

# WP 09-10: Internet of Things for Enterprise Environments

Work programme Objective 1.3

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# Background

- Policy
  - Communication COM(2007) 96
  - Recommendation on Privacy, Data Protection and Information Security Aspects
- RTD
  - ICT in FP7 → from RFID to the “Internet of Things”
  - CERP Cluster
  - European technology platform (ETP): EPoSS
- Innovation
  - ICT Policy Support Programme (PSP) in CIP
- Standardisation
  - Cooperation with standardisation bodies
    - ETSI, CEN/CENELEC, EPCglobal...

# Internet of Things in Fp7

- Framework 7 work programme 2008 - 2009

- *Challenge 1: Pervasive and Trustworthy Network and Service Infrastructures*
  - *Objective 1.3: Internet of Things and Enterprise environments.*
- ( IP/STREP EUR 35 M and CSA EUR 2 M Timing: ICT Call 5 )*

# Challenge 1, Future Internet: Why?

- ✓ The Internet is going **mobile**
- ✓ The Internet is going (ultra) broadband
- ✓ Novel Media classes of applications be supported (e.g. 3D)
- ✓ Device/object/machine connectivity - towards an **Internet of Things**
- ✓ Huge number of on-line – user controlled - dynamic services open the door to an **Internet of Services**
- ✓ Security, Trust, Identity raising novel classes of issues
- ✓ Internet manageability and scalability are limited

**“As novel and unforeseen usages are pushing the original Internet architecture to its limits, a fresh technological and architectural approach is needed.”**

# Challenge 1, Future Internet: What?

## Challenge

- Making the Internet
  - mobile/broadband
  - manageable/scalable/QoS/QoE
  - secure, and trustworthy
  - 3D/Media enabled
- Virtualised resource, ad-hoc application design
- Enabling novel applications (RFID/sensor based)
- Social Internet, Net is the database, search
- Understand Internet “behaviours” (federated testbeds)
- Standards, International Co-operation...

## Approach

- Developing the technological and architectural foundations of the FI
- Further building the Future Internet Assembly
- Support to reinforced co-operation with EU national initiatives
- International co-operation with regions having FI initiatives
- Leveraging EU assets, industrial drive
- Standards

# Challenge 1, Future Internet: How?

Call 4: 19 Nov – 1 April 2009 = 190 MEuro

Call 5: 31 July – 3 Nov 2009 = 367 MEuro

Challenge 1 - "Pervasive and Trustworthy Network and Service Infrastructures"

THE FUTURE INTERNET

Call 4  
80 MEuro

Call 5  
110 MEuro

Call 5  
90 MEuro

1.4 Trustworthy ICT

1.5 Networked Media & 3D Internet

1.3 Internet of Things

1.2 Internet of Services & SW

1.1 The Networks of the Future

1.6 Future Internet Experimental Facility

Call 5  
37 MEuro

Call 5  
50 MEuro

Call 4  
110 MEuro

Call 5  
80 MEuro

# Challenge 1 and Future Internet

## NETWORK

## SERVICES

## ENTREPRISE

## MEDIA A/V

Cognitive Radio,  
Spectrum  
Management,  
B3G...

Converged and  
Optical Networks

Future Internet  
Architectures  
and Technologies

### Complementary Issues

Service,  
Software  
Engineering

Future Internet  
Service  
architectures  
and Platforms

Future  
Entreprise

Internet of  
Things

Beyond HDTV  
and e\_Cinema

Content aware  
Nets, Net aware  
Applications

Networked  
Search

3D and Media  
Internet

Experimental Facilities + Experimentally Driven research

Trustworthy Networks + Trustworthy Services

Tools and technologies for Trust

Trust/Security/Dependability

TESTBEDS

# Internet of Things in Framework 7

## Target outcomes

- **Architectures and technologies for an Internet of Things**
- **Future Internet based Enterprise Systems**
- **International co-operation and co-ordination**

# Architectures & technologies for IoT

Funding scheme: IP & STREP

- Open protocols, enabling
  - Novel Internet-based applications,
  - Information at the periphery of the network
  - Aggregation of virtual and physical worlds
  - Event processing of tags, sensors, actuators
  - Object- or location-centric applications
  - Real world, Behavioural/People Business processes.

# Architectures & technologies for IoT

Funding scheme: IP &  
STREP

- Technologies for distributed intelligence
  - Role of the edge of the network
  - Role of the central information system
  - Service discovery systems
  - Scalable, secure, open middleware
  - Interoperability
  - Data ownership and reliability
  - Object life cycle (edge life cycle)

# Architectures & technologies for IoT

- Architectural Models
  - Enabling an open governance scheme
  - Without centralised gatekeeper
  - Without critical business/process functionalities
- Participation of third countries
  - Priority for those with links in the field
    - USA, Japan, South Korea, China, India

Funding scheme: IP & STREP

# Future Internet based Enterprise Systems

Funding scheme: IP &  
STREP

- Software platforms for innovative networked businesses
  - On top of an Internet of Services
  - Increase flexibility of virtual organisations
  - Create capability to aggregate services
  - Collaboration and interoperability
  - Next generation knowledge management
  - Semantically enriched information
  - Include object/sensor information

# International cooperation & coordination

Funding scheme: CSA

- Strategic visions covering IoT
  - Beyond process and analytical approaches
  - Fuzzy logic, decisional of systemic frameworks
  - Research roadmaps
- RFID: Exchange of best practices
  - Field trials or the deployment of pilot projects
  - Collaborative pre-normative research
  - Global standards
  - EU-US Transatlantic lighthouse priority project

# Expected impact in Europe

- Strengthened competitiveness
  - All sectors of economy
  - More automated processes
  - New classes of applications
  - More generic and open architectures
  - Dynamic and composite business models
  - High value added products and services
- Leadership
  - In supply of integrated solutions
  - In exploiting fast development of RFID and smart tags
  - Taking advantage of fusion between real and virtual world

# Wrap up: Internet of Things in Fp7

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# Network and obtain information at the same time!

## Network

- Meet researchers with similar or complementary research interests
- Form project consortia
- Follow-up of the ICT Event in Lyon

## Obtain information

- Around 100 Commission officials present
- Challenges and objectives of the WP
- Instruments, contracts, rules for participation



# Thank you for your attention!

- ❖ Register for ICT Proposers' Day free of charge!

<http://ec.europa.eu/ictproposersday>

- ❖ Information Society and Media:

[http://ec.europa.eu/information\\_society/](http://ec.europa.eu/information_society/)  
<http://cordis.europa.eu/ist>

- ❖ Contact: [INFSO-ICTPROPOSERSDAY@ec.europa.eu](mailto:INFSO-ICTPROPOSERSDAY@ec.europa.eu)  
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