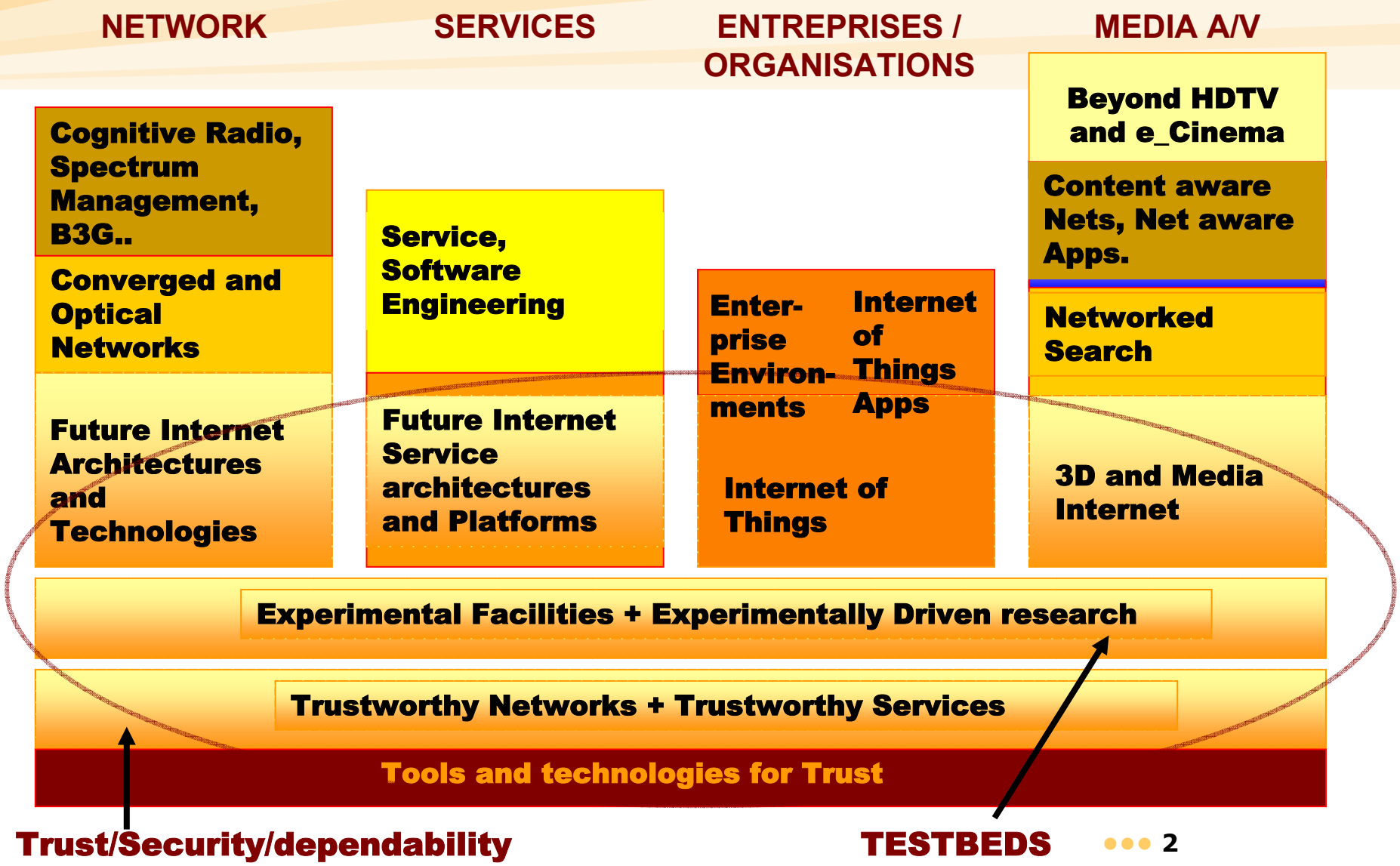
Information Day
ICT WP 09-10 Obj. 1.3
Internet of Things and Enterprise Environments

Alain Jaume, Deputy Head of Unit D4
Peter Friess, Project officer, Head of Cluster
Cristina Martinez, Project officer, Head of Cluster

Challenge 1 and the Future Internet



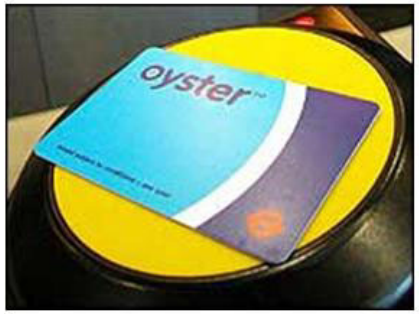
Introducing Objective 1.3: Internet of Things and Enterprise Environments

- **Objective 1.3 in the context of Challenge 1**
  a) Objective's contributions to Future Internet initiative
  b) Applied research in the enterprise dimension:
     - A disruptive call
     - Pave the way towards IoT for business

- **Target outcomes**
  a) Architectures and technologies for an Internet of Things
  b) Future Internet based Enterprise Systems
  c) International co-operation and co-ordination

A) Internet of Things

Tomorrow's ubiquitous world of tags, sensors and smart systems



tikitag

The Internet of Things will only matter in the context of applications

- Identities
- Virtual personalities

- Connect
- Communicate

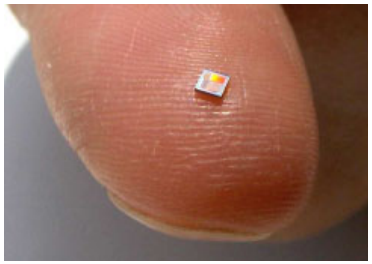
- Social context
- Environmental context
- User context

- Full Product Life cycle Management
- Intelligent transportation
- Intelligent Manufacturing
- Smart buildings and homes
- Public security

- Health and Well-being
- Cyber world applications
- Social networking
- Green-IT / Environment

Key Open Issues of the IoT

- Architecture (edge devices, servers, discovery services, security, privacy etc.)
- Governance, naming, identity, interfaces
- Service openness, interoperability
- Connections of real and virtual world
- Spectrum (HF, UHF, ISM etc?)
- Standards



a) Architectures and technologies for an Internet of Things

Funding scheme: IP & STREP

1. **Architectures and technologies using open protocols, which enable novel Internet-based applications**
   - Aggregation of virtual and physical worlds
   - Event processing of tags, sensors, actuators

2. **Optimised technologies covering distribution of intelligence**
   - Roles of network edges and central information system
   - Interoperability and integration with business platforms and object life cycle data

3. **Architectural models**
   - Enabling an open governance scheme without centralised gatekeeper lock-in for critical business/process functionalities

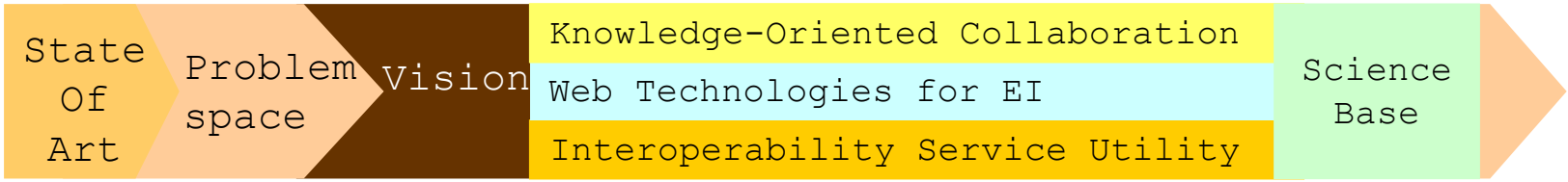
a) Architectures and technologies for an Internet of Things

- **Remarks and clarifications**
  - Targeted is applied research including SW and HW technologies.
  - Proposals must demonstrate a business vision/context and model for the applications.
  - The three areas of target outcomes (i., ii., iii.) can be addressed in common or separately –however, the third area (iii.) is most likely to be dealt with in an Integrated Project.
  - Participation is also possible for third countries with priority for those with links in the field (USA, Japan, South Korea, China, India). Financing is limited to travel costs in the Coordination Actions and for work contribution in exceptional cases.
  - If used, RFID can only be one part of the technological building blocks

b) and Enterprise environments

EI Research Roadmap' strategy for the EU industry

- Characteristics of the EI Research Roadmap v5.0
  - Forward-looking, ambitious, focused, problem-solving and evolving doc (updated in '07-08)
  - Vision, technology trajectories, from research priorities to value
  - Sharing ideas and knowledge, awareness-raising and FP7 input
  - Roadmap is widely applicable beyond the EI cluster
  - EI as a means to achieve innovation, not only to decrease costs
  - The Future Internet platform recognised for its potential



Future research will be based on the FI context

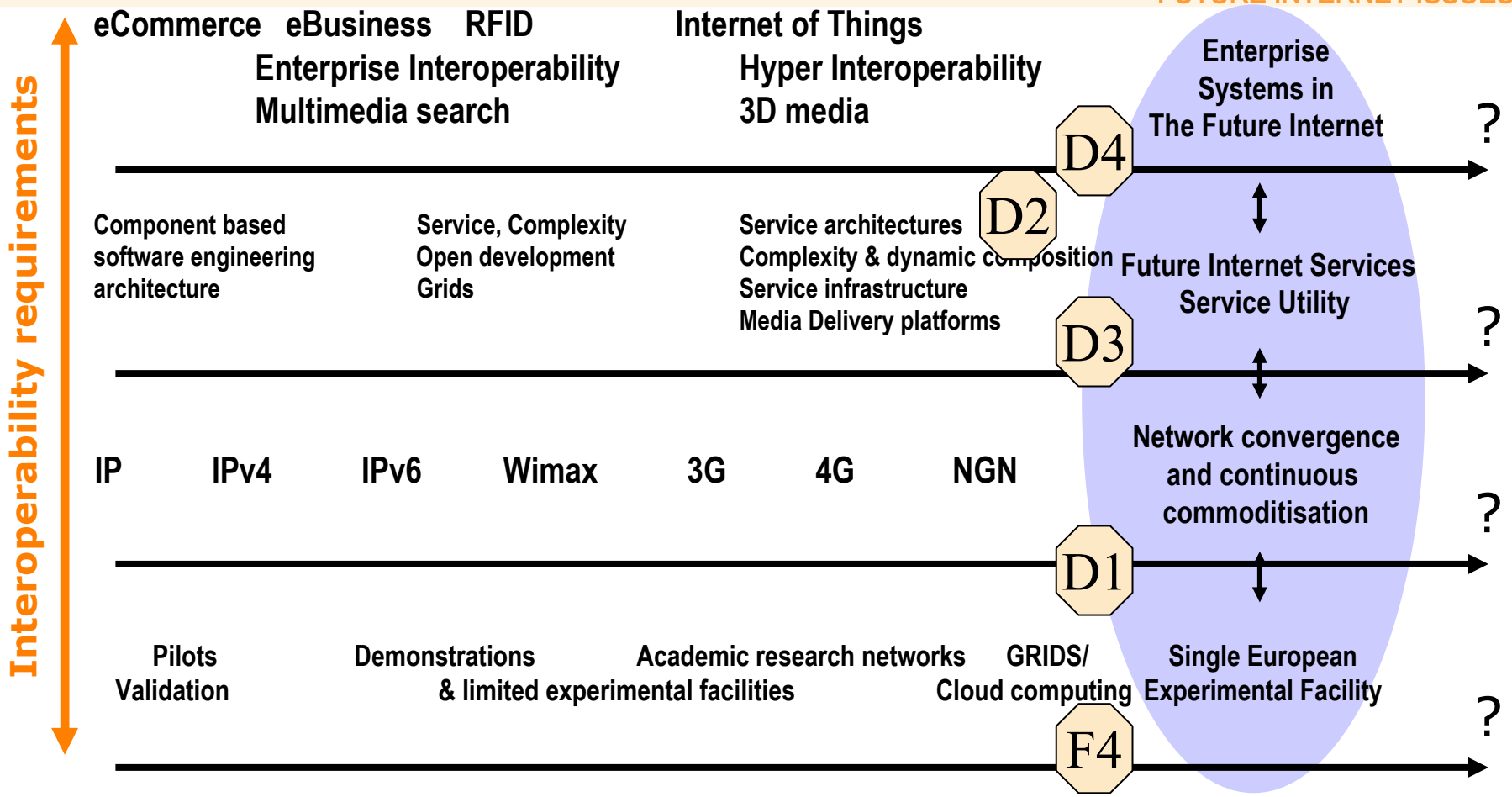
- Continuous Interneting: connected to anyone, anywhere, anytime
- Combination of material and immaterial set of tools
- Increasing demand for more bandwidth, knowledge, services and user empowerment as a commodity
- Diversity of continuously evolving ecosystems of enterprises in the future

->thanks to the new WEB

The (Future) Internet *is* the Enterprise

- A new participative web, hosting a new wave of services, using user-friendly technologies is empowering the enterprise of the future
- For the enterprise, the Internet becomes the platform through which knowledge is dynamically manipulated, experienced in the business context and *re*-presented in a radically different way to create new value
- The Internet blurs the boundaries between the intra and extra *muros* enterprise domain; collaboration becomes rooted in the essence of entrepreneurship
- Web-based applications become as rich as the desktop: we see the emanation of the WYSIWYG enterprise

Vision of the 2015-20 ICT landscape from the enterprise's perspective



Call text

Funding schemes: STREPS and IP

- b) **Future Internet based Enterprise Systems**
  - Software platforms supporting highly innovative networked businesses on top of an Internet of Services.
    - Enabling increased flexibility of the resources managed by virtual organizations
    - facilitating dynamic outsourcing with third parties capability to aggregate services, act as intermediaries for delivery, and provide innovative new channels for consumption.

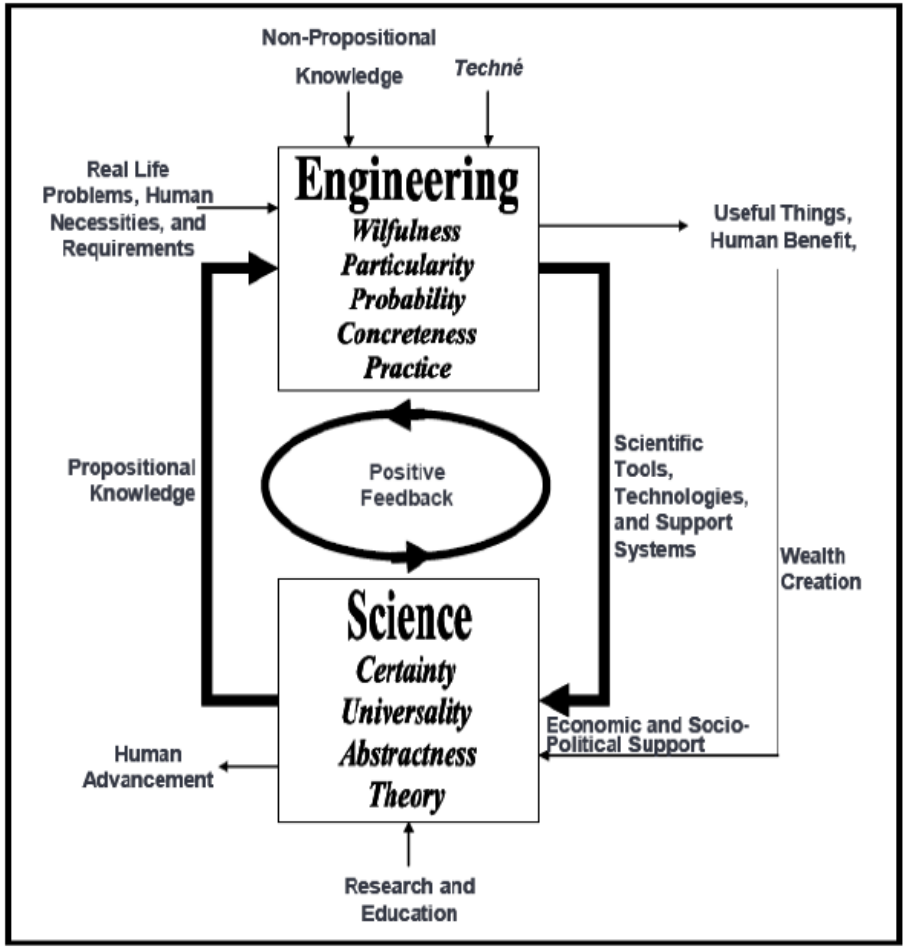
    Key features:
    - Collaboration and interoperability within dynamic ecosystems
    - next generation knowledge management services, making use of semantically enriched information, including object/sensor information

Remarks and clarifications

- Some indicative research issues
  - Opportunity to use Future Internet Technology in Enterprise Environments (impact on EI&EC)
  - System requirements for Enterprise Networking in FI paradigms
  - Software platforms on top of the Internet of Services
  - Shared vision, new perspectives, new value propositions and new ideas for FInES
  - CSA for an EI Science Base would be welcomed
- Remarks
  - Proposals must demonstrate a business vision/context and model for the applications
  - This area of target can be addressed in common or separately with bullet a)
  - System requirements and software platforms is most likely to be dealt with in an Integrated Project.

Why an EI science foundation?

- To avoid past errors or double funding
- To decouple research from technology and develop fundamental knowledge on complex environments integration
- Because EI is not only a technology issue, it contains semantics, organisational and business aspects also
- To leverage rigorous, formalised solutions and apply them to other interoperability contexts
- How to achieve it, if possible? The community needs to debate and coordinate its reflection > CSA?



Source: Pr. Pingaud, Université de TOULOUSE, presentation, A set of open questions for EI as a science

International co-operation and co-ordination

- c) **International co-operation and co-ordination**
  - Strategic visions covering the Internet of Things and/or integrated businesses; research roadmaps, organisation of events.
    - Worldwide cooperation networks on IoT with relevant partners from all over the world
    - Work on EI Science base
    - Clusters support, etc.
  - RFID:
    - Exchange of best practices from pilot projects
    - Organisation of the European follow-up of as part of the 'Lighthouse priority project' to support the established dialogue.

Impact and Funding schemes

- Expected impact
  - Strengthened competitiveness of European businesses in all sectors of the economy
  - European leadership in the supply of integrated business solutions taking advantage of the fusion between the real world and the virtual web-based world
- Funding schemes
  - a), b): IP, STREP; c): CSA
- Indicative budget distribution9
  - IP/STREP: EUR 35 million; the objective is to support at least 2 IPs
  - CSA: EUR 2 million
- Call
  - ICT call 5
    - Tentative date: OJ publication: 30 July 2009, submission deadline: 3 Nov. 2009 17h00

More information and links

- INFSO
  - Information Society and Media:
    - http://ec.europa.eu/information_society/
    - http://cordis.europa.eu/ist

- UNIT D4, FP7 Call 5: Internet of Things and Enterprise Environments
  - Obj. 1.3 Contact: alain.jaume@ec.europa.eu