Internet technologies
  - Cloud Computing
  - IoT and semantic technologies
  - Autonomy
Activities

- IoT Week – Organized every year in June.
- Presentations of demonstrations and pilots. IoT applications and technology developments practices for business networks.
- Innovation Incubators concepts.
- International cooperation
- Strategic Research Agenda
- Standardization ETSI, CEN/CENELEC, oneM2M, W3C, IETF, OASIS
Coordinating and building a broadly based consensus on the ways to realise the Internet of Things vision in Europe.

IERC OBJECTIVES

Identifying IoT technology research challenges at the European level in the view of global development.

www.internet-of-things-research.eu
IOT is a confirmed subject for the EC since the publishing of the Communication in 2009 – “An IOT Action plan for Europe”, and is now considered as one of the growth and innovation areas in the scope of Horizon 2020.
IoT future focusses

- so far important focus on sensors and architectures
- New considerations on:
  - identification;
  - Privacy and security
  - semantic interoperability
  - (users) interfaces
  - Potential of integrating could and big data approaches
New vision

- need more generic industry IoT framework
- Frameworks to evolve to Smart Environments and platforms forming a smart web of everythings as
  - One of the big next concepts supporting societal challenges
  - providing support of the citizen in their professional and domestic public life but also
  - changing and enhancing their way of working
Security and privacy

- recent call for R&D IOT projects addressing a safe and reliable IOT and the provision of technical solution in the complex field of IOT

- Balance between open solutions for data sharing and user-control and privacy protection

- new projects will start Sept. 2013
IoT Policies : follow up EU IoT Expert Group

- on-going study examines further policy recommendations and need for government action in the field of IOT
- Goal to stimulate innovation and trust while at the same time making sure that free access to the IOT is guaranteed
- users have to trust in the IOT instead of being victims of profiling and commercial exploitation.
IoT and data protection

- Data protection legislation proposed by Commissioner Reding early 2012 cater for better control of user data in the clouds.
- IOT deployment will exacerbate the need to protect user related data generated by sensor based systems.
- Needs to develop the technologies, standards and processes making it easier for user to control their own personal data.
- This is an issue that should be worked out globally.
IERC to organise R&D and Innovation

- IERC to support EC in organisation R&D&I
- direct funding in the past about 70 Mio €
- besides pure R&D also addresses equally questions of
  - security & privacy
  - standardisation
International cooperation

- integrated element of the EC activities from the beginning,
- IoT is being considered of having truly global nature.
- Join IoT activities are encouraged (eg China, Japan, Taiwan, SK)
Cooperation with Taiwan

1. Synchronisation of research communities (eg IERC), Forming Value Nets and Communities
2. Joint Workshops, Events and Exchange Events
3. Define common areas of interest (eg publish white paper) and plan common actions –
   - Smart Cities, Smart Home, Smart Industry,
   - Semantic Interoperability, Big Data Analytics
4. IOT, Cloud and Services Integration: World wide Standardisation, Architecture Integration and Common Generic IOT platform
5. Project Collaboration: Match Making of Running Projects
6. Architecture, Security & Privacy, Ethics, Governance: Exchange on accompanying policy measures for IOT through IOT FORUM
7. The Synergy between Taiwanese Innovation Programs and H2020 Projects
8. Testbeds and Joint Field Trials
9. Exchange of R&D People
10. Participation in Associations and Collaboration at Country level
Thank you!

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