

Nordic Grid *Infrastructure - Now and in the Future*. 3-4.3.2008



e-Infrastructures Reflection Group -  
Supporting a sustainable e-Infrastructure

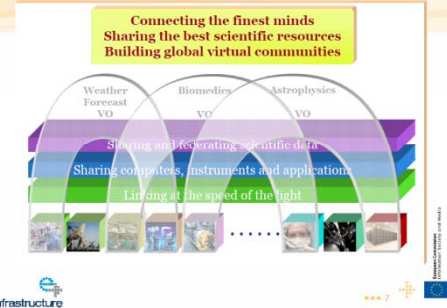
Leif Laaksonen

4.3.2008

## What is e-Science?

"e-Science is about global collaboration in key areas of science, and the next generation of infrastructure that will enable it."

*John Taylor, Director General of Research Councils Office of Science and Technology, 2000*



## What is an e-Infrastructure?

- e-Infrastructure stands for electronic infrastructure with 3 main layers:
  - *Networking, Grid resources (computing, storage, sensors, etc.) and Data sharing*
- *e-Infrastructure views...*
  - “A framework (political, technological and administrative) for the easy and cost-effective shared use of distributed electronic resources across a geographical area”
  - “The combination of research infrastructure, grid, and broadband technologies projects”
  - “Anything that enables eScience, collaborative research – distributed, persistent, reliable, accessible services”
  - “Broader than Grids - includes things like digital libraries, networking, etc”
  - “current Grid-based e-Infrastructure model”
  - “In some particular key areas e-Infrastructures have a stronger enabling role, in the sense that research as it is done today would be impossible in their absence – both in working on grand challenges and in enabling interdisciplinary collaboration”
  - “It is the lack of interoperability and provision of a common, unified, e-infrastructure beyond the Grid and network layer that needs to be addressed”

## Resource sharing

- Resources can be anything from and in any combination:
  - Computers (HPC ecosystem)
  - Storage/repositories/data management/electronic libraries
  - Sensors and Networks
  - People and software
  - Teaching and learning landscape
  - Visualization resources
  - Tools for collaborative computing
  - Research instruments

## Deployment of ICT-based infrastructures...

“The vision for a future European Research Area must include and encompass the deployment of ICT-based infrastructures (e-infrastructures) such as high-performance communication networks, appropriate ‘middleware’ and grid-enabled data infrastructures, as they connect research communities within and across different science disciplines. Virtual presence tools, focused on accelerating the creation of collaborative research communities, boost the research process and enable new ambitious goals and visions to be realised with greater speed and efficiency than was hitherto possible.”\*

**\*Developing World-class Research Infrastructures for the European Research Area (ERA) - Report of the ERA Expert Group, European Commission, 2008.**

## Policy overview and trends...

“Europe has taken a major step forward in the development of a more coordinated approach for policy-making in the field of RIs with the establishment of the European Strategic Forum on Research Infrastructures (ESFRI), the e-Infrastructure Reflection Group (e-IRG), the release of the first ever European Roadmap for Research Infrastructures and by establishing the ‘preparatory phase’ instrument within FP7 which aims to facilitate the construction or upgrade of some of the ESFRI roadmap RIs.”\*

“Continuous investments in e-infrastructures and ICT provide competitive European advantages and serve as excellent examples of how coordination and cooperation on a European level, paired with major research infrastructure advances, can dramatically change the way research work is being conducted.”\*

**\*Developing World-class Research Infrastructures for the European Research Area (ERA) - Report of the ERA Expert Group, European Commission, 2008.**

## Sources for Policies for European Governments

- ESFRI: European Strategy Forum on Research Infrastructures
- e-IRG: e-Infrastructure Reflection Group
- EU Funded Projects, e.g. GEANT, DEISA, EGEE, EGI, BELIEF, PRACE...
- National GRID Infrastructure Initiatives, D-Grid, UK e-Science Programme, SIRENE, TeraGrid, Naregi, ChinaGrid...

## Goals and Background of e-IRG

- Initiated in 2003 during the Greek EU Presidency
  - First workshop in June 2003, Athens
- Mission statement drafted in the Rome meeting
  - *“to support on the political, advisory and monitoring level, the creation of a policy and administrative framework for the easy and cost-effective shared use of electronic resources in Europe (focusing on Grid-computing, data storage, and networking resources) across technological, administrative and national domains.”*
- Starting point: impact of the major investments in the Grid and networking projects depends also on policies governing the use of the e-Infrastructure.

## Membership and Mandate

- Delegates appointed by the member state ministries
  - 30 European countries represented
    - Maximum 2 representatives/country
    - Usually appointed by the ministries of education
- European Commission
  - Two representatives
- Observers (new process initiated)
  - Major e-Infrastructure projects
    - EGEE, DEISA
    - GEANT/NREN Policy Committee
- Recognised as an advisory body by the EC
  - In addition to member states themselves

## Working methods

- Publish e-IRG White Paper
  - “Snapshot of the policy and state of the art in technology”
  - Short- to medium-term scope
  - 5 White Papers
- Develop the e-IRG roadmap
  - Long-term strategic issues
  - Responses to emerging technologies, paradigm shifts.
  - One Roadmap + one update
- Four annual meetings
  - Two open workshops
    - Host discussions within the community involved with the Grid and research networking
      - Part of the e-IRG White Paper process
    - Technology/policy-axis
  - Two delegates meetings
    - Endorse recommendations, discuss strategic issues

## White Paper

- An overview of the active topics in the e-Infrastructure context
  - Topics selected quite freely by the e-IRG community
    - The White Paper editor assigns “section editors” to collect information and contributions related to a particular topic
  - Process aims at establishing a common understanding of the topics.
  - Aiming at a transparent process.
- The key findings are distilled into “e-IRG recommendations”
  - Proposed by the section editors
  - Approved by the e-IRG delegates
  - Aimed at e-IRG member states and the EC
- 5 White Papers published since 2003
  - Available on the e-IRG website

## Roadmap in detail

- Evolved from the 2004 EC initiative for the “*strategic roadmap for Research Infrastructures*”.
  - Key question: *What contribution can or should the large European Research Infrastructures make to the success of the European Research Area in the next decades?*
    - 10 to 20 year timeframe
  - The e-IRG input intended as complementary to the work of ESFRI with the emphasize on e-Infrastructure..
- e-IRG publications:
  - Opportunities list, March 2005
  - First edition of the Roadmap, June 2006
  - The update to the roadmap was published 2007.

## The e-Infrastructures Reflection Group Support Programme 2 (e-IRGSP2), 2008 – 2010.

The European Commission supported e-IRGSP2 project will provide full support to the work of the e-Infrastructures Reflection Group (e-IRG). The activities of the project are based on supporting the process of the e-IRG, modelled as an iterative repetition of four-phases:

1. Studying the state-of-the-art and best practices
2. Creating scenarios based on the data (white papers and roadmaps)
3. Establishing consensus about the actions needed (e-IRG recommendations)
4. Engaging with the necessary stakeholders

Secretarial support is involved in all of the activities. Its role is central in enabling e-IRG to study the state-of-the-art and engage with the necessary stakeholder groups through communication and dissemination support.

## e-IRGSP2 partners in the management board

<b>Partner</b>	<b>Representative</b>
CSC	Leif Laaksonen (Project Director)
NCF	Patrick Aerts
ETL	Matti Heikkurinen (Deputy Project Director)
LIP	Gaspar Barreira
GRNET	Panagiotis Louridas
AUEB-RC	Costas Courcoubetis
Genias Benelux	Ad Emmen
PSNC	Norbert Meyer

## e-IRGSP2 work packages

1. **WP1 – Project management (lead by CSC)**
2. **WP2 – Policy support and analysis (lead by ETL)**
3. **WP3 – Dissemination and outreach (lead by LIP)**
4. **WP4 – Legal issues (lead by GRNET)**
5. **WP5 – External stakeholder liaison (lead by NCF)**

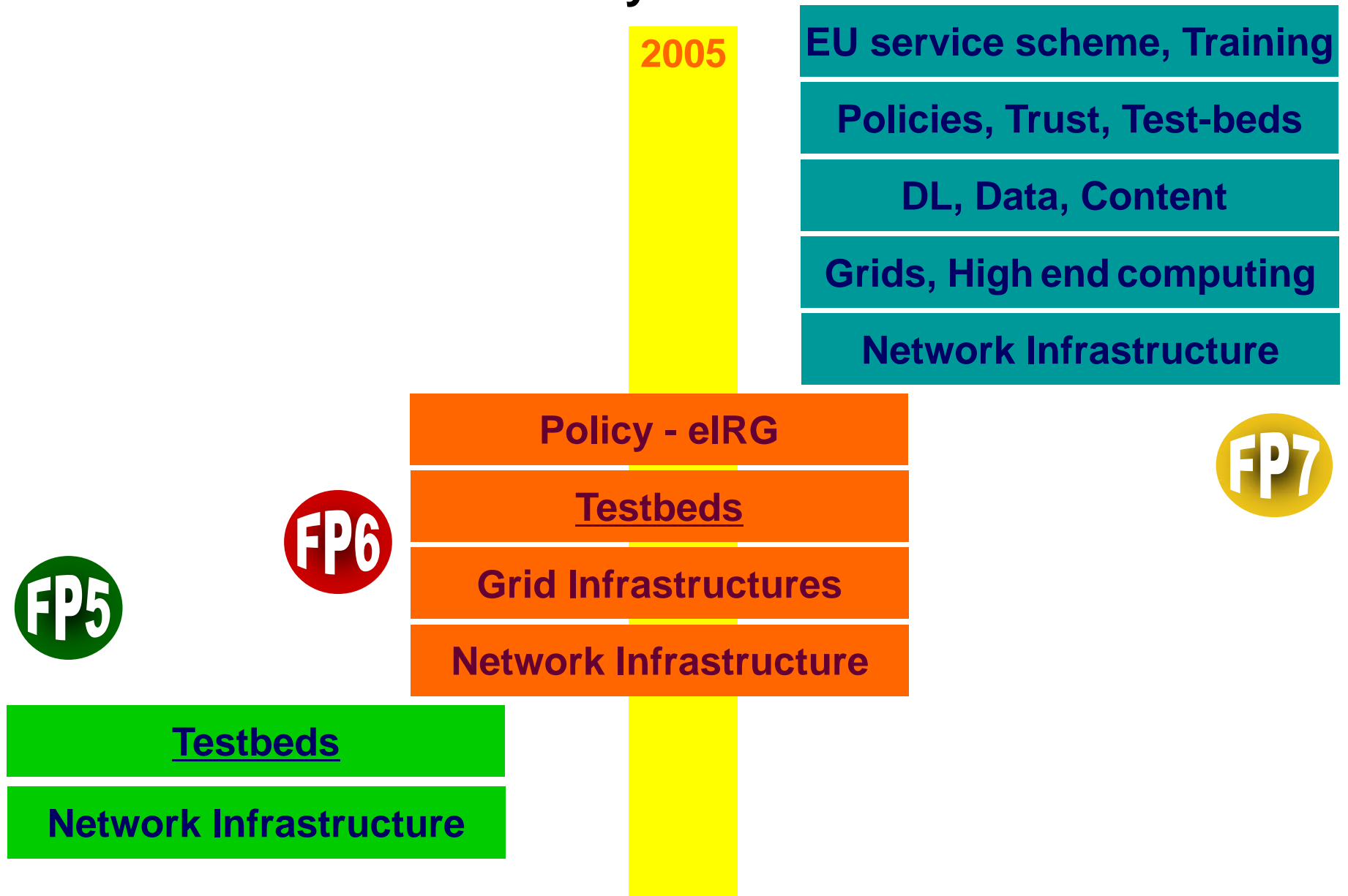
- Funded work 135 PM



## Towards sustainable grid-based e-Infrastructures

- FP5: Broad scale test-beds
- FP6: Production quality facilities
- FP7: Sustainable grid-based e-Infrastructures (utility model)
- To support the transition
  - e-IRG White Paper
  - e-IRG Roadmap
  - Opportunities list
  - <http://www.e-irg.eu/publ/>
- e-IRG Support Programme 2 (e-IRGSP2)
- Task force on Sustainable e-Infrastructures (Sel). Final report distributed widely.
- Task force on Education and Training (ETTF).
- Task force on Data management planned for 2008.

# e-Infrastructure evolutionary Path

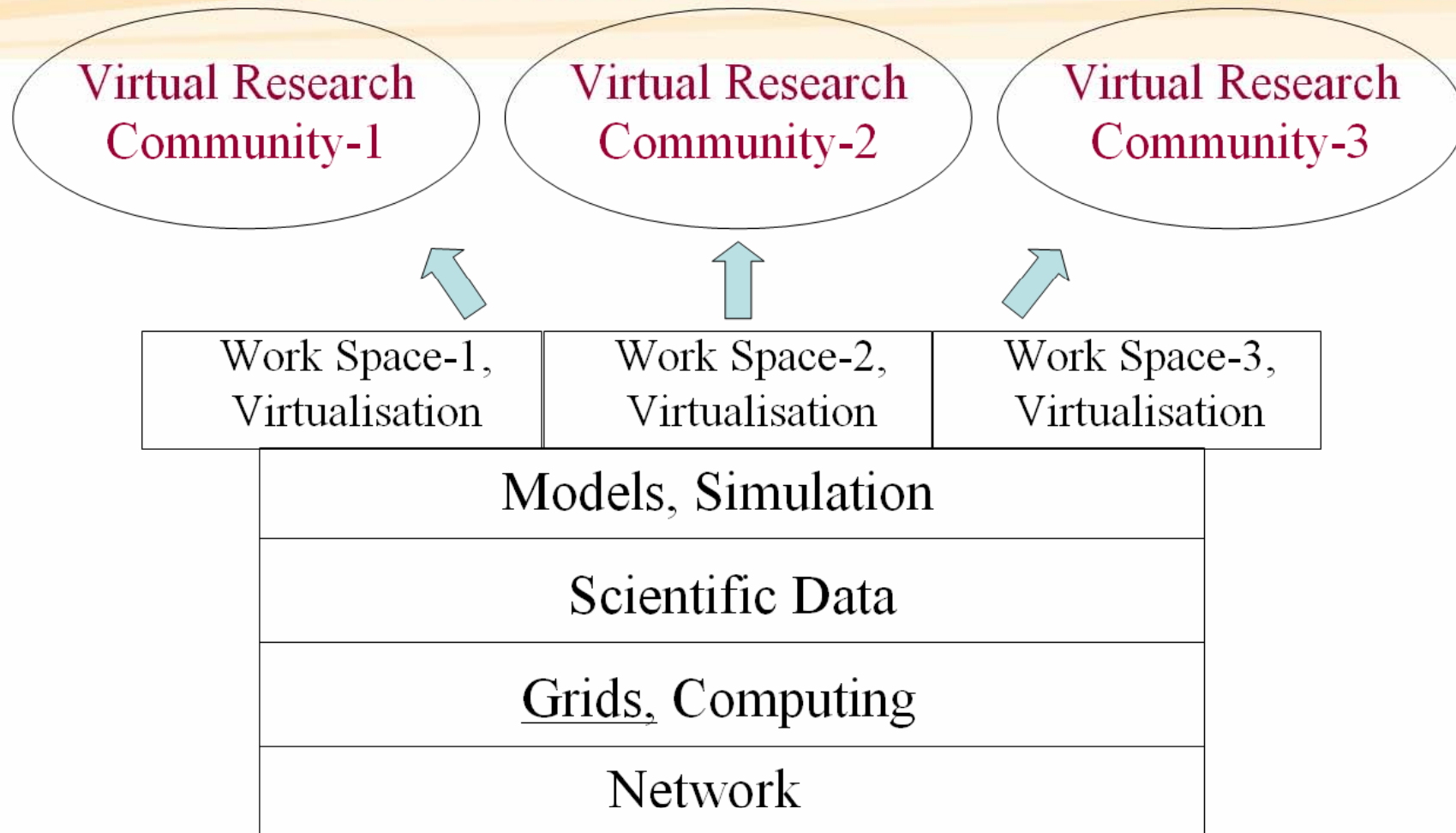


# Roadmap to an ESFRI e-Infrastructure eco-system

e-IRG building the e-Science e-Infrastructure	<i>Social Science and Humanities</i>	<i>Environmental Sciences</i>	<i>Energy</i>	<i>Biomedical and Life Sciences</i>	<i>Material Sciences</i>	<i>Astronomy, Astrophysics and Nuclear Physics</i>	<i>Computer Data Treatment, Particles and Space Physics</i>
	Crossing the boundaries of science						
	Resources/services (such as supercomputers, sensors, data)						
	Middleware and organisation						
	Networking Infrastructure						

**ESFRI addressing seven fields of Research and major challenges**

# e-Infrastructures transforming science: Science of tomorrow based on *Global Virtual Research Communities*



Global Virtual Research Communities are complementary to physical research centres; they are not replacing them



## Collaboration opportunities with the community

- White Paper process
  - Subscription available on e-IRG site
    - News, events and paper-version of the White Paper
- Roadmap
  - The consultation process is open on the e-IRG website
- Workshops
  - Next e-IRG Workshop in Zürich, Switzerland 24-25 April 2008.
- Recommendations on e-infrastructure matters from e-IRG.
- Collaboration to support interdisciplinary research with a common e-infrastructure.

## Further information

- e-IRG - <http://www.e-irg.eu/>
  - e-IRG Secretary: secretary [ at ] e-irg . eu
  - White Paper subscription -  
<http://www.e-irg.eu/subscribe/>
- e-IRG chair leif.laaksonen [ at ] csc . fi
- e-IRGSP2 - <http://www.e-irg.eu/support/>

# e-IRG

e-Infrastructure  
Reflection Group

Thank you!  
Questions and comments?