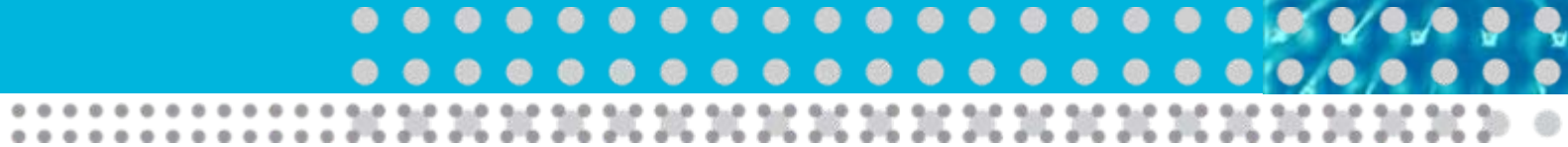
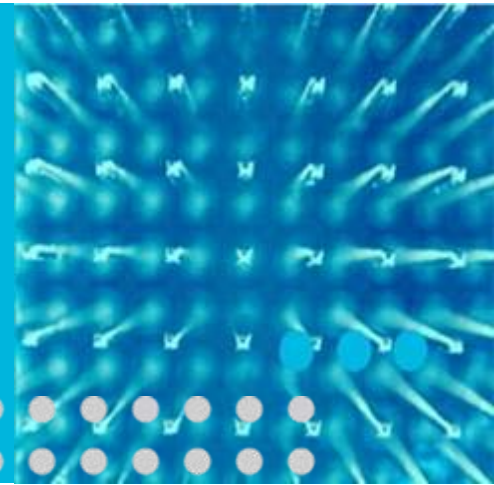


FI PPP

The Role of Experimentation



Dr. Didier Bourse

01.07.09 - FIRE Week - Lulea

Future Internet PPP - Ambitions

- To **secure EU interests** and **establish its role** in the Future Internet domain
- A **multidisciplinary approach**, where **massively distributed services and applications are run over large scale internet infrastructures** is the only means to deal with the **increasing complexity of intertwined application and service requirements**
- **Only strong coordinated and decisive action** can enable the establishment of such a multidisciplinary approach at the EU level
- Form a **Public Private Partnership (PPP)** that will enable **faster progress** and **exploit synergies** in a way that is not possible with current Instruments
 - Target **short-medium terms impacts**
 - **Accelerate industry developments** and **enable the pitch** (and derisking) of specific developments that are today at lower priorities for EU industry
 - Contribute to **close the gap between technology and applications**
 - Contribute to **close the EU innovation and competitiveness gap**
 - **Complement the longer term research** of the FP

Future Internet PPP - Industrial Core Group (CG)



Future Internet PPP - Call For Action (CFA)



Industry calls for a Public Private Partnership on the Future of the Internet - During the conference David Kennedy, Director of Eurescom and the representative of a group of leading European technology companies, presented their **industry call for action**, notably on the establishment of a public private partnership on Future Internet.

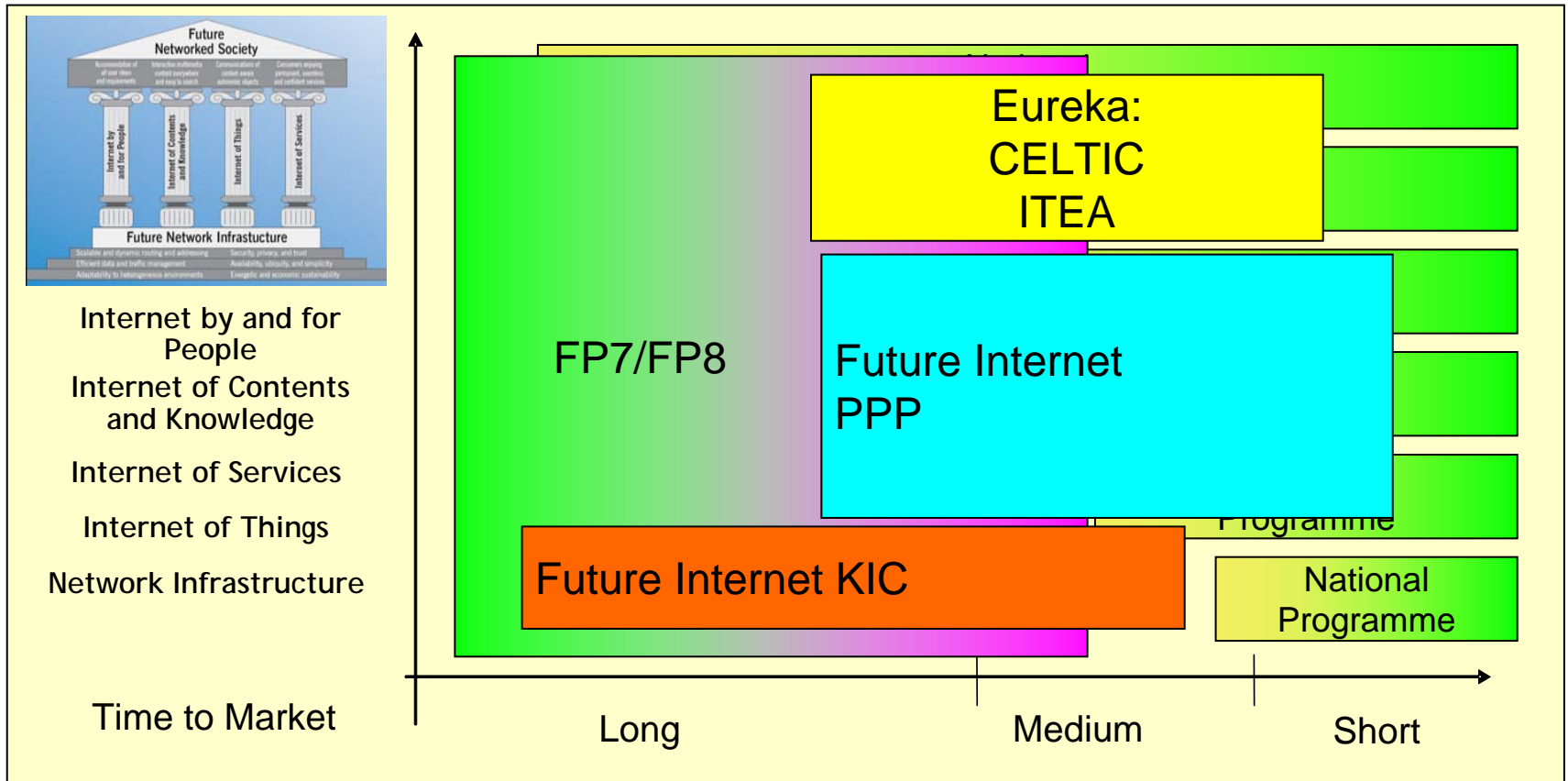
EC FI Newsletter N°6 - 18.06.09

We are proposing the creation of a
large scale coordinated Public-Private Partnership
based on an estimated
overall investment of 1B€ over 5 years
to shape the Future Internet for Europe
and make it
an industrial, economic and societal success.

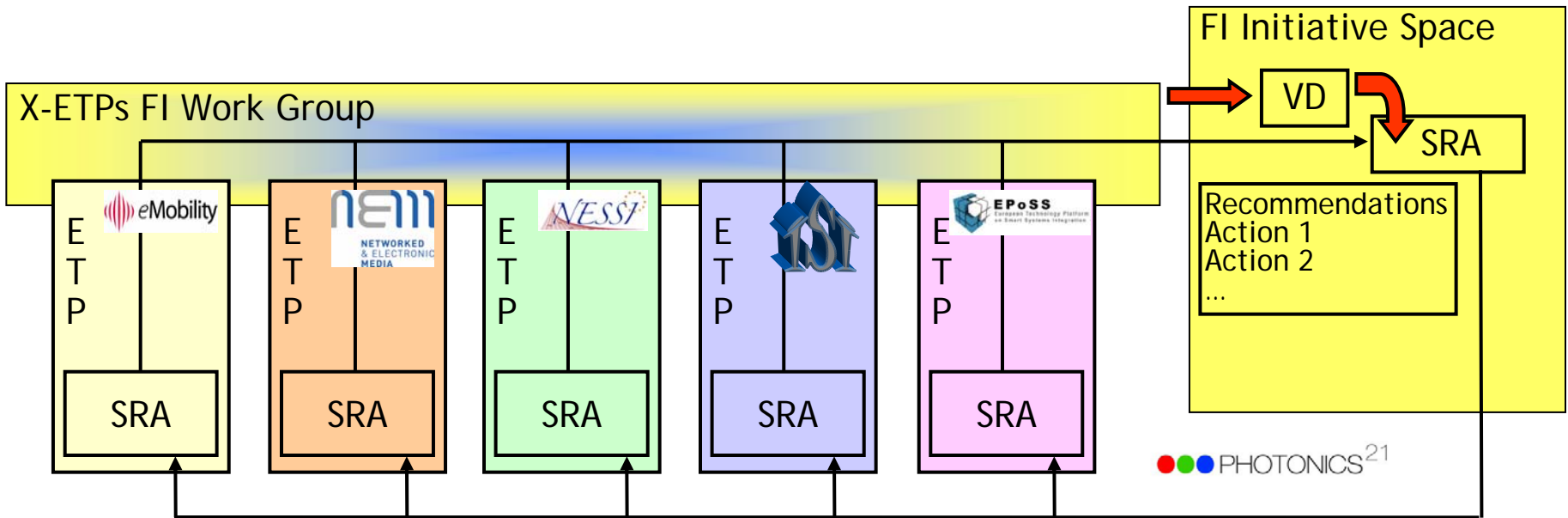
Industry is prepared to contribute up to 50% of this investment

<http://www.future-internet.eu/>

Future Internet PPP - Global Perspective



Future Internet PPP - X-ETPs FI Basis



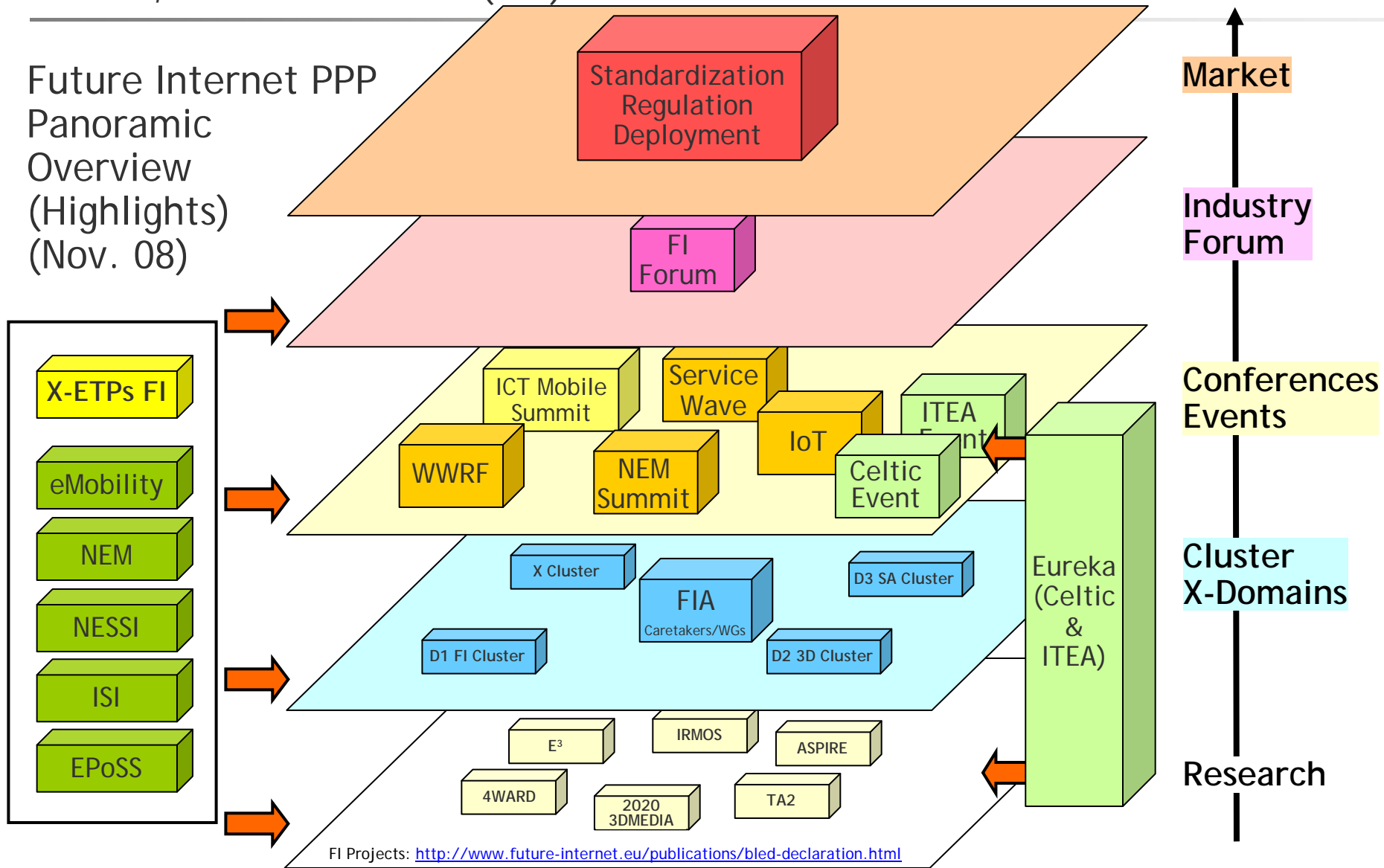
Recommendations

- Identify achievable business models based on the current ecosystem and based on disruptions brought by the Future Internet developments
- Develop a dynamic roadmap for the key research challenges to be tackled, and establish a road map ensuring the take-up of the research results
- Explore different R&D evolutionary and disruptive approaches, covering classical, clean-slate, and experimentally-driven
- Further develop the cross-domain research fertilization covered by the set of projects working together in the Future Internet Assembly
- Provide the financial resources allowing for the strengthening of the industrial/public partnerships in R&D
- Develop appropriate multi-disciplinary teaching and life-long training programs to ensure sustainable knowledge and skills acquisition facilitating innovation
- Develop an integrated and structured approach between National and European R&D programs so as to overcome the current fragmentation of efforts
- Develop and implement the so-called push-pull model: Large investment in R&D accompanied by a solid and homogenous policy of leading edge markets development and public procurements
- Stimulate a pan-European coordinated approach on matters relating to standardization and the single market
- Provide the means to ensure global coordination of concepts and plans for the Future Internet to address industrial perspective
- Raise awareness of all European citizens about the clear and visible benefit of the outcome of the investment in Future Internet development

FI PPP Initiative

Context, Status and Actions (6/9)

Future Internet PPP
Panoramic
Overview
(Highlights)
(Nov. 08)

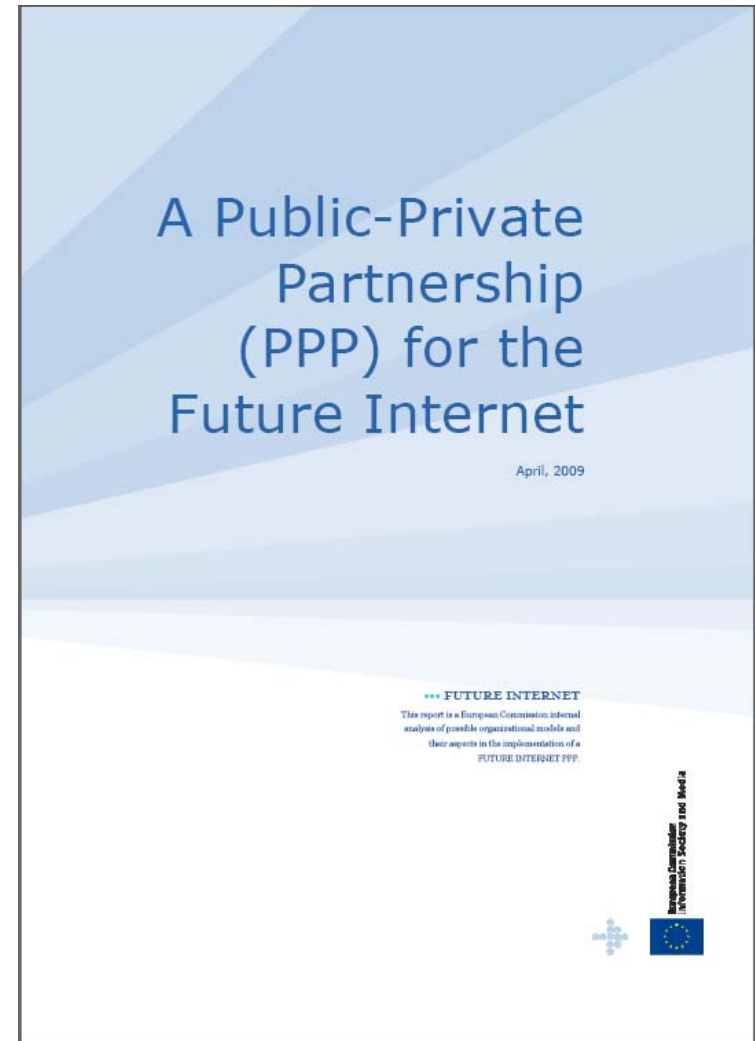


Future Internet PPP - CG Focus

- PPP Definition



- **Content** definition
- **Impact Assessment** (IA) definition
 - Problem statement
 - Objectives setting
 - Policy options
 - Impact definition: Economic, Social, Environmental
- **Governance** definition



EC Document - April 09

http://ec.europa.eu/information_society/activities/foi/library/index_en.htm

Future Internet PPP - Content (Highlights)

- **Vertical Applications** (Highlights)

- Smart Cities
- Smart Energy
- Intelligent Transport
- Logistic and Traceability
- eHealth
- ...



Applications sectors requirements to be further captured

- **Horizontal Technologies / Enablers** (Highlights)

- Cloud Computing
- Autonomic & Network Management
- Massive Multimedia Distribution
- Security / Digital Identity
- ...



Technologies and Enablers under detailed definition/discussion

Future Internet PPP - Impact Assessment (Highlights)

▪ Problem Statement & Objectives Setting

- **Economic assessment** of the size/value of the Internet economy, the position of EU, and the estimated value of this economy over the next 5 to 10 years
- **Identification of problems and issues faced in EU on Internet**, incl. the possibilities for EU to rapidly access new classes of innovative applications with social or/and economic impacts
- **Identification of drivers / underlying causes** of the problems
- **Identification of potential market failures and regulatory failures**
- **Identification of achievable business models** based on the **current** ecosystem and based on **disruptions** brought by the Future Internet developments
- **Qualification and quantification of the objectives setting** (SMART objectives) for the specific **vertical applications** and **horizontal technologies** scoped by the FI PPP
- **Note:** Include discussion bw marketing/business experts from the FI PPP CG

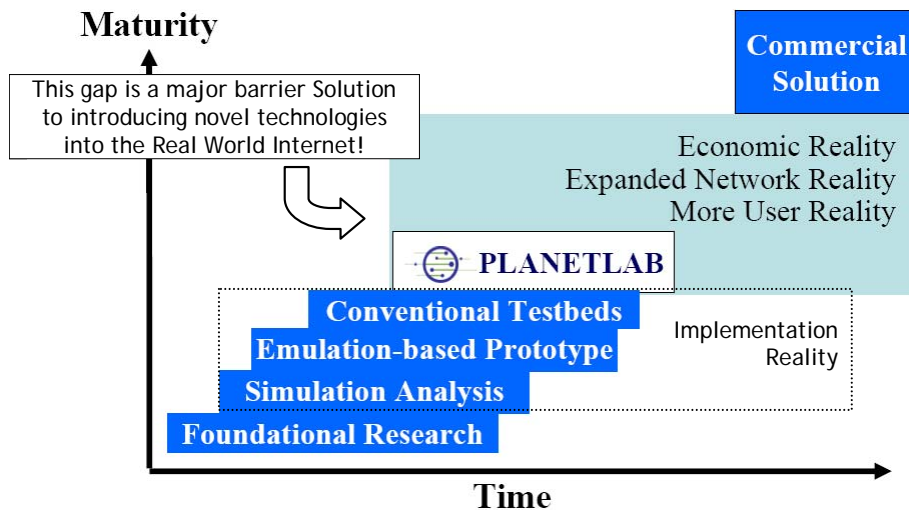
▪ Impact definition: Economic, Social, Environmental

- **Example for Economic:** New businesses? Jobs creation? Impact on investments cycle? Introduction of new production methods? Impact on free movement of goods, services, capital and workers?...

Future Internet PPP - Prototyping and Validation

- FI PPP shall/will include specific focus on prototyping, validation, piloting, trials -> Requirements will be defined
- "Experimentation gap"

Much more to do to close the gap...



PlanetLab - Marc E. Fiuczynsk - Princeton University
FIRE Week - 10.09.08 - Paris
(Combination of Gap / Gap Decrease / More to do...)

Current analysis/discussions on what will be experimented through (different goals and methodologies)

- "Classical" prototyping
- Trials on existing networks and "real" Internet (e.g. through NOs networks)
- "FIRE" experimental facilities (e.g. FOT approach)
- Pilots (e.g. in connection to Smart Cities)

Reflecting presenter views

“ FIRE-like ” Experimentation - Facts (Highlights)

- **Derisk prototypes concepts/modules** that require trials in real-life conditions that can not be reproduced in confined environments
- **Access to hundred of machines physically distributed** across the world and available on public Internet **to host applications for testing in real-life environment**
 - Consider delays, latency, real-life network traffic, variable bandwidth, realistic robustness, large scale, failure modes...
- **Build by experiment distributed systems and network protocols**
- **Evaluate performance of infrastructures and services**
- **Validate mechanisms for interworking and verification of interoperability**
- **Experiment and co-create with real-users** and real-life environment. Important role of **User Driven Innovation (UDI)** in the context of FI
- **Note: “Natural” evolution** for experimentation, all applications evolving toward digital/virtual world (e.g. banking, commerce...)

Reflecting presenter views

“ FIRE-like ” Experimentation - Open Questions (1/2)

- What is the **most appropriate FOT approach** in the context of **short-medium terms Industry impact**?
 - PlanetLab / PlanetLab Europe? OneLab2?
 - LivingLabs? European Network of LivingLabs (ENoLL)?
 - Federica? (VITAL++? Wisebed?) - GEANT? NREN? DANTE? TERENA?
 - PanLab2?
 - G-Lab?
 - CoreLab? GENI Spiral1?
 - PPPLab?
- Are these **experimentation facilities interoperable** (meta-level) or should the facilities be **considered as standalone** (one facility family per specific objective)?
- **What can Industry not test** on “FIRE-like” experimental facilities as compared to “real” Internet

Reflecting presenter views

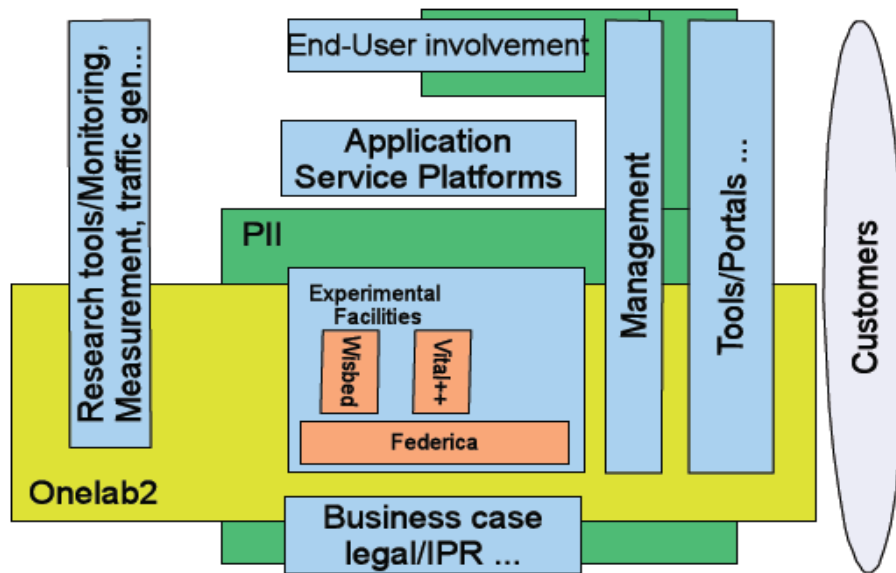
“ FIRE-like ” Experimentation - Open Questions (2/2)

- Where is the **right balance** between **bottom-up** (availabilities) and **top-down** (use requirements) experimental facilities design/development
 - Who are the “**customers**”/users of the current experimental facilities?
 - Are the **FP7 projects** taking benefit of the experimental facilities?
- Is this possible to guarantee **reproducible and verifiable results** from experimentations?
- Is this **secure enough environment** for experimentations?
- What are the **standardization contributions** expected from the experimental facilities work, towards IETF, ETSI, ITU...?
- What are/will be the **tangible industrial achievements/benefits** from the experimental facilities (e.g. from PII, OneLab2...)?

Reflecting presenter views

Future Internet PPP - Prototyping and Validation

- Definition of the **FI PPP experimentation requirements**
- Definition of the **evolution of FIRE experimental facilities**



Specific discussions shall be organized in the coming weeks/months to define the intersections points between the **FI PPP experimentation requirements** and the **FIRE experimental facilities evolution**

FIRE - Wise Men Report (Wilander) - Up-dated version to be released

Reflecting presenter views