

The 2nd Annual Internet of Things Europe 2010
A Roadmap for Europe

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How Europe encourages investment in Internet of Things research and innovation

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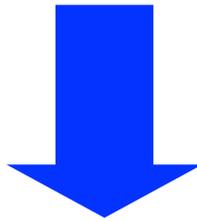


- **Past R&D investment**
 - Cluster of research projects on RFID & IOT
- **Internet of Things (IoT) in the European Economic Recovery Plan**
 - IoT in the Future Internet (FI) PPP
 - IoT in the Future of Manufacturing (FoF) PPP
- **Internet of Things in FP7 and the innovation programme**
 - IoT (Real world Internet) in Fp7
 - IoT applications in smart cities (ICT PSP program)



Past R&D investments

- RFID & IOT selected in Fp6 and Fp7 R&D calls
- Latest call 5 of Fp7
- Policy support programme on RFID pilot projects



- IoT European Research Projects (IERC)
(Former CERP-IOT cluster)



RFID/IoT Cluster projects 2006-2008 (1)

| Project Acronym | Name of Project | coordinator |
|----------------------------|--|---|
| AMI-4-SME | Ambient Intelligence Technology for Systemic Innovation in Manufacturing SMEs | Harald Sundmaeker , ATB, Germany |
| ASPIRE | Advanced Sensors and lightweight Programmable middleware for Innovative Rfid Enterprise applications | Prof.Dr. Neeli R.Prasad , CTIF Aalborg, Denmark |
| BRIDGE | Building Radio frequency Identification solutions for the Global Environment | Henri Barthel , GS1 |
| CASAGRAS | Coordination and Support Action (CSA) for Global RFID-related Activities and Standardisation | Ian Smith , AIM UK |
| CASCADAS | Component-ware for Autonomic Situation-aware Communications, and Dynamically Adaptable Services | Antonio Manzalini , Telecom Italia - Future Centre |
| CE-RFID | Coordinating European Efforts for Promoting the European RFID Value Chain | Dr. Gerd Wolfram , METRO Group, Germany |
| CoBIs | Collaborative Business Items | Stephan Haller , SAP, Switzerland |
| CONFIDENCE | Ubiquitous Care System to Support Independent Living | Igone Velez , Centro de Estudios e Investigaciones Técnicas de Gipuzkoa (CEIT), Spain |



RFID/IoT Cluster projects 2006-2008 (2)

| Project Acronym | Name of Project | coordinator |
|--------------------------------------|--|--|
| CuteLoop | Customer in the Loop: Using Networked Devices enabled Intelligence for Proactive Customers Integration as Drivers of Integrated Enterprise | Harald Sundmaeker , ATB Bremen, Germany |
| ETP EPoSS | European Technology Platform on Smart Systems Integration | Alessandro Bassi , Hitachi Europe |
| DACAR | Data Capture and Auto Identification Reference Project | Dr. Christoph Thuemmler , Chelsea and Westminster NHS Foundation Trust, London |
| DiYSE (EUREKA ITEA2) | DiY Smart Experiences, Creating smart experiences on the Web of Things | Marc Roelands , Bell Labs, Alcatel-Lucent, Belgium |
| Dynamite | Dynamic Decisions in Maintenance | Kenneth Holmberg , VTT, Finland |
| EU-IFM | Interoperable Fare Management Project | John Verity , ITSO Limited |
| EURIDICE | European Inter-Disciplinary Research on Intelligent Cargo for Efficient, Safe and Environment-Friendly Logistics | Paolo Paganelli , Insiel, Italy |
| EUWB | Coexisting Short Range Radio by Advanced Ultra-Wideband Radio Technology | Hrjehor MARK Cc euwb@gwtonline.de ,GWT-TUD GmbH |
| FIA/RWI | Future Internet Assembly: Real World Internet | Alex Gluhak , University of Surrey, United Kingdom |



RFID/IoT Cluster projects 2006-2008 (3)

| Project Acronym | Name of Project | coordinator |
|----------------------------------|---|--|
| GRIFS | Global RFID Interoperability Forum for Standards | Henri Barthel , GS1, Belgium |
| HYDRA | Heterogeneous physical devices in a distributed architecture | Markus Eisenhauer , Fraunhofer FIT |
| IMS2020 | Intelligent Manufacturing System 2020 | Dr. Dimitris Kiritsis , EPFL, Lausanne |
| INDISPUTABLE KEY | Intelligent distributed process utilization and blazing environmental key | Richard Uusijärvi , SP, Sweden |
| iSURF | An Interoperability Service Utility for Collaborative Supply Chain Planning across Multiple Domains Supported by RFID Devices | Asuman Dogac , METU, Turkey |
| LEAPFROG | Leadership for European Apparel Production From Research along Original Guidelines | Dieter Stellmach , euratex, Belgium |
| PEARS Feasibility | Privacy and Security Ensuring Affordable RFID System: Technical and Commercial Feasibility | Humberto Moran , Friendly Technologies |
| PrimeLife | Bringing sustainable privacy and identity management to future networks and services | Dieter Sommer , IBM Zurich, Sandra Steinbrecher, Karel Wouters |



RFID/IoT Cluster projects 2006-2008 (4)

| Project Acronym | Name of Project | coordinator |
|----------------------------------|--|--|
| PRIME | Privacy and Identity Management for Europe | Marit Hansen , ULD,Germany |
| PROMISE | Product orientated manufacturing systems including RFID technology | Dr. Dimitris Kiritsis , EPFL, Lausanne |
| RACE networkRFID | ICT PSP European RFID Thematic Network (Call2) : Raising Awareness and Competitiveness on RFID in Europe | Philippe Rohou , ERCIM, France |
| SMART | Intelligent Integration of Supply Chain Processes and Consumer Services based on Unique Product Identification in a Networked Business Environment | Dr. Antonis Ramfos , Intrasoft, Belgium Dr. Katerina Pramataris , Athens University |
| SMMART | System for Mobile Maintenance Accessible in Real Time | Jean-Louis Boucon , TURBOMECA, France |
| StoLPaN | Store Logistics and Payment with NFC | András Vilmos , Motorola, Hungary |
| SToP | Stop tampering of products | Harald Vogt , SAP, Germany |
| TraSer | Identity-based Tracking and Web-Services for SMEs | Zsolt Kemeny , SZTAKI,Hungary |
| WALTER | Wireless Alliances for Testing, Experiment and Research | Franck Le Gall , Inno |



IoT Cluster projects 2009 (Fp7 call 5)

FP7 Call5 Project Acronym

Name of Project

coordinator

[CASAGRAS2](#)

Coordination and Support Action for Global RFID-related Activities and Standardisation - 2

[Ian Smith](#) , AIM UK

IoT-i

Internet Of Things Initiative

[Prof. Rahim Tafazolli](#) and
[F. Carrez](#) ,University Of Surrey

IoT-A

Internet of Things Architecture

[Sebastian LANGE](#) ,VDI/VDE-IT

INTREPID

An Interoperability platform for a Real-world populated Internet of Things domain

[Dr. Markus Eisenhauer](#) ,Fraunhofer FIT

ELLIOT

Experiential Living Labs for the Internet Of Things

[Gabriella Monteleone](#) ,TXT Polymedia s.p.a.

SPRINT

Software Platform For Integration Of Engineering And Things

[Andreas Keis](#) ,EADS

NEFFICS

Networked Enterprise transformation and resource management in Future internet enabled Innovation CloudS

Arne J. Berre, SINTEF

IoT@Work

Internet of Things at Work

[Amine M. Houyou](#) , Siemens AG



European Commission
Information Society and Media

More on IoT projects

Vision and Challenges for Realising the Internet of Things

March 2010



Edited by
Harald Sundmaeker
Patrick Guillemin
Peter Friess
Sylvie Woelfflé

Reference:

<http://www.rfid-in-action.eu/cerp>



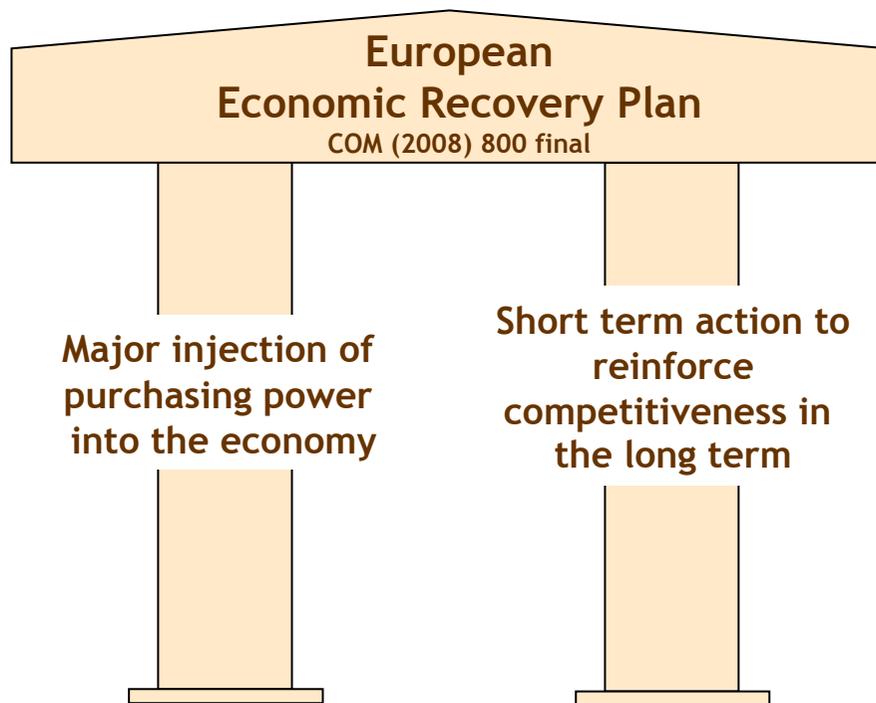
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- **Internet of Things (IoT) in the European Economic Recovery Plan**
 - IoT in the Future Internet (FI) PPP
 - IoT in the Future of Manufacturing (FoF) PPP



Internet of Things (IoT) in the European Economic Recovery Plan



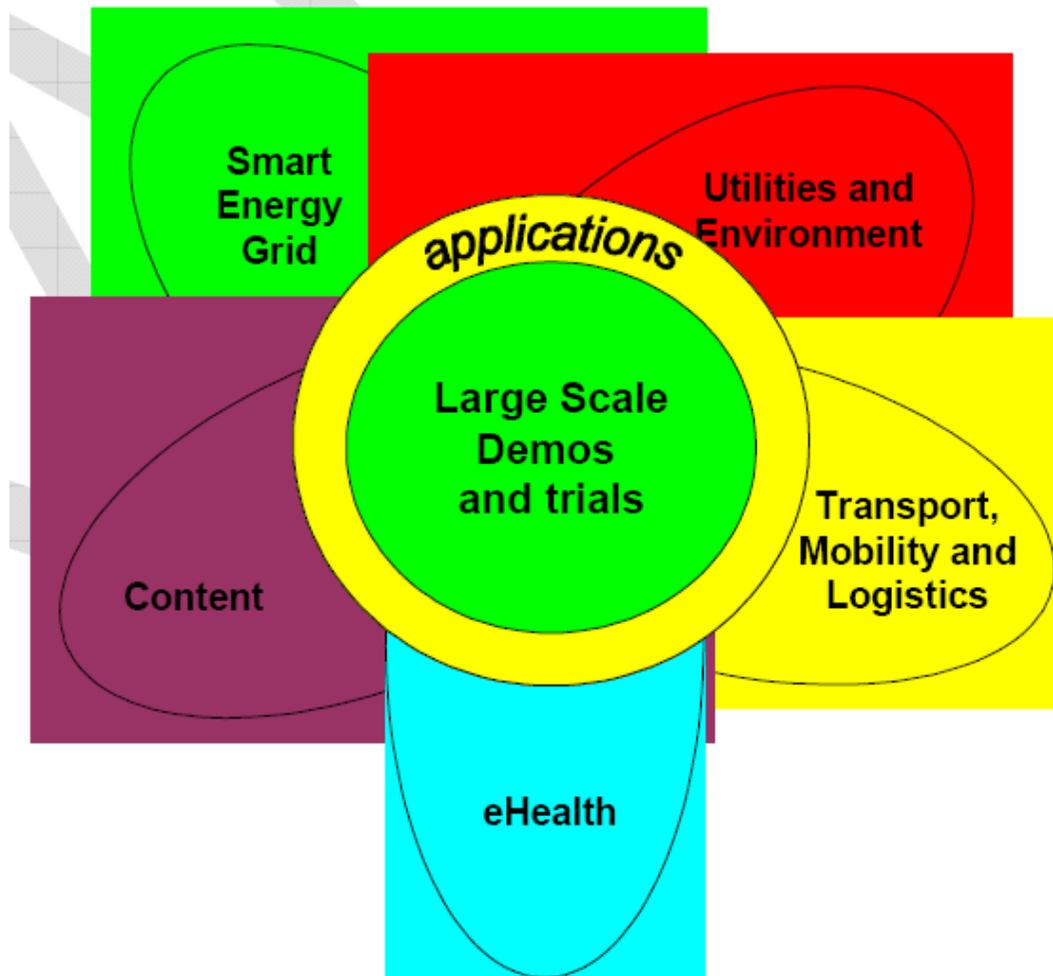
AIMS:

- Stimulate demand, boost consumer confidence
- Maintain jobs
- Increase competitiveness
- Speed up shift towards low carbon economy

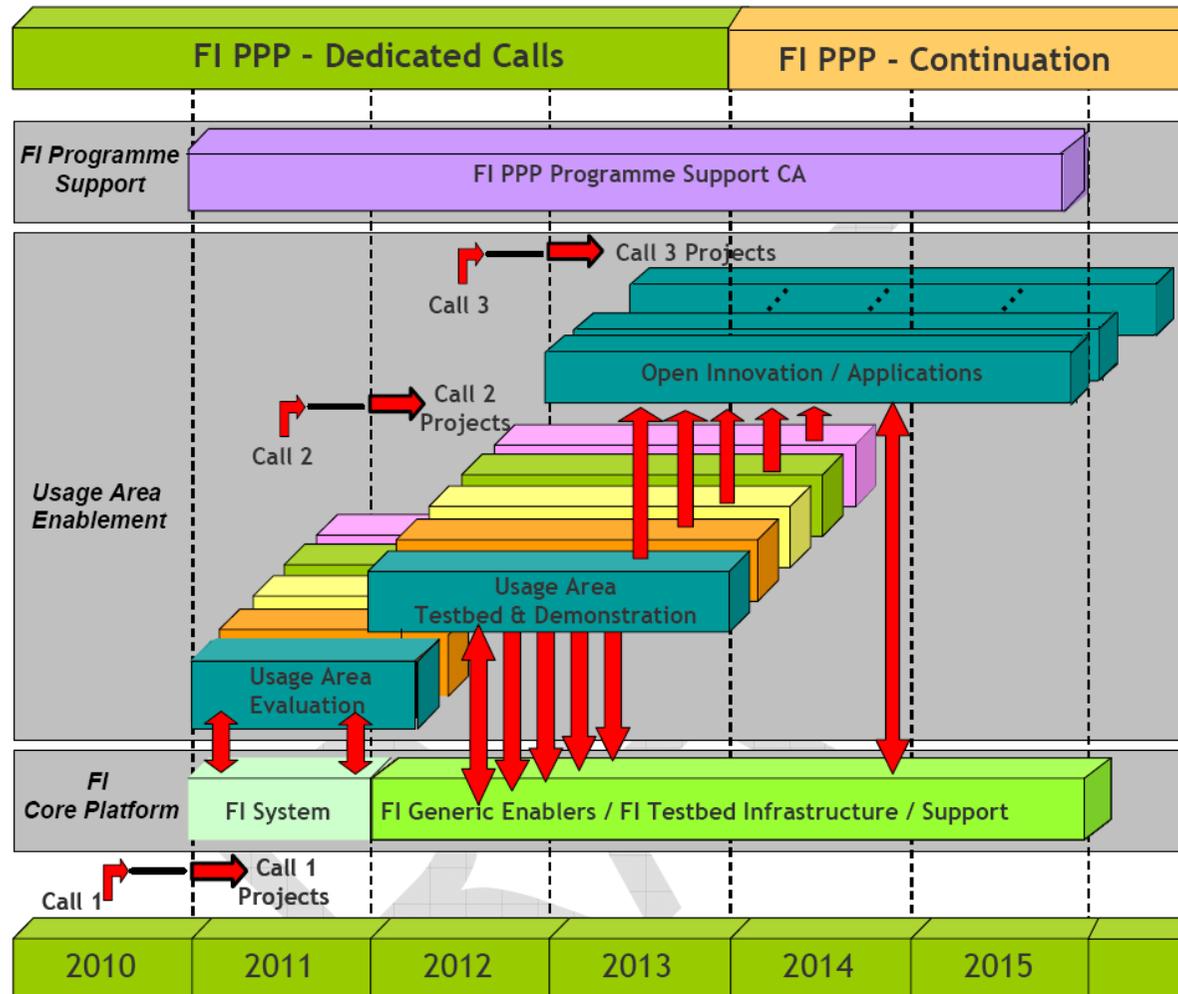


The Internet of Things in the Future Internet PPP

What ?



Future Internet PPP

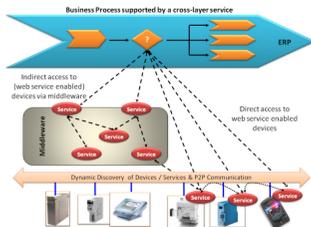


Future Internet PPP

Work programme 2011-2012

| Project | Number | Phase | Budget |
|-------------------------------------|-----------------------|-------|--------------------|
| Core Platform | 1 IP | 1+2 | 40 M€, 30% open |
| Use Cases - 1 st part | Up to 8 IP @ 5M€ | 1 | 40 M€ |
| Use Cases - 2 nd part | Up to 5 IP @ 13 M€ | 2 | 65 M€, 10% open |
| Capacity building support | 1 CSA @ 2 M€ | 1+2 | 3 M€ |
| Infrastructure support | 1 IP | 2 | 12 M€ |
| Programme management and support | 1 SA | 1+2 | 10 M€ |
| TOTAL | | | 170 M€ |

Vision: ICT is key to Factories of the Future (FoF PPP)

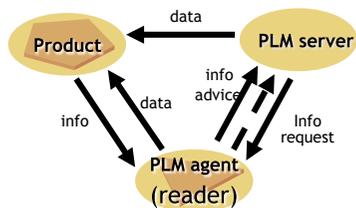


Smart Factories:

- Goal:
More automation, better control & optimisation of factory processes
- Means:
Software, lasers & intelligent devices embedded in machines & factory infrastructure

- Less waste
- Less energy use
- Faster time-to-market
- Better quality

Sensors,
Tags



Virtual Factories:

- Goal:
To manage supply chains; to create value by integrating products & services
- Means:
Software to holistically interconnect & manage distributed factory assets; new business models & value propositions

- High-value products
- Keep jobs in Europe
- Process transparency
- IPR security
- Lower CO₂ footprint



Digital Factories:

- Goal:
To “see” the product before it is produced
- Means:
Software for the digital representation & test of products & processes prior to their manufacture & use

- Reduce design errors
- Better & efficient products
- Less waste + rework
- Faster time-to-market



Virtual Factories

Where do we stand?

- Manufacturing undergoing radical change:
From the simple provision of products towards a provision of product-enabled functionality
- Key industry players:
SAP, Alcatel-Lucent, ATOS Origin, Sigular Logic, Telefonica, France Telecom, T-Systems, ...
- Intelligent products offer opportunities for value creation & jobs
- Fragmented markets

Where do we want to go & why?

- End-to-end integrated ICT for distributed enterprise/ factory productivity
- Better management efficiency & environmental sustainability of supply chains
- Improve product/service integration: New business models; value proposition
- Carbon-tracing of products from “cradle-to-grave”:
Energy-transparent product lifecycle



Virtual Factories

Target outcomes

- Distributed, adaptive, interoperable virtual enterprise environments
 - Integration of novel management methods & ICT to help virtual factories/enterprises move beyond existing operational capability
- Real-time management of volatile manufacturing assets
 - Manage inventories, stakeholder relationships, product configurations, knowledge & skills across the value chain
- Tools & architectures for a dynamic composition of services
 - Sustainable lifecycle management of product-based services
- Internet-based tools for networked business
 - New manufacturing business models & practices; enhancing & sustaining product-based services across the value chain

Tentative planning: Open call 30/06/2010 Close call: 2/12/2010

Call FoF/2010

45 M€ IPs/STREPs



- **Internet of Things in FP7**
 - Call7: IoT (Real world Internet) in Fp7
- **IoT in the innovation (ICT PSP) programme**
 - IoT applications in smart cities (ICT PSP program)



Real world Internet in Fp7

- An open networked architecture for Internet-connected objects
- Adaptive software supporting data acquisition from a large number of sensors
- Coordination and Support actions:
 - Roadmaps on research needs,
 - International research agendas

Tentative planning: Open call 28/09/2010 Close call: 19/01/2011

Draft WP 2011-2012 ICT Call 7 - 30 m€



Internet of Things applications in Smart cities



July 12, 2007 A United Nations report coinciding with World Population Day revealed that for the first time in history, more people now live in cities than rural areas...

<http://www.kingabdullahcity.com/en/CityInProgress/CityPhases.html>



<http://www.songdo.com/>



Features and elements of a “Smart City”

- **Instrumented**

- Smart meters, distribution networks
- Building management systems
- Infrastructure sensors
- Traffic and transit sensors
- Public safety systems



- **Interconnected**

- Networked environments - fibre, wireless, buildings, open spaces
- Networked sensors, sensor platforms, concentrators
- Enterprise Service Bus (ESB) - a platform to realise a service-oriented enterprise architecture

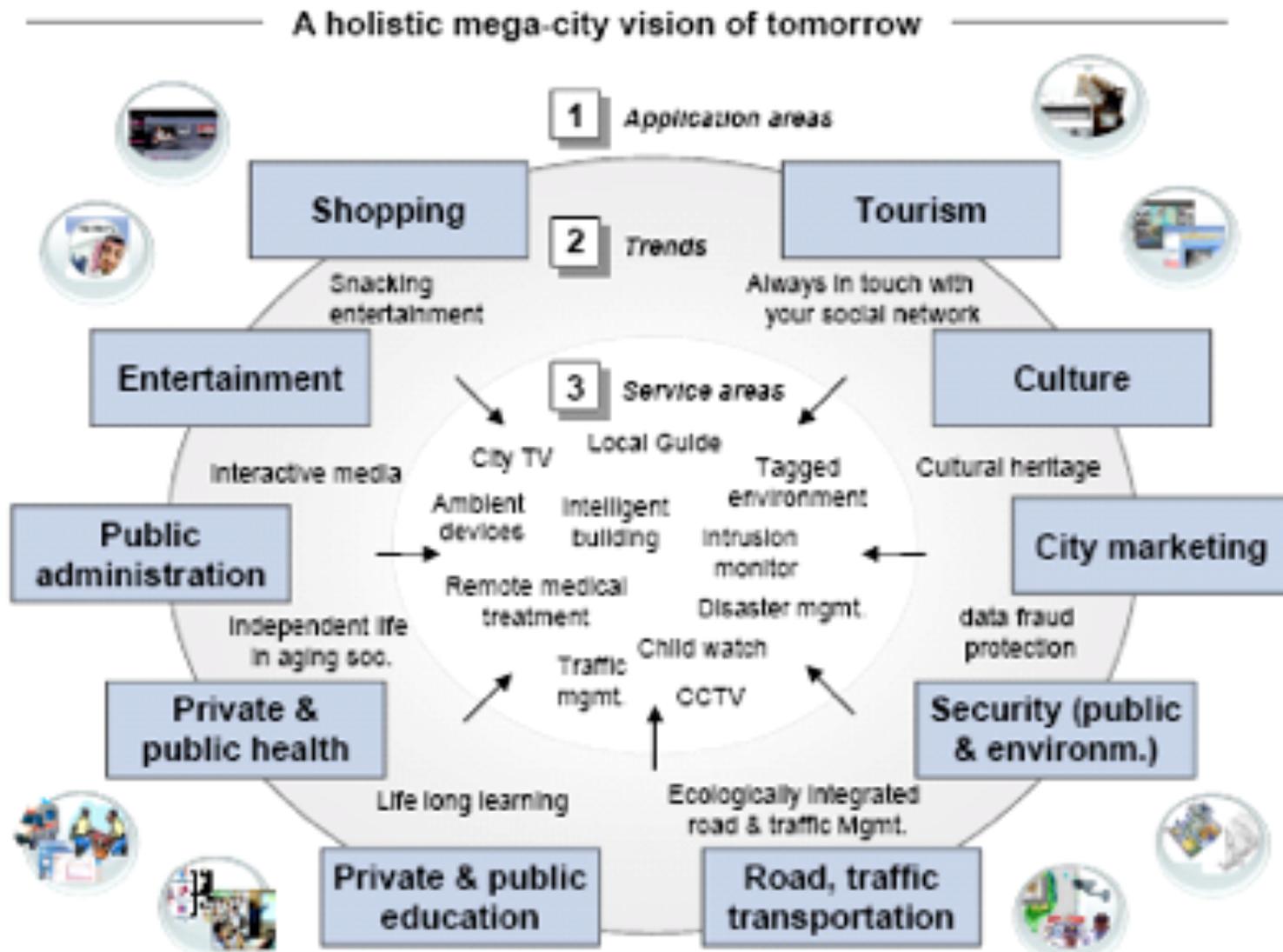
- **Intelligent**

- Lots of data - how to get value from it?
- Real-time analysis of sensor data streams
- “Enterprise-view” visibility of the city in action
- Behavioural modelling of physical, natural and people systems,...

Source: IBM at Global Forum 2009, Bucharest, RO



Smart City: A System of Systems



Technological components for Internet-enabled services in Smart Cities

Networked RFID tags and elements

- Passive and active tags partially interconnected
- Simple mobile devices

Sensor Networks

- Interconnected simple and multimodal sensors and actuators
- Partially build-in intelligence
- Complex mobile devices

Internet of Things

- Diverse identification technologies (Sensors, Biometrics, etc.)
- Intelligent Objects
- Distributed Intelligent Systems
- Sophisticated devices, clothes and materials



Characteristics of the pilots

- Budget for one pilot is around 3M€ EU funding
- Duration 2 to 3 years
- Integral part of local city ecosystem
- Networked across Europe
- Assess at early stage socio-economic implications of pilot and its business models.
- Suggested key innovation areas:
 - Smart living – codesign of smart homes and living spaces
 - Green digital agenda – supporting a low carbon economy
 - Open platform with levels of security and privacy (tourists, residents, public administration)



More information

http://ec.europa.eu/information_society/policy/rfid/index_en.htm

http://cordis.europa.eu/fp7/ict/enet/rfid-iot_en.html

http://ec.europa.eu/information_society/activities/ict_psp/index_en.htm

Contact: florent.frederix@ec.europa.eu

