LEIT ICT WP2014-15

ICT 30 2015: Internet of Things and Platforms for Connected Smart Objects

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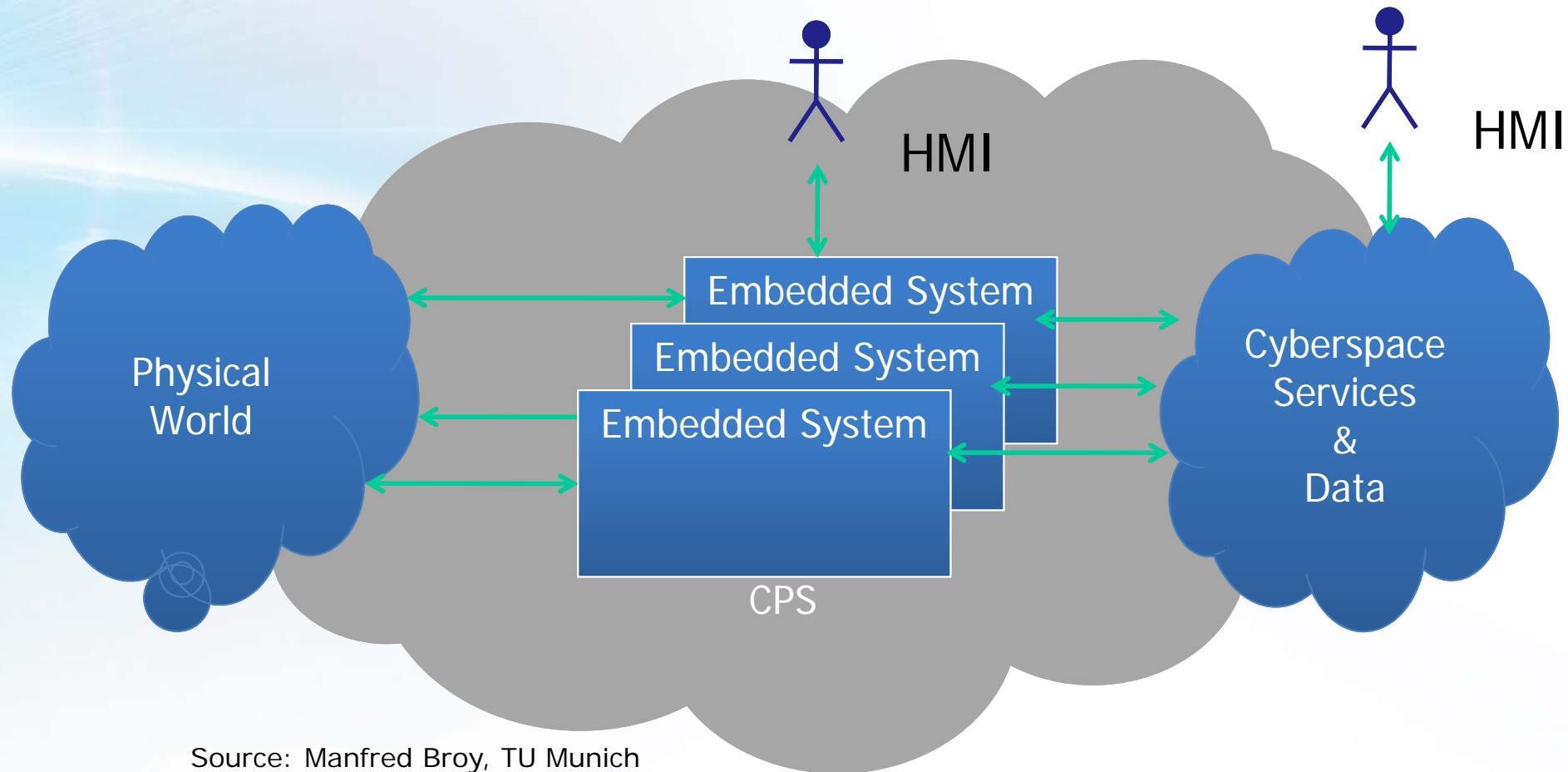**EUROPEAN COMMISSION, DG CONNECT**

Vilnius, November, 2013

Internet of Things - motivation

- Need for a multi-stakeholder and ecosystem perspective rather than the deployment of individual, not compatible technical solutions

- Strong basis of research, smart systems, manufacturing and integration providers in Europe but lack of ecosystem(s) for creating a strong Internet of Things (IoT) take-up

- Need for integration of various disciplines' results – Cloud technologies, Big data, cyber-physical systems, components, network technologies, privacy & security technologies

- Developed strategy for IoT international cooperation focusing on architectures, semantics, security&privacy, standardisation

- Internet of Things (IoT) is a dynamic global network infrastructure with self-configuring capabilities based on standard and interoperable communication protocols where physical and virtual "things" have identities, physical attributes and virtual personalities and use intelligent interfaces and are seamlessly integrated into the information network.
(Definition by ITU and IERC-Internet of Things European Research Cluster)

Cyber-Physical Systems

Interfaces to users, to the physical world and the cyberspace

HMI

HMI

Embedded System

Embedded System

Embedded System

CPS

Physical World

Cyberspace Services & Data

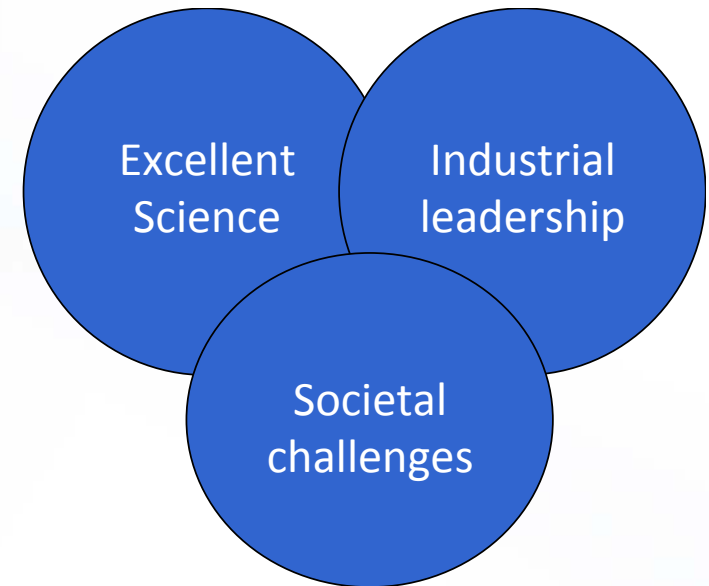Source: Manfred Broy, TU Munich

HORIZON 2020

Internet of Things: An important research and policy element of the European Commission

- As follow-up of FP7 specific IoT research and innovation in the context of H2020 for developing federating platforms towards a world of Connected Smart Objects

- Stronger combination of the IoT with Cloud Computing, Future Internet, Cyber-Physical Systems and network technologies like 5G

- Support of the policy and social dialogue as the Internet of Things lays the foundation for a "digital society"

Horizon 2020

- The next European Research & Innovation funding programme (2014-20) (~77 billion Euro)

- A core part of Europe 2020, Innovation Union & European Research Area:

  – **Responding to the economic crisis** to invest in future jobs and growth

  – **Addressing peoples'concerns** about their livelihoods, safety and environment

  – **Strengthening the EU's global position** in research, innovation and technology

Excellent Science

Industrial leadership

Societal challenges

ICT Cross-Cutting Activities in Horizon 2020

- ICT 30: Internet of Things and Platforms for Connected Smart Objects
  - Cutting across several LEIT-ICT areas (smart systems integration, cyber-physical systems, smart networks, big data)
  - Bringing together different generic ICT technologies and their stakeholder constituencies
  - 51 M€, 2nd call (publication 2nd half 2014)
  - Research and Innovation Actions (100% funding) & Coordination and Support Actions
  - Large Projects
  - Mechanism of open competitive calls up to 30% of total budget

ICT 30 – Scope of Research & Innovation Actions

- Architectural concepts and concepts for semantic interoperability for "Platforms for Connected Smart Objects"
  - Dynamically configured infrastructure and integration platforms for covering multiple technologies, multiple devices including robots, and heterogeneous integration levels
  - Integration of smart devices into self-adaptive, robust, safe, intuitive, affordable and interconnected smart network and service platforms

- Reference implementations, including proof-of-concept, large-scale demonstrations and validation driven by innovative use scenarios, e.g. in
  - Smart homes, public spaces and context aware commercial environments Potential use scenarios include
  - health, energy, mobility and commercial services

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ICT 30 – Scope of Support Measures

- Measures for development of ecosystems around the platforms e.g.
  – Communities of open API developers for low cost applications, networking of stakeholders
  – Contribution to pre-normative activities / standardisation, development of business models, innovation activities which aim at stimulating platform adoption
  – Activities to increase societal acceptance and foster specific education
- One Co-ordination and Support Action to stimulate the collaboration between selected projects and between the potential platforms

Targeted communities

- HW and SW providers, device manufactures
- Service providers, industrial and home application providers,
- Integrators and telecoms
- Research institutes and universities
- Stakeholders from "Internet of Things European Research Cluster" - IERC, Smart cities, Living labs and
- Relevant European Technology platforms such as ARTEMIS, EPOSS, EUROP
- …

ICT 30 – Expected impact

- European offer for integrated IoT systems and platforms
- Availability of architectures and methodologies to provide IoT turn key solutions
- Dissemination and availability of results for technology adoption and pre-normative activities e.g. in standardisation fora and bodies like the EIT
- Facilitation of platforms for co-creation of products and services in open innovation ecosystems including all relevant stakeholders.

ICT 30 – Additional remarks

- The evolutionary elements plays an important role due to the nature of a fast developing subject

- A strong community building for the actors coming from various disciplines is pivotal

- Demonstration of good integration between R&I Actions and Support Measures

- Technology link with FI-PPP and ARTEMIS-ECSEL JTI beyond uses cases where it makes sense; cooperation with FIRE where appropriate

- Continuation and extension of international collaboration

- Embedding the Social Science and Humanities (SSH) dimension (identity, privacy, reputation, motivations, responsibility, attention, and fairness)

- Considering (partially) open platforms and technology approaches which allow application developers to produce new added value across multiple systems

Next steps

- Publication of Call in 2nd half 2014

- 2014 Community building
  (tentative – to be detailed early 2014)
  - Community building workshop 1st half 2014
  - Targeted contributions attached to important events
  - …

References

- IERC – Internet of Things European Research Cluster http://www.internet-of-things-research.eu/

- Internet of Things - CONNECT Digital Agenda: http://ec.europa.eu/digital-agenda/en/internet-things

- Robotics - platform EUROP: http://robotics-platform.eu

- Embedded and Cyber-Physical Systems - CONNECT Digital Agenda: http://ec.europa.eu/digital-agenda/en/cyber-physical-systems-1

- Embedded and Cyber-Physical Systems - JTI ARTEMIS: www.artemis-ju.eu

- Micro-systems - platform EPOSS: www.smart-systems-integration.org