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# Utilizing the full Potential of Research Infrastructures for Strengthening the ERA

*January 2009*

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# What are Research Infrastructures ?





# Research Infrastructures (incl. e-infrastructures) are:

- Facilities, resources, and related services used by the scientific community for
  - Conducting leading-edge research
  - Knowledge transmission, knowledge exchanges and knowledge preservation
- Today Research Infrastructures include
  - Major scientific equipment
  - Scientific collections, archives, structured information
  - ICT-based infrastructures
- Excellence of research services generally subject to periodic evaluation by international scientific committee

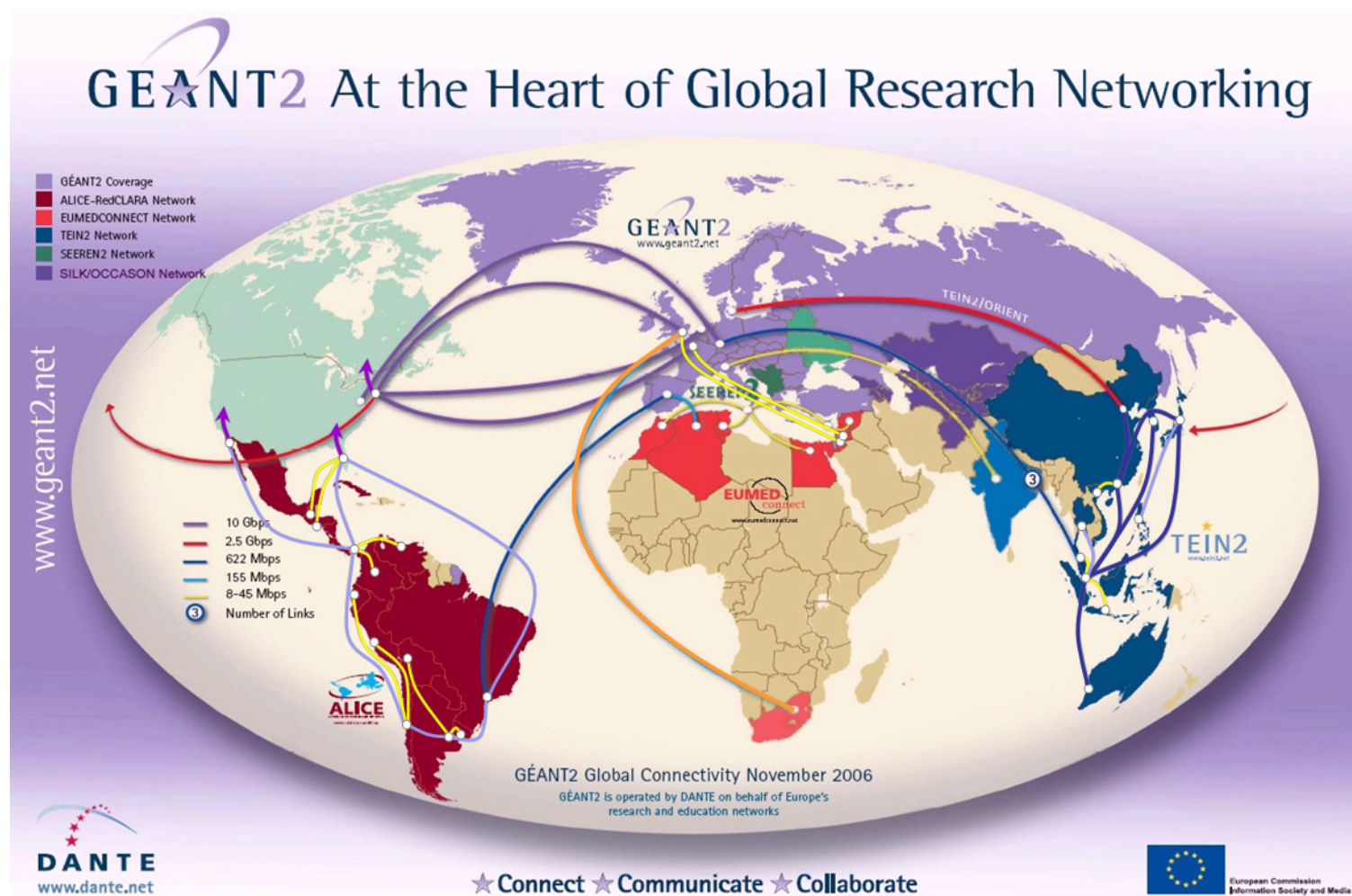




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# GÉANT (global dimension)

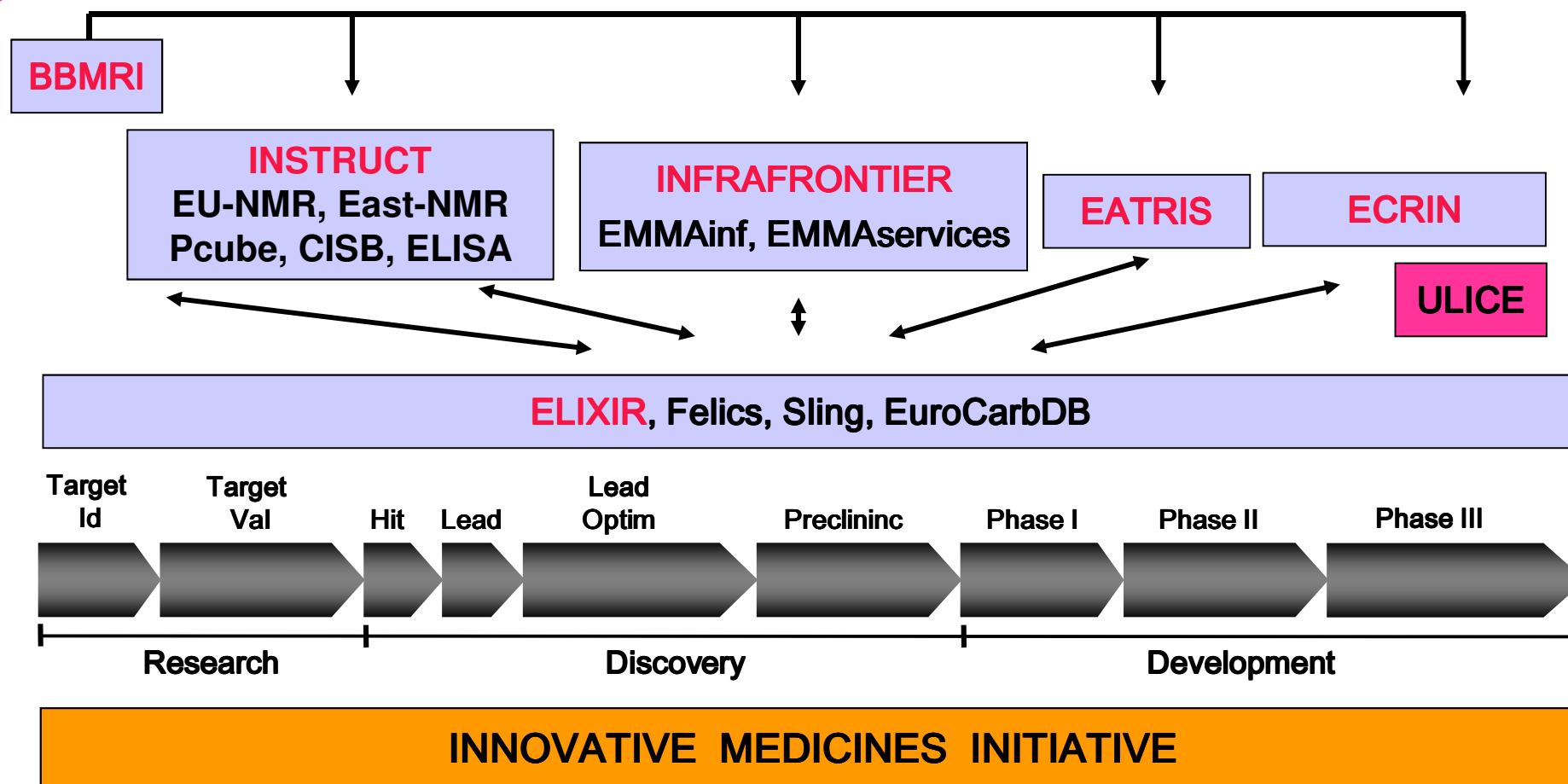




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# Research Infrastructures in support of Cancer Research





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# Excellence and RIs

**Europe has a long-standing tradition of excellence in research infrastructures**



- **Abbey-libraries: Research, Knowledge & Technology Transfer centres / EU's cultural roots**
- **More recently: CERN; EMBL; ESO; ESRF; ILL, and several open European based facilities**
- **Their success is due to uniqueness and quality, attracting world level scholars and researchers**





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**World-class Research Infrastructures  
are essential for Europe's researchers to stay  
at the forefront of research development.  
They are a key component of Europe's  
competitiveness in both basic and applied  
research.**

– Challenges:

- to overcome fragmentation in Europe
- to improve the efficiency of research services
- to cope with increasing cost / complexity of RIs
- to further develop and better exploit the potential of e-infrastructures



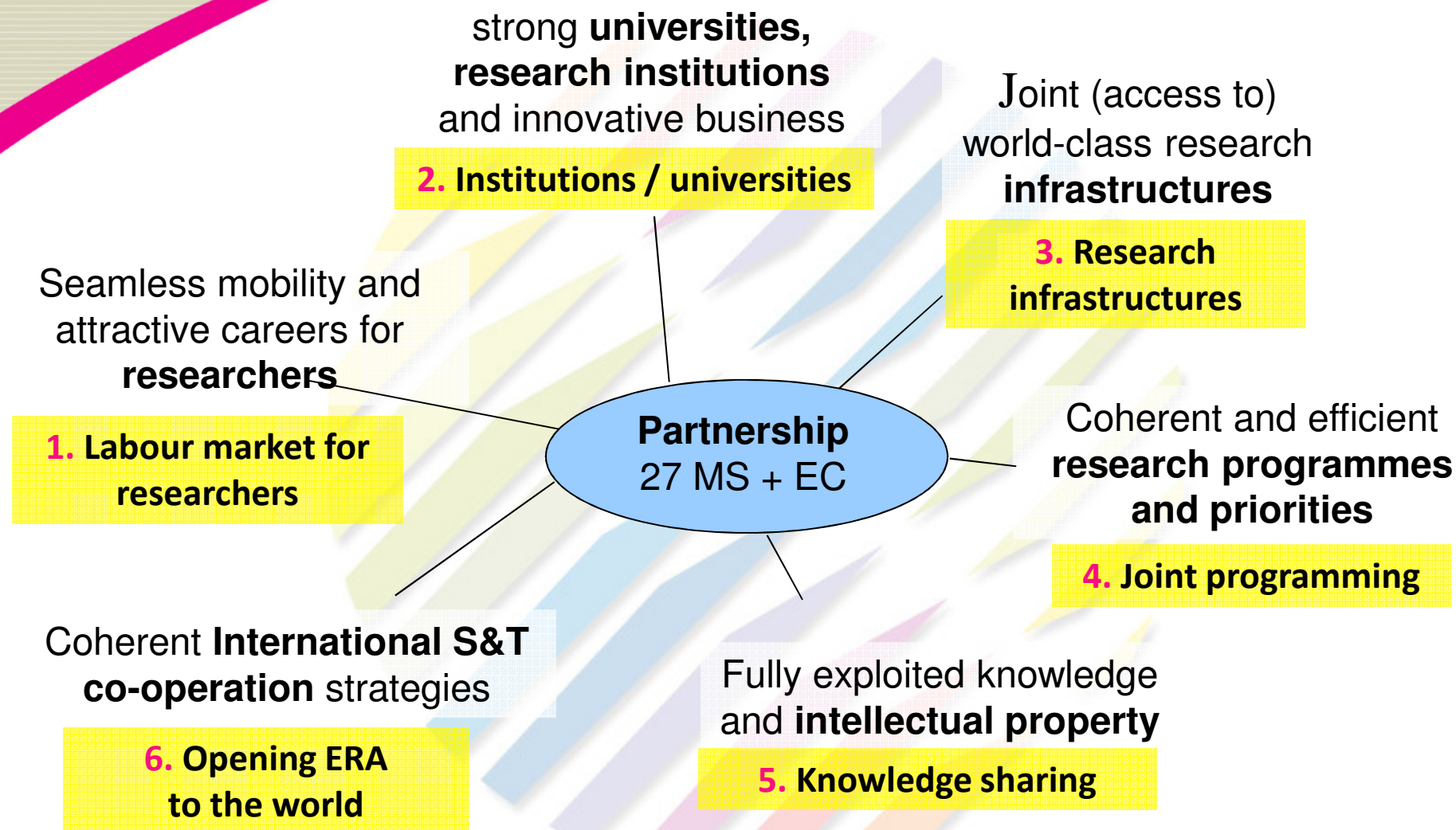




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# A shared vision of ERA...



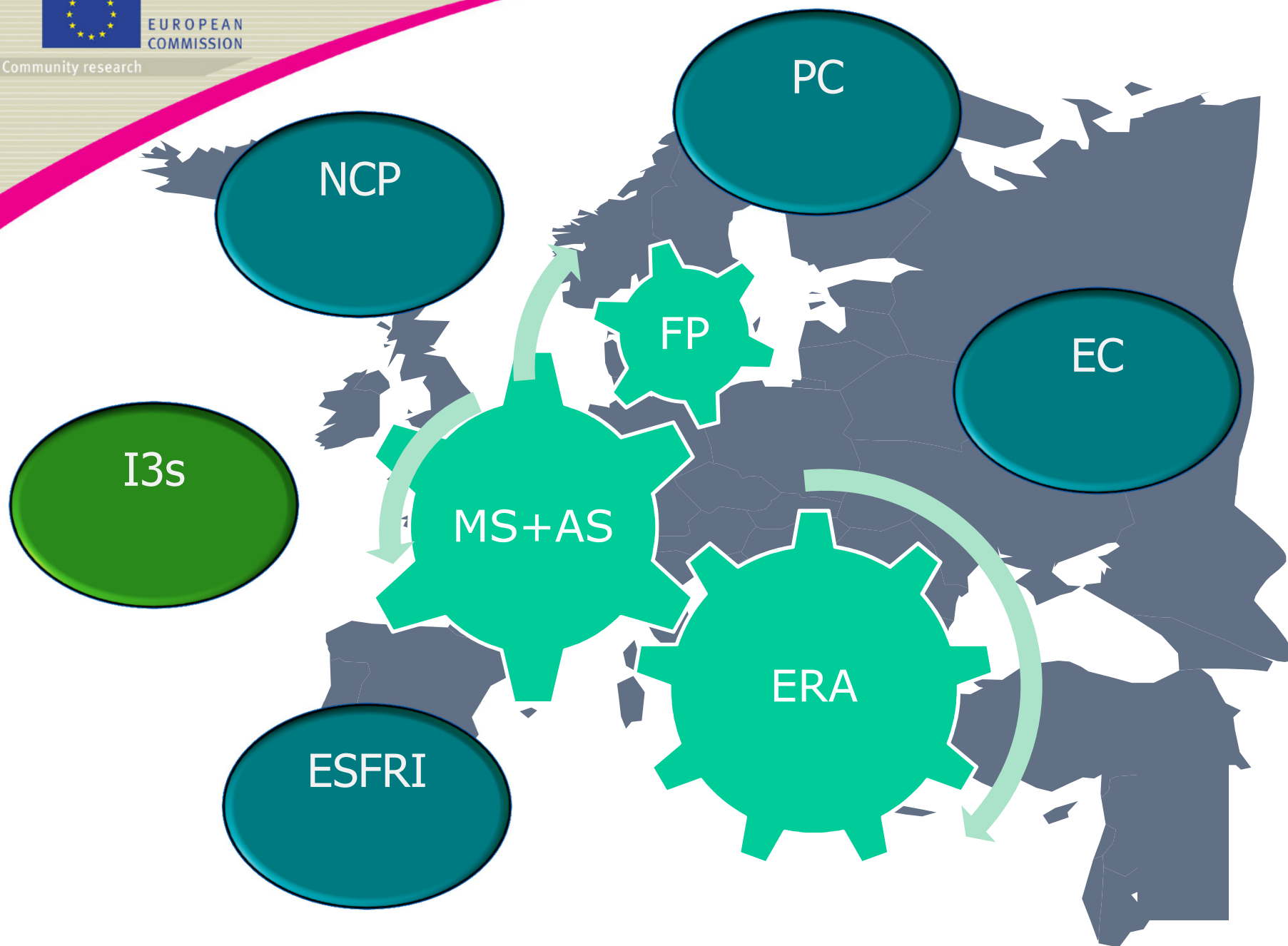
**Research infrastructures are in the heart of ERA**





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# RI policy at EU level has no other choice than continuing reinforcing coordination

- At EU level,
- At national and regional,
- At “variable geometry”,
- At global level...

*This explains the important  
role of ESFRI and others...*



European Strategy Forum  
on Research Infrastructures



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## Key objectives focus on:

- *Existing RIs:* to continuously improve, better integrate and structure them in the different S&T areas, and to make them more easily accessible to researchers
- *New RIs:* to facilitate the collaboration between countries for the joint establishment and operation of new facilities
- *e-infrastructures:* to further develop and maximise the use of ICT technologies (GEANT, grids, data repositories, ...)
- *Governance:* To integrate current initiatives in the field of RIs into a coherent European strategy

19/10/2012







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# Role of ESFRI

*Set up by the Council in 2002*

## Mission:

- To support a coherent and strategy-led approach to policy making on RIs in Europe
- To facilitate multilateral initiatives leading to a better use and development of RIs

*It brings together representatives of Ministers of the 27 Member States, of the 9 Associated States, and of the EU Commission*

ESFRI

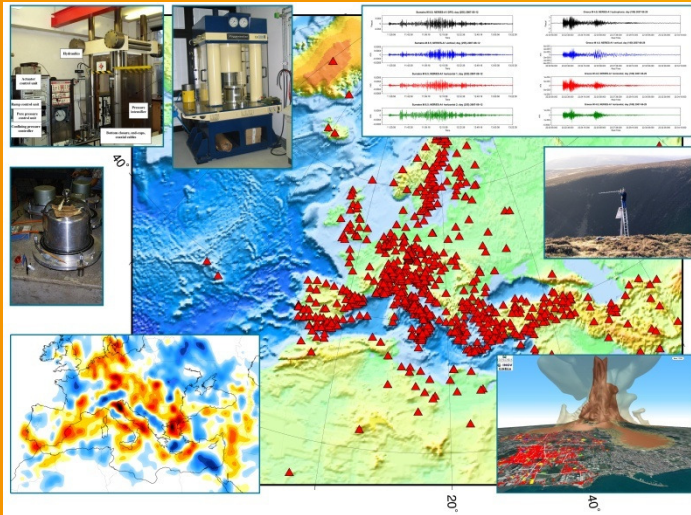
European Strategy Forum  
on Research Infrastructures

# ESFRI roadmap 2008

- **Social Science & Humanities** *5 Projects*
- **Environmental Sciences** *10 Projects*
- **Biomedical and Life Sciences** *10 Projects*
- **Energy** *4 Projects*
- **Physical Sciences & Engineering:** *8 Projects*
- **Materials and Analytical Facilities:** *6 Projects*
- **e-Infrastructures** *Wide input* *1 Project*

Total: 44 projects ( $\sim 20$  B€ in  $\sim 10$  years)  
equal to  $\sim 2$  B€ per year,  
increase of  $\sim 20\%$  on present investment

# EPOS



**Estimated  
construction cost**

**500  
M€**

**First open access  
foreseen**

**2018**

## *European Plate Observing System*

- RI and e-science for Data and Observatories on Earthquakes, Volcanoes, Surface Dynamics and Tectonics;
- Integration of the highly advanced European facilities currently scattered;
- Promotion of innovative approaches for a better understanding of the physical processes controlling earthquakes, volcanic eruptions and tsunamis;

[www.epos-eu.org](http://www.epos-eu.org)



# SIAEOS



<b>Estimated construction cost</b>	<b>50 M€</b>
<b>First open access foreseen</b>	<b>2012</b>

## *Svalbard Integrated Arctic Earth Observing System*

- Integrates studies of geophysical, chemical and biological processes from research and monitoring platforms;
- Answers to needs for global environmental change monitoring;
- Serves a broad and interdisciplinary user community;
- Offers unique opportunities for education and training of young scientists – in a broad international context;

[www.unis.no/SIAEOS](http://www.unis.no/SIAEOS)

# BLS4



**Estimated  
construction cost**

**174  
M€**

**First open access  
foreseen**

**2018**

## *European High Security BLS4 Laboratories*

- A major upgrade of existing High Security Laboratories, and building new ones
- Integrated through a European coordination body
- To help facing any pandemic outcome from emerging and re-emerging infectious diseases with level 4 pathogens

[www.hbsl.eu](http://www.hbsl.eu)



<b>Estimated construction cost</b>	<b>81 M€</b>
<b>First open access foreseen</b>	<b>2011</b>

## *European Carbon Dioxide Capture and Storage Laboratory Infrastructure*

- Key technology for reducing emissions from fossil energy use
- Three approaches to CO<sub>2</sub> capture (pre and post combustion and O<sub>2</sub>/CO<sub>2</sub> oxyfuel recycle combustion capture)
- and three approaches to storage combined (aquifers, depleted oil/gas fields, coal bed methane)



# Critical Issues

- Implementation of Roadmap: financing construction and initial procurements, sustainable operation costs, legal and fiscal issues,
- Prioritise and improve expenditure through high level evaluation
- Improve management and strengthen socio-economic returns and regional aspects
- Expand e-Infrastructure aspects
- Extend connection to “main Challenges” (Food, Environment, Health, Energy) and define better infrastructures for Applied Research

## **Importance of Community RI actions:**

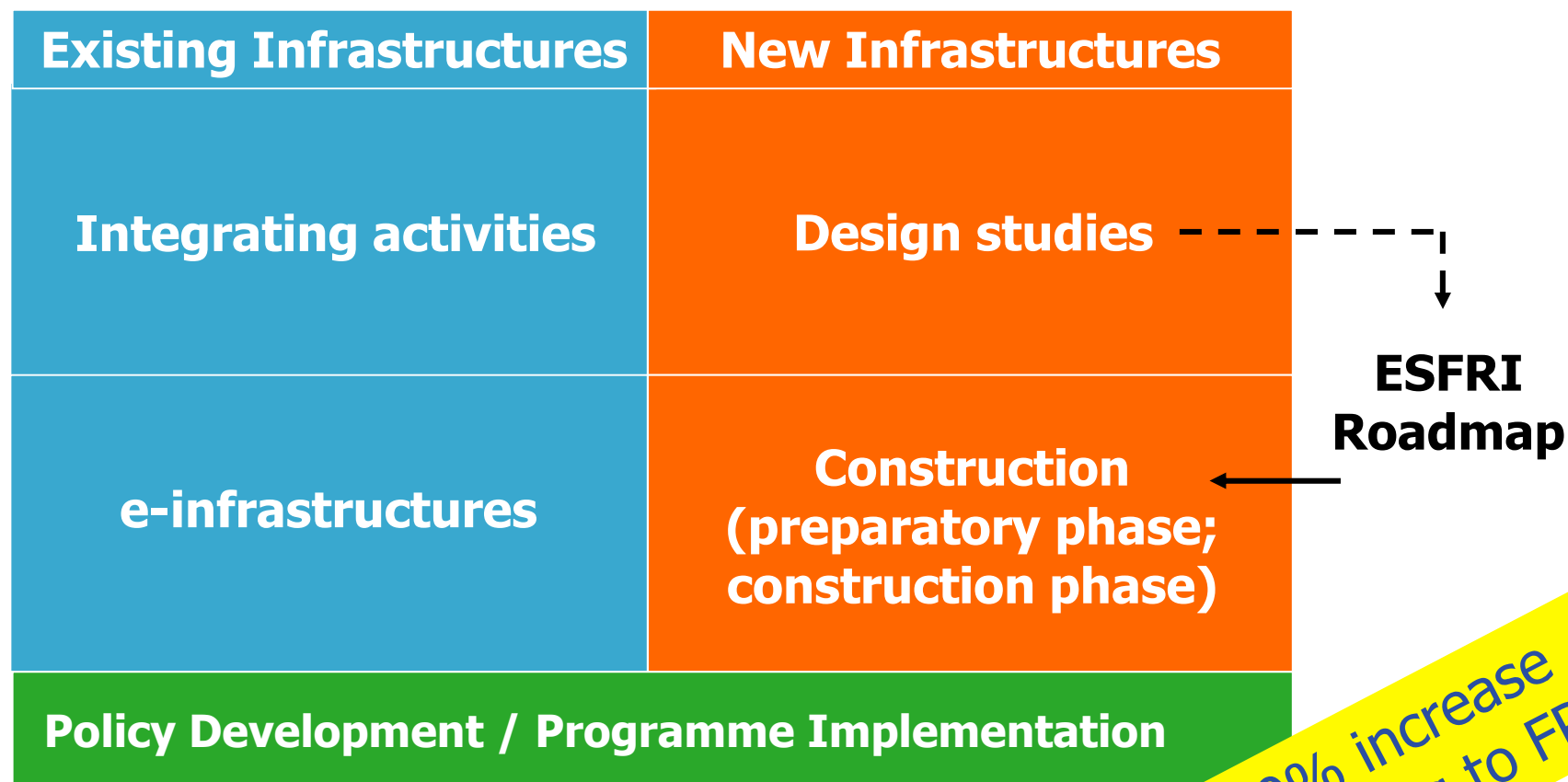
- **To reduce European fragmentation and dispersion of existing facilities**
- **To stimulate vision, policy development and more international cooperation in certain fields**
- **To help developing a research market for access to and use of installations / research services**



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# FP7 Research Infrastructures actions





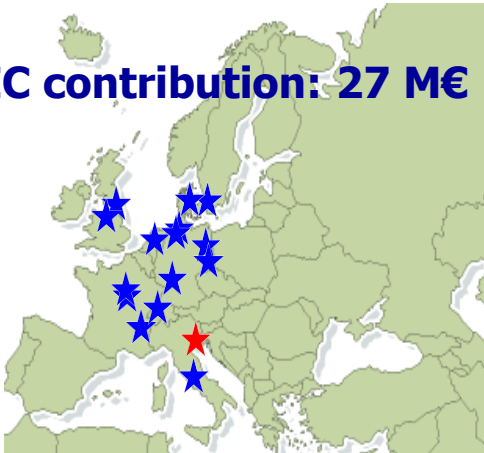


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# ... lot of efforts are carried out to “integrate” existing RIs (ex the Synchrotron I3)

EC contribution: 27 M€



## Transnational Access (~19 M€):

- 15 installations, with 4000 users from a very broad spectrum of disciplines

## Networking Activities (~2 M€):

- e.g. specialized workshops, conferences, schools (support areas of transnational cooperation)

## Joint Research Actions (~6 M€):

- e.g. setting up of a European platform for Protein Crystallography, development of new instruments, e.g.: Photo-injector for X-ray Free Electron Lasers, instrumentation for Femto-second Pulses, diffractive x-ray optics

See: <http://www.elettra.trieste.it/i3/>

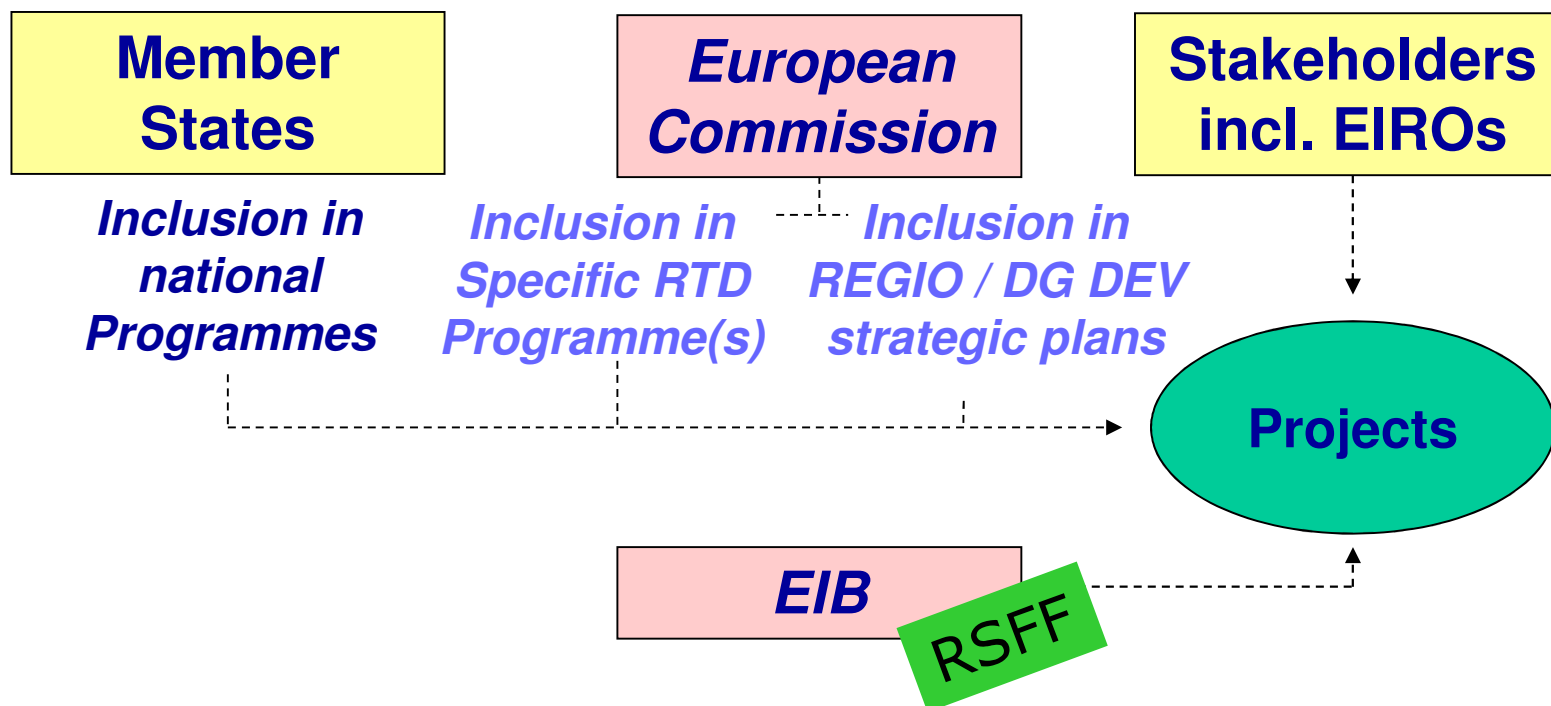




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# Preparatory Phase facilitating financial engineering for new research infrastructures



*34 of the 35 ESFRI projects supported*





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# Recent developments

- Council Conclusions on European Research Infrastructures and their regional dimension (May 2008)
- Commission's proposal for a new Community legal framework for European RIs (July 2008) & discussions at Council, EP, EESC, CoR levels
- Update of the ESFRI roadmap (December 08)
- Development of national roadmaps (on-going)
- Member States are the key actors in the development and financing of RIs



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**What remains to be done  
within the next months  
?**







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## Next steps:

- Follow-up of ECRI 2008 (the European Conference on Research Infrastructures Conference: Versailles, December 2008)
- Follow-up of discussions at Council, EP, EESC, CoR levels
- Continuation of FP7 support to existing and new RIs (continuation of I3s, DS and new call for Preparatory phase)
- Reflections on future instruments for FP8





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# Planning of the calls

~ 160 M€

**RTD Targeted:  
List of topics**

+ 93 M€

**e-Infrastructures,  
Support measures**

**Call A**  
**Published Sep. 2009**

~ 100 M€

**RTD Targeted:  
List of topics**

+ 74 M€

**e-Infrastructures**

**Call B**  
**Published Jan. 2011**

~90 M€

**RTD Targeted:  
List of topics**

+ 52 M€

**e-Infrastructures**

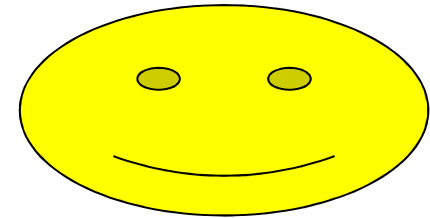
**Call C**  
**Published Jan. 2012**





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**Role of IGLO  
members?**

**Main challenges  
within the next years  
?**

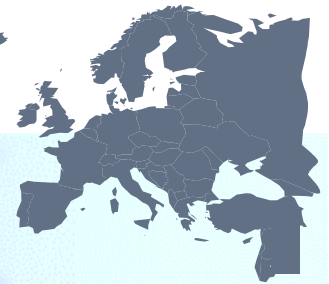




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**Entry gate to your country;  
Help development of RI evaluations  
Sharing of best practices;  
Supporting multidisciplinary approaches;  
Stimulate adequate training of staff;**



Europa



growth and jobs  
working together for Europe's future





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**Which are potential socio-economic impacts for such “knowledge industry”  
?**





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# Impacts (1)

- **on Industry** (*data from ERID Watch*)
  - ✓ Huge market ~8-9 B€ per year
  - ✓ Increase of 5.5% over the last 10 years
    - o Direct commercialisation (e.g. Medical drugs)
    - o Leading edge technologies (e.g. instrumentation)
    - o Secondary industrial products (e.g. DNA sensors)
  - ✓ Marketing image for companies working with RIs
  - ✓ In addition, it is clear that ERIs open global markets for technologically-based companies





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## Existing RIs

# Impacts (2)

### **Research effectiveness:** network-driven management

- ✓ Generates new standards and protocols
- ✓ Opens up to European and International users
- ✓ Gives access to critically important equipment
- ✓ Generates / enhances inter-disciplinary research
- ✓ Increases speed of end-user access
- ✓ Improves standing and visibility of European RIs

### **On cost / risk sharing**

- ✓ EC contributes to operating costs of existing RIs (more than 350 Mio € for 2004-09 / 53 networks)





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## Existing RIs

# Impacts (3)

### **European added value:** network-driven management

- ✓ Enables activities not possible otherwise
- ✓ increases involvement of researchers from New MS and improvements in RIs in NMS
- ✓ Expands existing / new research networks
- ✓ Open and free access on internet
- ✓ Develops a European spirit versus national



### **On Human Resources**

- ✓ Access to the 'best' RI: more than 7000 user groups
- ✓ Mobility of Researchers (more than 30.000 people)
- ✓ Help training of science community users







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## For further information

- ESFRI on CORDIS  
<http://cordis.europa.eu/esfri/>
- FP7 and Capacities Specific Programme  
<http://cordis.europa.eu/fp7/>  
<http://cordis.europa.eu/fp7/capacities/>
- Research Infrastructures on CORDIS (FP6)  
<http://cordis.europa.eu/infrastructures/>
- Research Infrastructures in Europa  
<http://ec.europa.eu/research/infrastructures>





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*Danke*

*Merci*

*Tānan*

*Grazie*

*Bedankt*

*Dziękuję*

*Gracias*

*Grazzi*

*Hvala*

***Many thanks***

*Mersi*

*Kiitos*

***for your attention***

*Tak*

*Tack*

*D'akujem*

*Obrigada*

*Благодаря*

*Ευχαριστώ*

*Ačiū*

*Köszönöm*

*Paldies*

*Go raibh maith Agat*

