

The Internet of Things and Standardization

EU RFID Forum 2007, Brussels, 13/14 March 2007

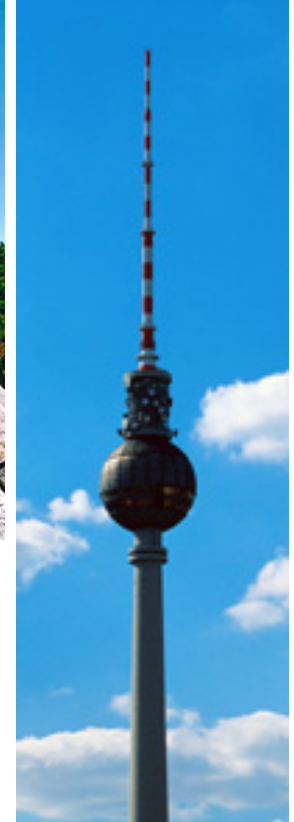
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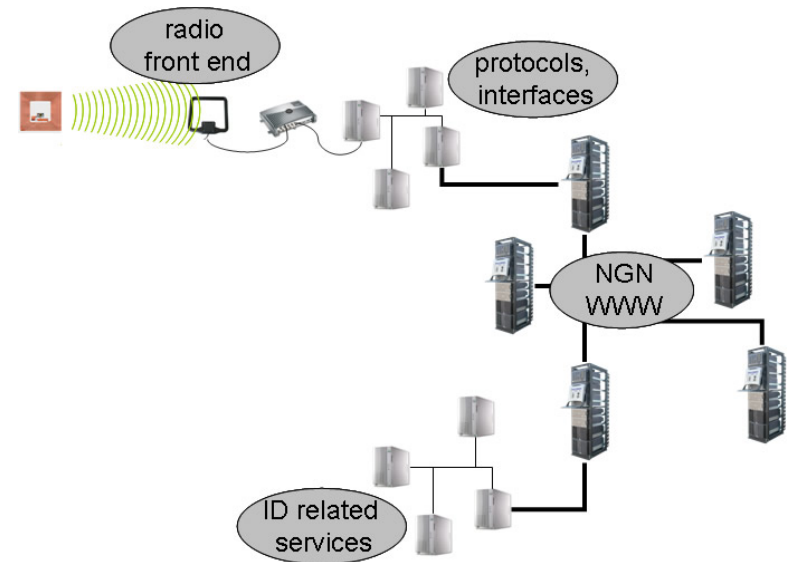
Ubiquitous communications

- ☐ Anytime and anywhere
- ☐ Multimedia
- ☐ End-to-end and multipoint
- ☐ Broadcasting
 - Real time
 - On demand
- ☐ Enabling networks
 - Fixed (cable and radio (terrestrial and satellite))
 - Mobile



Not only people communicate

- ❑ Machine - Machine - Communications beyond personal communications
- ❑ Enabling technologies
 - Ubiquitous networks
 - Mobile phones as barcode reader
 - Networking devices such as RFIDs
 - Sensor networks
- ❑ Creating data, information and knowledge for control
 - Transport and logistics
 - Retailer business
 - Financial networks
 - Environmental and emergency networks (Tsunami warning)
 - Smart Houses
 - Health services



More communications networks dependencies

- ☐ **New challenges for Quality of Service (QoS)**
 - **Availability**
 - **Real-time requirements**
 - **Guaranteed bandwidth**
- ☐ **Product proofing against crime (Design against crime)**
- ☐ **Regulation, co-regulation, self-regulation**
- ☐ **Electronic communications regulations**
 - **Universal services focus on voice communications**
- ☐ **Privacy and data protection regulation regulations**
- ☐ **ICT as a critical infrastructure**
 - **Robust against attacks**
 - **Concepts beyond technologies**

Data collections create greediness

- ❑ The value of information and knowledge
 - For own market
 - Trading information
 - For the authorities

- ❑ Animals are (not) “things”, (and people?)
 - RFIDs in Livestock
 - Tracing prisoners
 - Patients in hospitals
 - Location information in mobile communications
 - RFIDs for border control
 - Goods (container sealing)
 - Livestock and animal products
 - People (passports)



Expanding the ICT sector into others or vice versa

❑ The ICT industry sector beyond personal communications serves other industry sectors, e.g.

➤ **Intelligent Transport Systems and Services**

- Automotive industry
- Railways
- Maritime and inland waterways
- Air traffic management
- Multi- and inter-modal transport

➤ **eHealth**

- Supply chain from Bar Code to RFIDs
- Health Cards (also contact-less)

➤ **eBusiness, eCommerce**

➤ **eGovernment**

➤ **Civil protection**



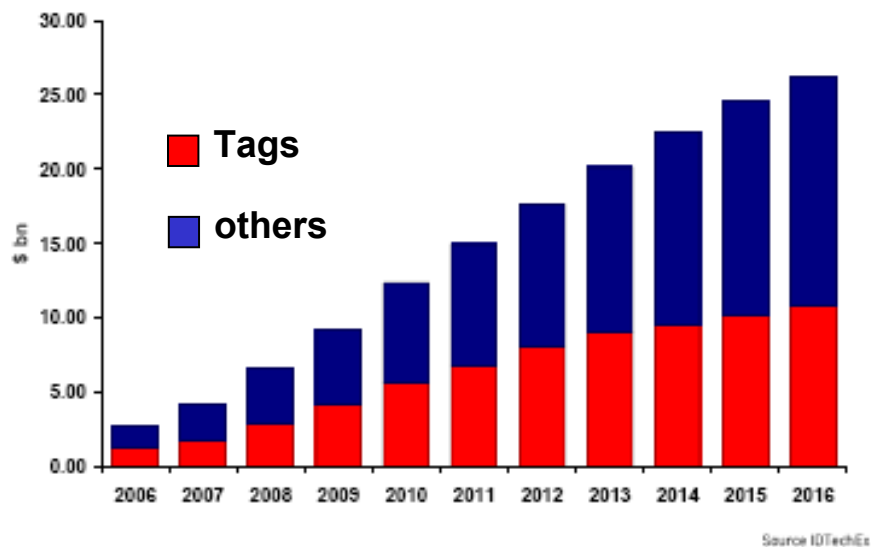
Freight



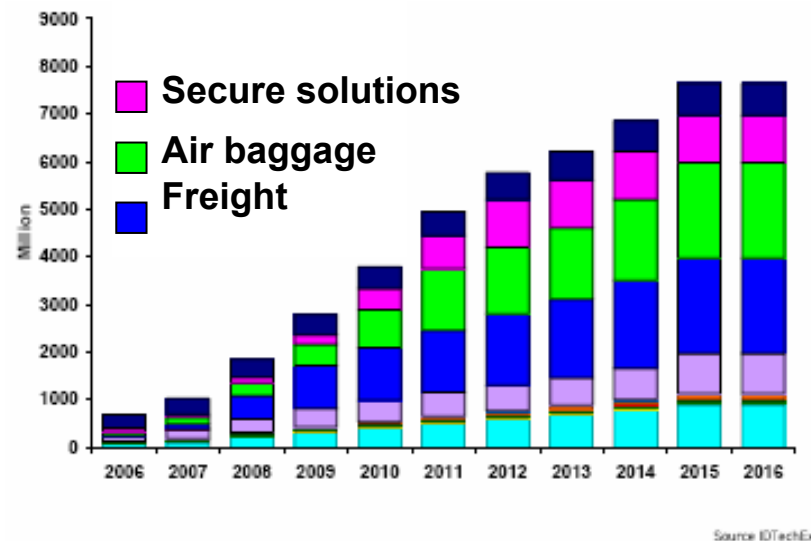
medical

Expanding markets

Market estimations for a very broad enabling technology, such as RFID are difficult and not very reliable, a solid growth over the coming 10 years is very likely.



Total market turnover (bn US \$)



Sector specific market turnover (mil. US \$)

Challenges and opportunities for standardization

- ❑ The Internet of Things needs the ICT experts from a wide range of partners
 - Multicultural sectors concerning standardization & regulation
 - Multidisciplinary participation, including non-technical experts
 - Industry experts from different sectors
 - Manufactures, operators, service providers
 - NGOs, e.g. users, consumers, environmentalists, researchers
 - Authorities
- ❑ The Internet of Things is in a multi-vendor and multi-user environment requiring interoperability
- ❑ Standardization provides the platform for creating end-to-end solutions including networking
- ❑ Standardization in an open and transparent way is prerequisite for market-acceptance and global application

Compatibility and interoperability

- ☐ **Compatibility addresses the co-existence of different solutions in the same location**
 - **Avoid interference; consider emission and immunity in EMC**
- ☐ **Interoperability is the working together**
- ☐ **Compatibility is a “must”**
- ☐ **Interoperability is a “must”**
- ☐ **Consequently,**



Standardization is the key to future RFID business

ETSI and the Internet of Things standardization

☐ Long-term experience

- From Telecommunications to ICT
- From authorities-driven to industry-driven standardization

☐ Geographical aspects

- From European standardization to Europe-based global standardization
- Global and inter-regional co-operations

☐ Participation aspects

- International direct membership
- Members from ICT and adjacent industry sectors, e.g. automotive and aeronautical sector
- Big and small members (SMEs), users and consumers
- Authorities

ETSI and the Internet of Things standardization

- ❑ **Leading IPR policy**
 - **The principle of FRAND**

- ❑ **Complies with WTO TBT agreement's "Code of Good Practice for the Preparation, Adoption and Application of Standards"**

- ❑ **Professional standards-making**
 - **Permanent technical experts' support**
 - **Use of Formal Description Techniques (FDT)**
 - **Standards validation techniques**
 - **Use of Specialist Task Forces (STF) i.e. Projects Teams**
 - **Interoperability test events (Plugtests™)**

ETSI and the Internet of Things standardization

Conclusion

ETSI is the place to meet your standardization requirements

Examples for current related standardization activities

- **RFIDs,**
- **Smart Cards,**
- **Implantable medical devices,**
- **Security**
- **Short Range Communications for ITS**



Thank you for your attention

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