



***The Internet of Things – when your
fridge orders your groceries***

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How It All Got Started

- ❑ Kevin Ashton, P & G, 1998
- ❑ EPC Executive Symposium, 2003
- ❑ ITU Report, 2005
- ❑ EC Communication on RFID, 2007
- ❑ EU Presidency Conferences
 - Berlin (DE) and Lisbon (PT), 2007
 - Nice (FR), 2008
- ❑ Telecom Council Conclusions on Future Networks and the Internet, 2008



What Are “Things”?

- ❑ Static information appliances: computers – fixed, portable, mobile; servers, etc.
- ❑ Mobile information appliances: cell phones, digital cameras, PDAs, scanners, Web Tablets, pocket PCs, games, iPods, talking books, DVD players, mobile devices that use services such as GPS, digital maps and IVR, etc.
- ❑ Mobile devices: vehicle cargo containers, tankers, supply chain assets (stock-keeping-units – SKUs), etc.
- ❑ Static devices: medical devices, HVAC (heating, ventilation, air-conditioning systems for climate control in buildings), industrial machinery, distributed generation, etc.
- ❑ Controllers: industrial controllers, appliance controllers, etc.
- ❑ Smart sensors: accelerometers, pressure gauges, flow/position/speed/temperature biosensors, etc.;
- ❑ Microprocessors and microcontrollers: 8-, 16-, 32-, 64-bit chips, etc.
- ❑ Internet of Devices (M2M)
- ❑ Internet of Things
 - ❑ 6,000-7,000 objects surrounding each of us in our daily life!

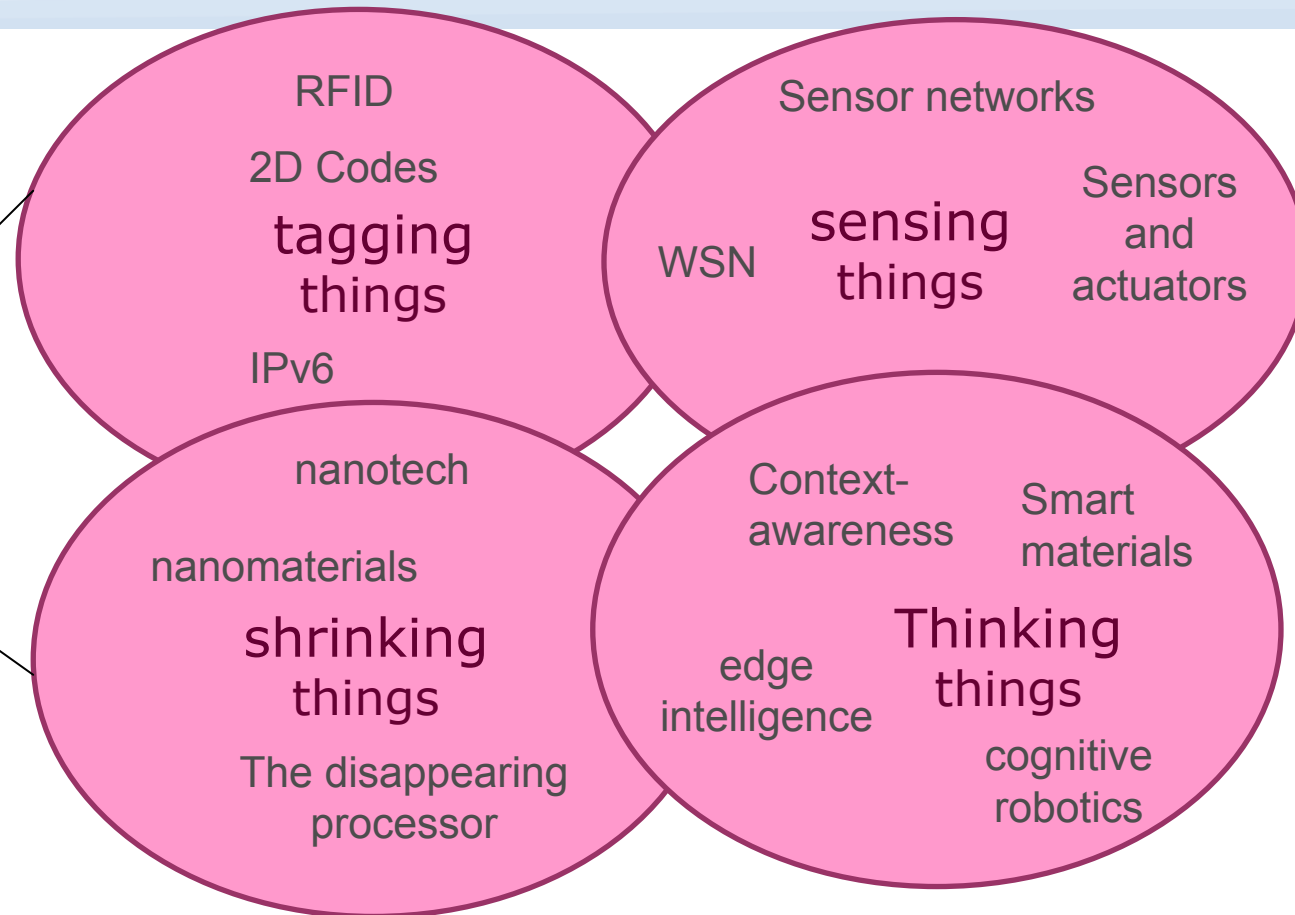


Internet of Things: Hip or Hype?

- ❑ September 2008
 - IPSO Alliance
 - Vinton Cerf
- ❑ November 2008:
 - U.S. National Intelligence Council
- ❑ 27 November 2008
 - Telecom Council Conclusions
- ❑ December 2008
 - IoT in TIME's 50 Best Inventions
 - IoT in Ron Callari's Top 10 Inventions



Technological vision and ITU 2005 report on “Internet of Things”



A Few First Instances of the Internet of Things

- RFID
 - Nabaztag
- NFC
 - tikitag
- ZigBee
 - Tendril
- Bluetooth
 - CatchNet



The Enabling Technologies

- ❑ “Thing-to-person” and “thing-to-thing” communications
- ❑ A network of interconnected objects
 - The issue of capacity (IPv4 → IPv6)
- ❑ Specific IoT technologies and synergistic technologies
- ❑ The European approach
- ❑ IoT development will build upon a variety of technologies
 - The issue of interoperability



The Applications of the Internet of Things

- Things on the move
 - Retail, logistics, pharmaceutical, food
- Ubiquitous intelligent devices
 - Smart clothes, smart books, intelligent buildings, intelligent cars,...
- Ambient and assisted living
 - Health, intelligent home, transportation,...



The Role of the European Commission

- ❑ 'Big Bang' Workshop
 - From RFID to the Internet of Things, 6-7 March 2006
- ❑ Staff Working Paper
 - Public consultation, Sep-Nov 2008
- ❑ Communication on Future Networks and the Internet (COM(2008) 594 final)
- ❑ Future Internet initiative
 - From Bled (SI) to Madrid (ES) to Prague (CZ)
 - Future Internet Assembly
- ❑ Clustering of research work
 - CERP-IOT: <http://www.rfid-in-action.eu/cerp>
- ❑ International dialogue
 - FP7-ICT projects CASAGRAS, GRIFS
- ❑ Contacts with industrial associations
 - EPoSS European Technology Platform,...



Main Policy Challenges

- ❑ **Security and confidentiality**
- ❑ **Privacy and data protection**
- ❑ **Management of critical global resources**
- ❑ **Naming and meaning on digital networks**
- ❑ **Standards-setting and interoperability**
 - ❑ Harmonisation is needed to ensure smooth development and widespread adoption
 - ❑ Spectrum, communication protocols and tag formats
- ❑ **Social and human impacts**
 - ❑ Better personal safety, more efficient care of human health
 - ❑ Better environmental protection
 - ❑ Internet of Things should support individuality and self-expression, not create a (perceived) societal/individual surveillance
 - ❑ Impact of technology on human relationships and intimacy



Interested in EC Activities? Policy & Research

- 2009-2010 FP7-ICT Work Programme
 - Objective ICT-2009.1.3.a: “Architectures and technologies for an Internet of Things”

- Competitiveness and Innovation Programme (CIP) – the “ICT PSP” part has a stream of RFID-related activities:
 - 2008: RFID Thematic Network
 - 2009-2011: pilot projects

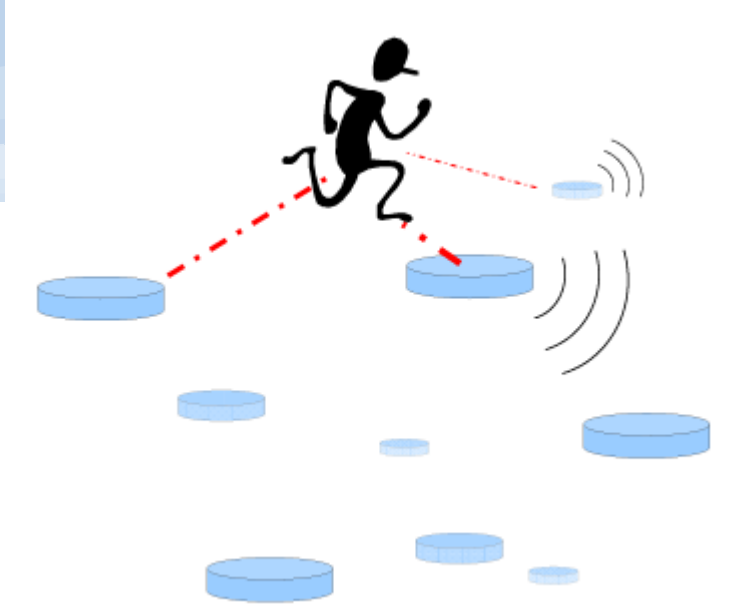
ec.europa.eu/information_society/activities/ict_psp



Further Information & Upcoming Events

- ❑ RFID / Internet of Things ... activities of the European Commission
 - Policy → ec.europa.eu/information_society/policy/rfid
 - Research → cordis.europa.eu/fp7/ict/enet
- ❑ Future of the Internet ... activities of the European Commission
 - Policy → ec.europa.eu/foi
 - Research → cordis.europa.eu/ict/ch1
- ❑ Future of the Internet ... one year after the Bled Declaration, Prague, 11-13 May 2009, www.fi-prague.eu
- ❑ 2nd Transatlantic Symposium
 - On the social benefits of RFID
 - Brussels, 6 May 2009





*THANK
YOU!*

