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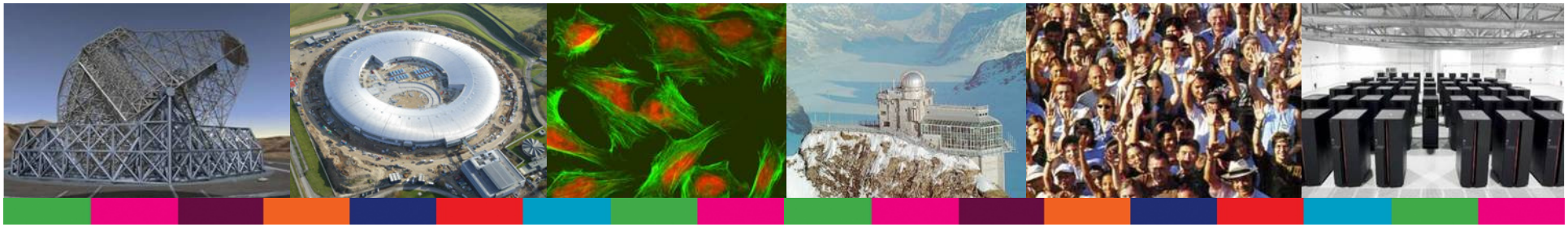
Research Infrastructures in Europe
Now and in the future

Christian Kurrer, European Commission, DG Research, Unit B.3



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Overview

- What are RI
- Why is the EC involved in RI policy
- What is the EC doing in support of RI
- Where do we go from here

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Definition of Research Infrastructures

- **Facilities, resources, and related services used by the scientific community for**
  - ➔ **Conducting leading-edge research**
  - ➔ **Knowledge transmission, knowledge exchange and knowledge preservation**

- **They include**
  - ➔ **Major scientific equipment**
  - ➔ **Scientific collections, archives and structured information**
  - ➔ **ICT-based infrastructures "e-Infrastructures"**
  - ➔ **Other entities of a unique nature, used for research**

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Definition of Research Infrastructures

- **They play a major role in all fields of science and research including**
  - → **Physics, Astronomy, Analytical facilities**
  - → **Life Science**
  - → **Environmental sciences**
  - → **Engineering**
  - → **Social sciences and Humanities**
  - → **Computer science, e-Science**

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Definition of Research Infrastructures

- **Typical examples include**
  - → **Syncrotrons, neutron sources, telescopes, accelerators**
  - → **Facilities for protein crystallography, mouse archives, BSL4 labs**
  - → **Research vessels, observation stations**
  - → **Wind tunnels, wave labs**
  - → **Data bases, collections**

- **What do these facilities have in common / What is the common denominator?**

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Definition of Research Infrastructures

- **Key aspects**
  - → They are often crucial tools for conducting cutting edge research
  - → They are often too costly or complex for individual research groups to operate
  - → They are used by larger number of researchers in a shared access model
  - → Researchers need to obtain access to them, often across borders…
  - → Regional universities, national laboratories, internationally mobile researchers…
    - → European approach

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EC policy for Research

- **Role of the Commission**

  - ➔ **Initiating European Policy**
  - ➔ **Implementing European policy**
  - ➔ **Promoting research in Europe since the 1980s**

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EC policy for Research

- **Principles**
  - ➔ **Respecting the principle of subsidiarity**
  - ➔ **Creating "European added value"**
  - ➔ **Creating win-win situation for facilities, users, funding agencies**

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EC policy for Research Infrastructures

- **Main focus of EC activities**
  - ➔ **Make existing facilities more accessible**
  - ➔ **Promoting networking between facilities and structuring of the European user community**
  - ➔ **Promote joint research activities to develop more powerful facilities**
  - ➔ **Promote the emergence of a new generation of facilities of European scale**

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Main areas of activities

- **Promoting political coordination**
  - ➔ **E.g. through participation in the ESFRI process**
- **Creating the legal framework to facilitate cooperation**
  - ➔ **E.g. through creation of the new ERIC legal instrument**
- **Support to scientific community**
  - ➔ **Through funds made available by the Framework Programme for Research**

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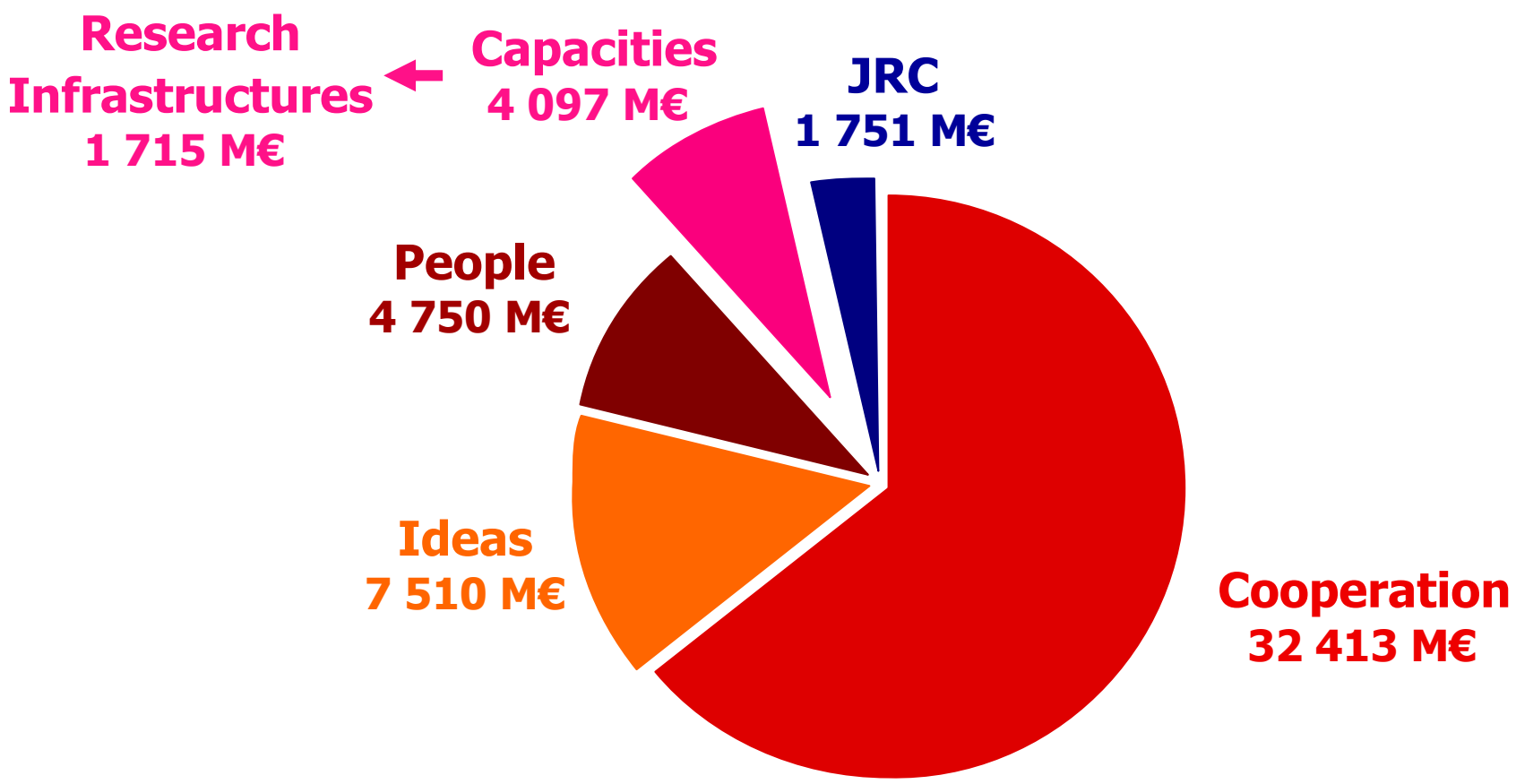
European Research Area

Structure of FP7 2007-2013



FP7 budget (50 521 M€, current prices)

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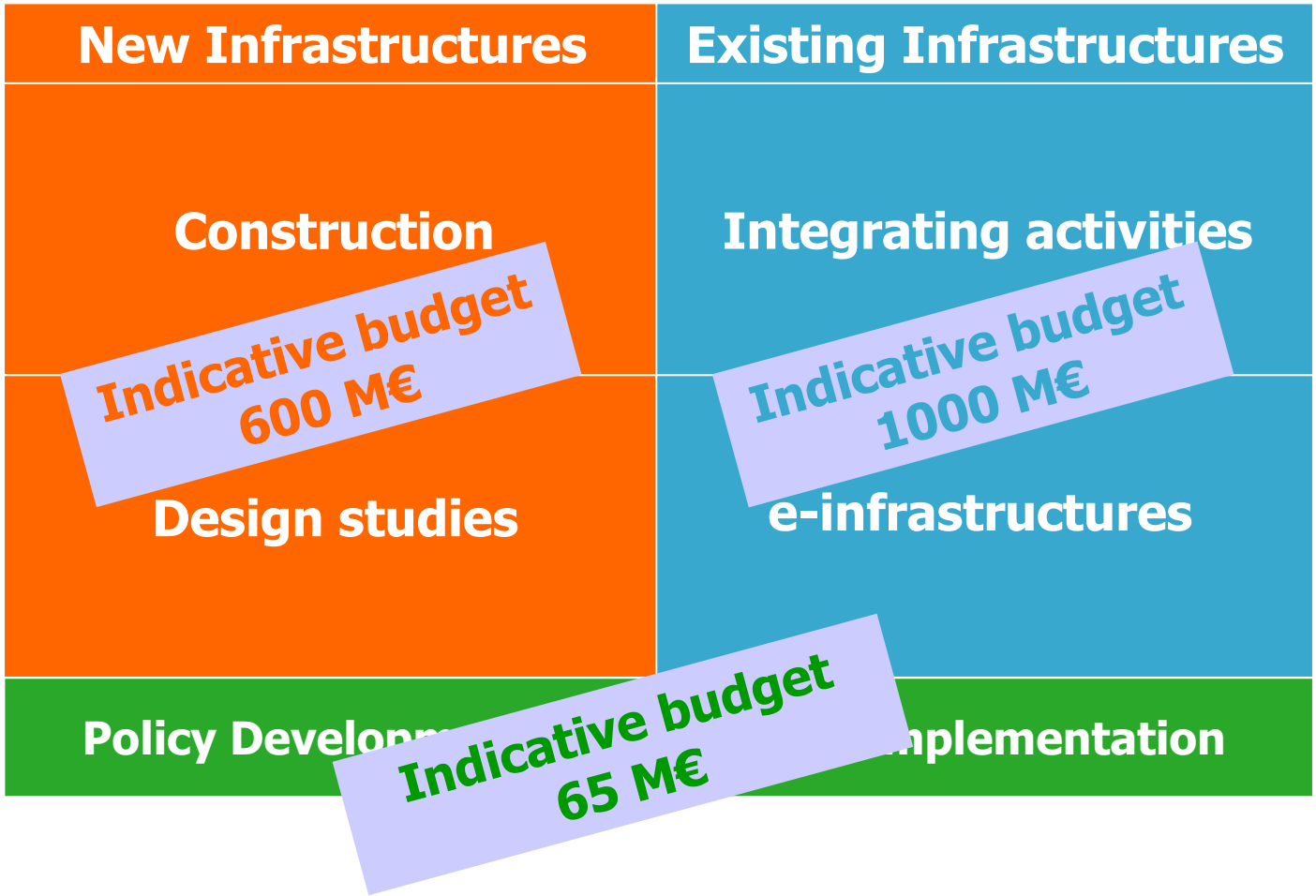
FP7 Research Infrastructures actions



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Implementation of EC support

- **Support to scientific community**
  - ➔ **Through annual calls for proposals**
  - ➔ **Specified in the annual Work Programmes**
  - ➔ **Organised by the Commission's Directorate General for Research (RTD) and Information Society (INFSO)**

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Upcoming RTD call
FP7-INFRASTRUCTURES-2011-1

New Infrastructures	Existing Infrastructures
Construction: Implementation Phase 30 M€	**Integrating activities 100 M€**
Design studies 20 M€	**e-infrastructures**
Policy Development / Programme Implementation 9 M€	

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Indicative timetable

➔ **Publication of call**	**30 July 2010**
➔ **Deadline for submission**	**25 November 2010 17:00 (Brussels time)**
➔ **Evaluation of proposals**	**Dec. 2010 – Feb. 2011**
➔ **Sending of evaluation summary reports (ESR)**	**March 2011**
➔ **Invitation letter to launch negotiation**	**May 2011**
➔ **First grant agreements**	**From autumn 2011**

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Integrating Activities

- **Objective**
  - ➔ **To bring together and integrate, on a European scale, key research infrastructures in a given class, in order to promote their coordinated use and development**
- **Partnership**
  - ➔ **Normally all major existing research infrastructures in Europe in one field. At least 3 MS or AS**
- **Funding**
  - ➔ **EU contribution (usually) up to 10 M€ (4 years)**
- **Mandatory activities**
  - ➔ **Networking Activities**
  - ➔ **Trans-national Access and/or Service Activities**
  - ➔ **Joint Research Activities**

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Integrating activities
Topics

- A list of 23 defined topics, focused on strategic priorities
- Each topic corresponding to one project
- Both for the follow-up of the Research Infrastructure action and for the opening to new communities
- More topics published than can be funded to ensure competition

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Integrating activities
List of topics (1)

- **Social Sciences and Humanities**
  - **INFRA-2011-1.1.1. Language Resources and Tools for cross-disciplinary research in social sciences and humanities.**
  - **INFRA-2011-1.1.2. European Data Infrastructure for multidisciplinary research in the socio-economic behaviour of individuals and households, related to sustainability policy, climate change policy and environmental risk.**
  - **INFRA-2011-1.1.3. Integrating Digital Archives and Resources for Research on Medieval and Modern European History.**
  - **INFRA-2011-1.1.4. Integrating Archives for research on Contemporary European Social History.**

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Integrating activities
List of topics (2)

- **Life Sciences**
  - **INFRA-2011-1.1.5. Facilities and resources for multinational clinical trials.**
  - **INFRA-2011-1.1.6. Facilities and resources for protein structure determination at synchrotron radiation sources.**
  - **INFRA-2011-1.1.7. Life sciences bio-molecular data resources and services.**
  - **INFRA-2011-1.1.8. Facilities and resources for plant phenotyping.**
  - **INFRA-2011-1.1.9. Facilities and services for livestock physiology and phenomics.**

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Integrating activities
List of topics (3)

- **Environmental Sciences and Earth Sciences**
  - → **INFRA-2011-1.1.10.** Research Infrastructures for Carbon Cycle Observations.
  - → **INFRA-2011-1.1.11.** Integrated non-CO2 greenhouse gas Observing Systems.
  - → **INFRA-2011-1.1.12.** Integrated observatories and centres for marine and freshwater biodiversity and for long-term ecosystems research.
  - → **INFRA-2011-1.1.13.** Research infrastructures for forestry research.
  - → **INFRA-2011-1.1.14.** Multidisciplinary Marine Data Centres.
- **Energy**
  - → **INFRA-2011-1.1.15.** Research Infrastructures for thermo-chemical biomass conversion.
  - → **INFRA-2011-1.1.16.** Research Infrastructures for Hydrogen & Fuel Cells facilities.

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Integrating activities
List of topics (4)

- **Materials and Analytical Facilities**
  - **INFRA-2011-1.1.17.** Infrastructures for Neutron Scattering and Muon Spectroscopy. **(Max. EU contribution: 15 M€)**
  - **INFRA-2011-1.1.18.** Synchrotron radiation sources and Free Electron Lasers. **(Max. EU contribution: 15 M€)**
  - **INFRA-2011-1.1.19.** Laser sources.
- **Physics and Astronomy**
  - **INFRA-2011-1.1.20.** Research Infrastructures for hadron physics: Studying the properties of nuclear matter at extreme conditions.
  - **INFRA-2011-1.1.21.** Research Infrastructures for advanced radio astronomy.
  - **INFRA-2011-1.1.22.** Research Infrastructures for optical/IR astronomy.
  - **INFRA-2011-1.1.23.** Research Infrastructures for astroparticle physics: High energy cosmic rays, multi-messenger approach.

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Integrating Activities

- **Key issues to be addressed by an I3 proposal**

  - ➔ **What are the key facilities in this field?**
  - ➔ **What kind of services do they offer to users?**
  - ➔ **What is the current user community?**
  - ➔ **For which new users should the access be facilitated?**

  - ➔ **Where can facilities learn from each other?**
  - ➔ **How can we better structure the user community?**

  - ➔ **Where should facilities jointly work together to improve their facilities**

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Design Studies

- **Objectives**
  - ➔ **Conceptual design of new research infrastructures (or major upgrade), which are of clear European dimension and interest.**
- **Activities**
  - ➔ **Address all the key questions concerning the scientific, technical and financial feasibility of a new or enhanced infrastructure, laying down its conceptual foundations.**
- **Funding and partnership**
  - ➔ **Typically 2-5 M€. Open to all fields of science and technologies. At least 3 MS or AS.**

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Implementation Phase

- **Objectives**
  - ➔ **To ensure a larger harmonisation and interoperability between ESFRI facilities, to exploit synergies, to optimise technological implementation.**
- **Topics**
  - ➔ **INFRA-2011-2.3.1 to INFRA-2011-2.3.4, covering "Social Sciences and Humanities", "Life sciences", "Environmental Sciences" and "Physics and Analytical Facilities".**
- **Partnership**
  - ➔ **Representatives of the ESFRI infrastructures that have sufficiently progressed in their preparatory phase and that have ensured clear commitments for their construction**
- **Funding: EC contribution up to 15 M€**

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Support to policy development and programme implementation

- To strengthen the development of a European policy for research infrastructures and to address specific needs for international cooperation in this field
- Three topics
  - ➔ INFRA-2011-3.1: ERA-NET supporting cooperation for research infrastructures in all S&T fields
  - ➔ INFRA-2011-3.2: Coordination and support actions to international cooperation for research infrastructures in all fields of S&T
  - ➔ INFRA-2011-3.3: Study for the development of a possible EU action on scientific instrumentation

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Contact persons

- **National Contact Point**
  - → **http://cordis.europa.eu/fp7/get-support_en.html**
- **General information on call (@ec.europa.eu)**
  - → **Anna-Maria.Johansson or Annika.Thies (call coordinators)**
- **Specific actions or fields (@ec.europa.eu)**
  - → **Social Sciences and Humanities: Maria.Theofilatou, Lorenza.Saracco**
  - → **Life Sciences: Jean-Emmanuel.Faure, Brigitte.Sambain**
  - → **Environmental Sciences: Agnes.Robin**
  - → **Energy: Brigitte.Weiss**
  - → **Materials/Analytical facilities: Christos.Profilis, Hugues.Crutzen**
  - → **Physics/Astrophysics: Christian.Kurrer, Elena.Righi-Steele**
  - → **Implementation Phase: Lorenza.Saracco**
  - → **Support to policy development: Maria.Douka**

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Trends in RI policy EC

- **Increased focus on**

  - → **Global dimension of Scientific Competitiveness**
  - → **Grand Challenges**
  - → **Global economic competitiveness**

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Trends in RI policy EC

- **Global scientific competitiveness**

  - → **Making more efficient user of facilities and resources**
    - → **Further improving accessibility**
  - → **More efficient pooling of resources**
    - → **Achieving critical mass**
    - → **Capitalizing on diversity**
  - → **Participation in global partnerships**

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Trends in RI policy EC

- **Focus on Grand Challenges**

Mobilizing coordinated research effort on

- → **Climate issues**
- → **Energy**
- → **Health and ageing society**

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Trends in RI policy EC

- **Global economic competitiveness**

  - → **Research as a basis for economic competitiveness**
  - → **Innovation: Ensuring Transfer of knowledge**
  - → **RI Role for Research, Training, Knowledge transfer**
  - → **RI as an economic factor – market for instrumentation**

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Conclusions

- **RI will remain a key element in the construction of the « European Research Area »**
- **Opportunities**
  - → **Better cooperation across borders**
  - → **More efficiency**
  - → **Better science**
  - → **More innovation, contribution to societal issues**
- **Need for concerted actions by**
  - → **Scientific user communities**
  - → **Facility operators**
  - → **Funding agencies**
  - → **Policy makers**