Internet of Things
a policy perspective

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"The views expressed in this presentation are those of the author and do not necessarily reflect the views of the European Commission"
Internet of Things

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

use intelligent interfaces,

and are seamlessly integrated

into the information network.
IoT and Future Internet

Industrial and Government applications
- Infrastructure monitoring/smart cities
- Lighting
- Transportation
- Energy
- Process automation
- Security
- Agriculture

Internet of people
- Internet enabled personal electronics (phones, tablets, computers)

Consumer applications
- Wearable technology
- Home automation
- Healthcare, fitness, assisted living
- Consumer services and infotainment
- Vehicles

Internet of things
- Ubiquitous smart objects sense and communicate over the Internet with no human interaction

Internet of things without IP address
- Dedicated systems for connected things, proprietary and standardised RFID, Active RFID, Real time location systems, mesh sensor networks

Source (adapted) IDTeckEx
value chain

- Long value chain with opportunities for multiple actors
- Integrated platforms opportunities
getting closer to reality

- technology maturing rapidly and becoming cost effective
- Europe has the required competence to cover the whole IoT value chain - European market leaders very active.
- Dynamic SME's
- Business potential identified across industries
- Verticals benefiting from IoT, much beyond the ICT sector... strong European presence in most relevant verticals
integrated platform approach

IoT from Silicon to Cloud Computing

sensors, actuators, tags, embedded systems, devices

IoT connectivity solution

Service layer Knowledge layer

IoT gateway

Communication network (4G, 5G, access network, Internet)

IoT Spinal cord

IoT infrastructure, application and systems

IoT Nerves

Complex Context Awareness services

Complex Event Detection services

Big data analytics services

IoT Brains

Source: Connect Advisory Forum (CAF)
innovation

- Platform based, Fi-WARE, generic enablers including an IoT chapter
- FI-LAB for cloud based open innovation
- Smart Santander use case (flagship)
multiple initiatives - risk of siloed?

Standards
- ISO, JTC 1
- IEEE
- IETF (e.g. 6LowPan)
- ETSI, xM2M, 3GPP
- W3C SSN
- ...

Member States
- UK TSB
- Finland VTT
- Germany, Industry 4.0
- Sweden, Vinova
- ...

Industry
- Internet of Everything (Cisco)
- Industrial Internet (General Electric)
- Alljoyn alliance (Qualcomm)
- Qeo (Technicolor)
- ARM-Axeda (cloud)
- Google-automotive industry,
- ...
multiple stakeholders
market challenges

- Competing priorities in developing regions
- Global scalability
- Privacy and security concerns
- Lack of standards
- Nascent ecosystem for application development

Source: IDC 2014
IoT policy in Europe - a collective ambition

- Make Europe a leading IoT actor from the supply side and learn lessons from the creation of mobile ecosystems developed outside the EU
- Make Europe a lead-early adopter of IoT technologies in downstream sectors
- Address deployment at Digital Single Market scale
- Ensure citizen engagement and acceptability
- Ensure valorisation of Member States initiatives
- Ensure IoT supports other bold Union policies, e.g. smart cities.
a multifaceted strategy

- Catalyse the development of IoT ecosystems in Europe
- Explore potential of open platform
- Connect to tangible "replicable" playgrounds (Smart Cities)
- Solve remaining technological roadblocks
- Address user acceptance
- Promote (open) innovation
- Piggyback on existing developments and initiatives
- Explore international cooperation, global interoperability
WP 2015

Innovation, promotion of Open Disruptive Innovation (bottom up)


- Adaptability and dynamic reconfigurability
- Open to innovation
- Reference implementation
- Pilots validations through selected use cases.
towards deployment

**Stakeholders engagement under Smart City Call**

Towards replicable *large scale pilot*

- Identify wide deployment scenarios
- Identify most promising applicable standards
- Validate "desiloed" approach to multiple verticals
- Validate relevance of an ecosystem approach
- Reconcile interest of a multiplicity of stakeholders
supporting policy issues - standards

- Technical standards
  - Identification and search of objects, Interfaces between devices and systems
- Privacy & security standards
  - Privacy by design, Elements of cybersecurity
- Semantic standards & ontologies
  - Cross application information exchange (beyond siloes)
- Cross-industry standards / specifications
  - Process compliance, Reference Architectures
expectation from the standardisation process

- A similar exercise to the one successfully pioneered with the Cloud Computing standardisation initiative
- Co-ordinated by ETSI, with support of the EC
- Identification of business scenarios and applicable (or needed) standards ➢ Mapping
- Collaboration of multiple "verticals"
- Focus on cross siloes use cases
- Applicability/demonstrability of standards in large scale pilots to be implemented under H2020 WP 2016-17
- Standards supporting the emergence of IoT platforms and ecosystems
conclusions

- EC is committed to make IoT an economic and social reality in Europe
- Holistic approach, supported by open platforms
- Strategy being defined with large set of stakeholders and supported by "CAF"
- Deployment and innovation are core focus of the next phases
- Standards have a key role to play in the context of large scale pilot deployments, ecosystem creation, cross use case support
Thanks for your attention

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