



Future Internet Research and Experimentation – FIRE

www.ict-fire.eu

Presenter:

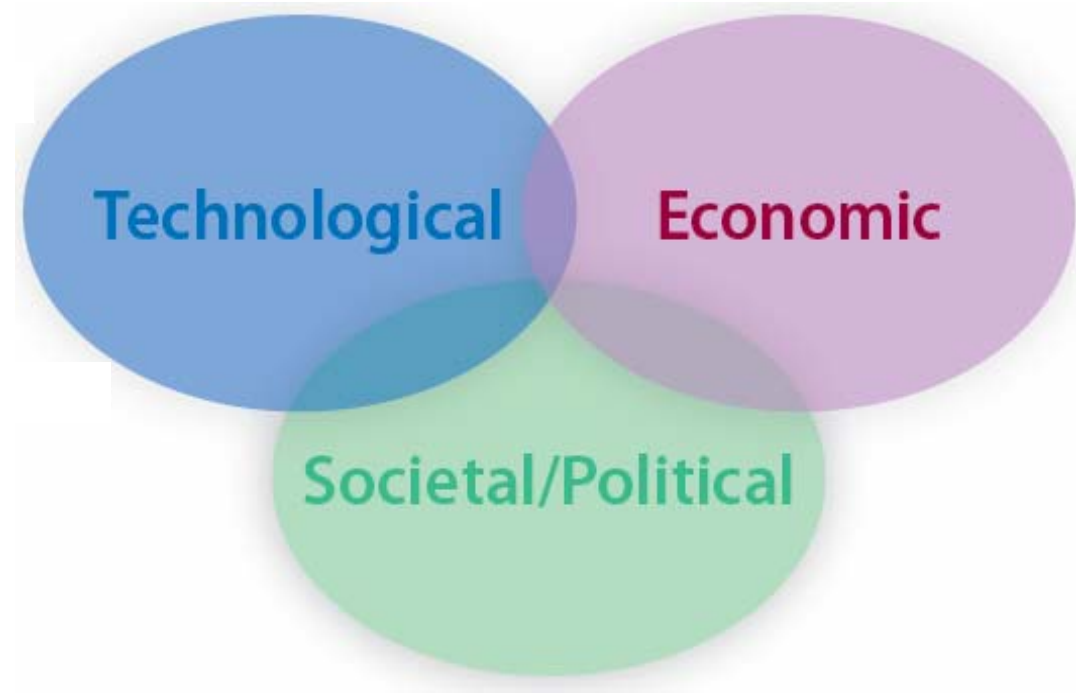
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Why Future Internet research



- Internet today, its size, complexity and the role it plays in modern society has far exceeded the expectations of its creators
- Internet has become an essential part of our lives, work, communication and entertainment
- Internet has become a critical infrastructure both from a social and economic perspective.



Future Internet research in the ICT Programme?



- Under the 'Cooperation' programme theme Information and Communication Technologies (ICT) of the 7th Framework Programme (2007 – 2013) of the European Community for research, technological development and demonstration activities (FP7), **Europe takes a major step forward in R & D for the Future Internet**, in order to meet the evolving requirements
- To date under FP6 and FP7, **Europe has invested several hundred million Euros in Future Internet research**
- **Work Programme 2009/10** will have a **strengthened and focused support for Future Internet research**, mostly concentrated under Challenge 1 'Pervasive and Trusted Network and Service Infrastructures'

FIRE– Why FIRE?



- In order to measure, compare and validate scientific results and also to provide a realistic basis for a scientifically rigorous impact assessment at technological, economic and social levels, these new paradigms need to be tested on a large scale including (but not limited to)
 - Network neutrality, end-to-end principle and integration
 - Compute and services infrastructures
 - Trust and security
 - The use of open source and open standards
- For this kind of ‘experimentally-driven research’ related to the Future Internet, researchers need an experimental facility (from proof-of-concept to validation) for validating innovative research and developments on network and service architectures and paradigms

FIRE - What is FIRE?



- There is an increasing demand from both academic and industrial communities to **bridge the gap** between **visionary research** and **large-scale experimentation** incl.
 - Experimentally-driven advanced research
 - Design and experimentation of new networking and service architectures
- There is a need to set-up a “group” of large-scale experimental facilities, going beyond individual projects and their testbed offering
- **FIRE addresses the emerging expectations** which are being put **upon the Internet**, by **providing a research environment** for **investigating** and **experimentally validating highly innovative and revolutionary ideas**

FIRE: Future Internet Research and Experimentation

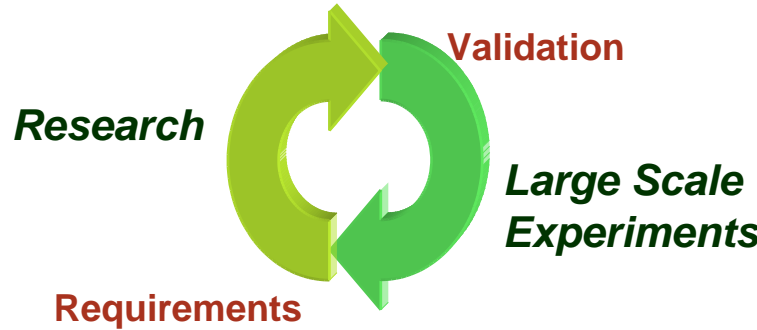


FIRE has two interrelated dimensions:

- **Experimentally-driven long-term, visionary research on new paradigms and networking concepts and architectures for the future internet**

- **Building large-scale experimentation facilities** to support both medium- and long- term research on networks and services by gradually federating existing and new testbeds for emerging or future internet technologies

FIRE Research



FIRE Experimental Facility



Onelab2, Federica, PII, and Wisebed are offering their prototype services

User involvement in FIRE



- In order to assess the impact of technological changes to the Internet in socioeconomic terms, involvement of user communities at an early stage of development is needed
- The FIRE stakeholders are investigating how far they can profit from advanced user-driven open innovation methodologies, as they are for example developed and applied in the European Network of Living Labs (www.openlivinglabs.eu)

IPV6 relation to FIRE



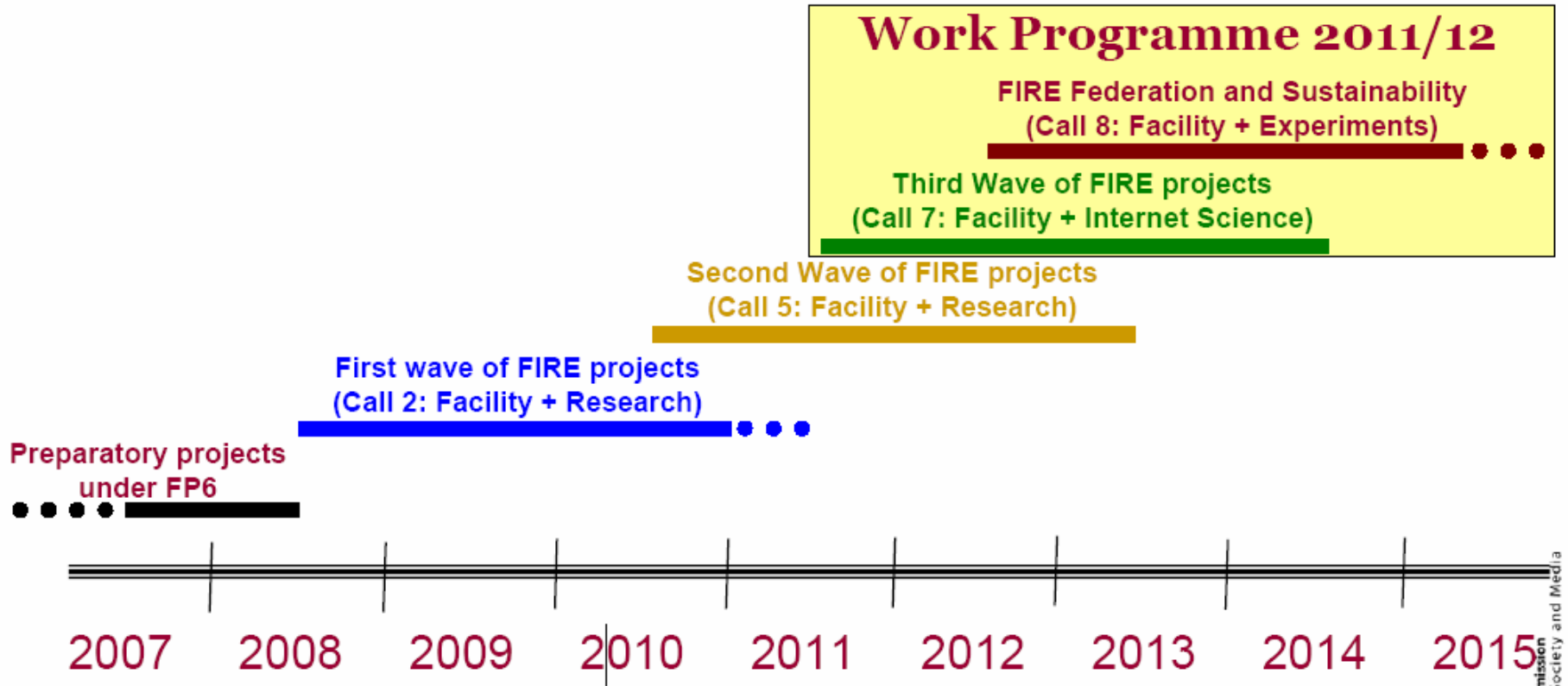
- With the Action Plan for the deployment of Internet Protocol version 6 (IPv6) in Europe, the European Commission encourages broad adoption of IPv6 on the basis of a specific action plan:
http://ec.europa.eu/information_society/policy/ipv6
- The adoption of IPv6 is a prerequisite for any further research and development on the Internet of Things, the 3D Internet and the Internet of Services
- However, as IPv6 was designed many years ago, it is already becoming apparent that the requirements of the Future Internet will go far beyond what IPv6 can offer

FIRE Science: Expected Impact



- Better **understanding** by European industry and academia of the complex nature of the Internet
 - Key when considering changes, when providing services, and when seeking to take advantage of new market opportunities
- Strategic capability to **assess a priori the evolution of Internet networks**, services and applications in terms of broad implications at societal, economic and environmental levels
 - taking into account aspects such as sustainability, privacy, openness, neutrality, and market evolution

FIRE Roadmap



European Commission
Information Society and Media



FIRE and other initiatives in Europe



- There are several initiatives and projects in the Member States and Associated States, which have similar or complementary objectives, e.g. G-Lab (German Future Generation Internet Research Platform), RNRT (French Research Network for Technological Innovation), ICT SHOK (Finnish Future Internet Research Programme), Ambient Sweden, Internet del Futuro (Spain).
- It is one of the tasks of the FIREworks project to draw a concrete map of European activities, that are related to FIRE, and to initiate and further stimulate a discussion, in order to exploit synergies

Benefits of FIRE for Europe



- The FIRE initiative creates an **open research environment**, which **facilitates strategic research and development** on new Internet concepts giving **researchers** an instrument to **carry out large-scale experimentation on new paradigms**



FIRE and International Dimension



- The future of the **Internet** is a **Global** topic
- **FIRE stakeholders** are **collaborating on project** and on **initiative** -level, with other relevant activities around the world, e.g. **Planetlab**, **GENI** (Global Environment for Network Innovations, US) and **JGN2plus** (Advanced Testbed Network for R & D, Japan) etc.



Future FIRE vision



- The **FIRE Facility** shall evolve towards becoming fully operational. In parallel, it is planned to expand the concept, by addressing as well the service architecture layer, by supporting experimentation which cuts across layers, by enabling socioeconomic impact assessment, as well as by broadening the involvement of large user communities
- The **FIRE experimentally-driven advanced research** shall further push the limits and define the challenges for the FIRE facility through visionary, multidisciplinary research, which considers the Internet as a complex system and therefore addresses all the associated aspects, in a holistic vision, at all relevant levels and layers

Further Information



- ☛ FIRE portal: www.ict-fire.eu
- ☛ FIRE White Paper:
http://www.ict-fireworks.eu/fileadmin/documents/FIRE_White_Paper_2009_v3.1.pdf
- ☛ FIRE Publications:
http://cordis.europa.eu/fp7/ict/fire/links_en.html
- ☛ FIRE - Future Internet Research and Experimentation FIRE Facility offer:
ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/fire/2009-06-24-fire-facility-offer-web_en.pdf
- ☛ Activities the EC undertakes on Future Internet:
www.ec.europa.eu/foi



Thank you for your attention

