Οδικός Χάρτης ESFRI και Ελληνικές Ερευνητικές Υποδομές

Ενημερωτική εκδήλωση για τις Ερευνητικές Υποδομές

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Research Infrastructures are facilities, resources and related services *offered to the scientific community* to conduct *(basic and applied) research* to generate innovations for our daily life.

This includes:
- major scientific equipment (or sets of instruments);
- knowledge resources: collections, archives, scientific data;
- e-infrastructure: data, computing and software systems;
- any other infrastructure of a unique nature essential to achieve excellence in research and innovation.
ESFRI

European Strategy Forum on Research Infrastructures

- Set up by the EU Council of Research Ministers in 2002
- Brings together representatives of Ministers of the 27 Member States, 10 Associated States, and of the European Commission
- Supports a coherent and strategy-led approach to policy making on Research Infrastructures
ESFRI – The Roadmap

- The ESFRI roadmap identifies new pan-European Research Infrastructures or major up-grades to existing ones, corresponding to the needs of European research communities in the next 10 to 20 years, in all fields of Sciences and Technologies, regardless of possible location

- First Roadmap published in 2006

- Followed by two updates in 2008 and 2010:
  - Now contains 48 projects
  - Requiring major financial investment (~20 b€) and long term commitment for operation (~2 b€/year)
The ESFRI Process (1)

RI proposal by Member State(s)

ESFRI

TWG1
TWG2
TWG3

- Pan-European
- Science case
- Technical case
- Business case
- Overall maturity

Recommended projects and analysis of landscape
The ESFRI Process (2)

- Finalise concept and design
- RI Organisation
- Legal framework
- Business plan
- Finance model

EC Funding of Preparatory Phase

ESFRI Incubator role

Member States Funding of Implementation Phase and operation

Support from EC
<table>
<thead>
<tr>
<th>Social Sc. &amp; Hum. (5)</th>
<th>Life Sciences (13)</th>
<th>Environmental Sciences (9)</th>
<th>Energy (7)</th>
<th>Material and Analytical Facilities (6)</th>
<th>Physics and Astronomy (10)</th>
<th>e-Infrastructures (1)</th>
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<tbody>
<tr>
<td>SHARE</td>
<td>BBMRI</td>
<td>ELIXIR</td>
<td>ICOS</td>
<td>EURO-ARGO</td>
<td>ECCSEL</td>
<td>EUROFEL</td>
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<td>European Social Survey</td>
<td>ECRIN</td>
<td>INFRA FRONTIER</td>
<td>LIFEWATCH</td>
<td>IAGOS</td>
<td>Windscanner</td>
<td>EMFL</td>
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<td>CESSDA</td>
<td>INSTRUCT</td>
<td>EATRIS</td>
<td>EMSO</td>
<td>EPOS</td>
<td>EU-SOLARIS</td>
<td>European XFEL</td>
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<td>CLARIN</td>
<td>EU-OPENSCREEN</td>
<td>EMBRC</td>
<td>SIAEOS</td>
<td>EISCAT_3D</td>
<td>JHR</td>
<td>E-ELT</td>
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<tr>
<td>DARIAH</td>
<td>Euro BioImaging</td>
<td>ERINHA BSL4 Lab</td>
<td>COPAL</td>
<td>IFMIF</td>
<td>NEUTRON ESS</td>
<td>KM3NeT</td>
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<td>ISBE</td>
<td>MIRRI</td>
<td></td>
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<td>HIAPER</td>
<td>ILL20/20 Upgrade</td>
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<td>ANAEE</td>
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<td>MYRRHA</td>
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**Greek Participation and funding commitments**

**Distributed research infrastructures**

**Single sited research infrastructures**
<table>
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<tr>
<th>Scientific Area (ESFRI)</th>
<th>Greek Involvement ESFRI</th>
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<tbody>
<tr>
<td>Biological &amp; Medical Sciences</td>
<td>BBMRI, EATRIS, ELIXIR, Infrafrontier, EMBRC, EURO-BiolImaging, ERINHA, ISBE</td>
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<tr>
<td>Energy</td>
<td>HiPER, ECCSEL, EU-SOLARIS, WindSCANNER</td>
</tr>
<tr>
<td>Physical Sciences &amp; Engineering</td>
<td>ELI, KM3NeT</td>
</tr>
<tr>
<td>Material, Analytical Facilities</td>
<td>European XFEL</td>
</tr>
<tr>
<td>Environmental Sciences</td>
<td>COPAL, EMSO, EPOS, EURO-ARGO, LIFEWATCH</td>
</tr>
<tr>
<td>Social Sciences &amp; Humanities</td>
<td>CESSDA, SHARE, CLARIN, DARIAH</td>
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<td>e-infrastructures</td>
<td>PRACE</td>
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National Roadmaps for Research Infrastructures

- Roadmap in place
- Roadmap under preparation
- National funding reserved for new/updated RIs
Projects expected to be implemented by 2013

- **Social Sciences and Humanities**: CLARIN, DARIAH
- **Environmental Sciences**: EISCAT, EURO ARGO, IAGOS, ICOS, LIFEWATCH
- **Health & Food**: BBMRI, EATRIS, ECRIN, ELIXIR, INFRAFRONTIER, INSTRUCT
- **Material Sciences**: European Spallation Source
- **Physical Sciences**: E-ELT, ELI

Projects officially under implementation (Roadmap 2010):
CESSDA, ESRF Upgrade, European Social Survey, SHARE, XFEL, ILL 20/20, FAIR, SPIRAL2, PRACE, JHR
Current ESFRI Working Groups

- **Strategy Working Groups:**
  - Energy
  - Social & Cultural Innovation
  - Environment and Climate change
  - Health & Food
  - Physics & Engineering

- **Implementation Working Group**
- **Regional Issues Working Group**
- **Innovation Working Group**
- **Ad-hoc Expert Group on indicators**
Recommendations by IG

- Roadmap projects should involve all stakeholders (MS, AC, non-EU countries) from an early stage

- MS/ACs should examine how they can better fit ESFRI projects into their national roadmaps

- Projects and Member States should explore the use of structural funds to finance national nodes of distributed pan-European RIs

- ESFRI should politically support the roadmap projects by raising awareness among the Member States
Regional Partner Facility

“A RPF to a Research Infrastructure of pan-European interest must itself be a facility of **national or regional importance** in terms of socio-economic returns, training and attracting researchers and technicians. The quality of the facility including the level of its scientific service, management and open access policy must meet the **same standards required for pan-European** Research Infrastructures. The recognition as an RPF should be under the responsibility of the pan-European single sited or distributed **ESFRI Research Infrastructure** itself, based on regular peer-review”.

- **The RPFs contribute to a more balanced development of the European Research Area, and to the “circulation of knowledge” throughout Europe**

- **Building up the regional RI capacity by using the Structural Funds**
Next steps

• The EC has set up an Expert Group on Assessment of the ESFRI projects.

• The members of the Expert Group are high level managers expert in setting up and managing RIs.

• This group will assess the financial and managerial maturity of the projects of the ESFRI roadmap.

• Strategy WGs monitor and report on the scientific development of projects.

• The IG will work together with the this Expert Group and the Strategy Working Groups to assist the implementation of the projects.
Development of World-Class RIs & RPFs

- Develop world-class research and ICT infrastructures building on existing regional scientific excellence through Structural Funds support
- Develop Regional Partner Facilities (RPF)
- Increased investments in research infrastructures, including those of ESFRI roadmap, by achieving synergies between Horizon 2020 and the Structural Funds
- “By 2015, EC and the Member States should have completed or launched the construction of 60% of the ESFRI projects”
Horizon 2020

**Excellent science**
- European Research Council
- Future and Emerging Technologies
- Marie Curie actions
- Research infrastructures (including e-infrastructures)

**Societal challenges**
- Health, demographic change and wellbeing
- Food security, sustainable agriculture, marine -maritime research, bio-economy
- Secure, clean and efficient energy
- Smart, green, integrated transport
- Climate action, resource efficiency, raw materials
- Inclusive, innovative and secure societies

**Industrial leadership**
- Leadership in enabling and industrial technologies (ICT, space, nanotechnologies, advanced materials and advanced manufacturing and processing, biotechnology)
- Access to risk finance
- Innovation in SMEs

EIT

JRC (non-nuclear)
Research Infrastructures under H2020

4.1. Developing the European RIs for 2020 and beyond

- 4.1.1 Developing **new world-class RIs**
- 4.1.2 **Integrating** and opening **national RIs of pan-European interest**
- 4.1.3 Development, deployment and operation of **ICT based e-Infrastructures**

4.2. Fostering the innovation potential of RIs & their human capital

4.3. Reinforcing European RI policy and international cooperation

In complementarity with the REGIO actions (Structural & Social Funds)
1.1 Developing new world-class RIs

- **Objective:** To ensure implementation, long-term sustainability and operation of the ESFRI and other world-class RIs

- EU funding will support:
  - the **preparatory phase** of future RIs (e.g. detailed construction plans, legal arrangements, multiannual planning, etc.)
  - the **implementation phase** (e.g. R&D and engineering work, etc.)
  - development of **Regional Partner Facilities** in synergy with DG REGIO actions (structural funds and social funds)
  - the **operation phase** (e.g. access, data handling, outreach, training and international cooperation activities)
  - **design studies** for new RIs through a bottom-up approach
1.2 Integrating and opening existing national RIs of pan-European interest

- **Objective:** *Open up key national RIs* to all European researchers and ensure *optimal use* and *joint development*

- EU funding will support “**European Research Infrastructure Networks**” bringing together RIs in a given field covering:
  
  ✓ *Transnational and virtual access* activities
  
  ✓ *Networking* activities to foster a culture of cooperation
  
  ✓ *Joint research* activities to *improve the services* provided by the infrastructures
1.3 Development, deployment and operation of ICT based e-Infrastructures

Objective: *To achieve by 2020 a single and open European space for online research*

- EU funding will support:
  - Global research and education networks
  - Grid and cloud infrastructures
  - Ecosystem of supercomputing facilities progressing towards exa-scale
  - Software and service infrastructure for visualisation and simulation
  - Real-time collaborative tools for virtual research communities
  - Interoperable, open and rich scientific data infrastructure
2014-2020: Thematic objectives

1. Research and innovation
2. Information and Communication Technologies
3. Competitiveness of Small and Medium-Sized Enterprises (SME)
4. Shift to a low-carbon economy
5. Climate change adaptation and risk management and prevention
6. Environmental protection and resource efficiency
7. Sustainable transport and disposal of congestion on major network infrastructure
8. Employment and support for labour mobility
9. Social inclusion and poverty reduction
10. Education, skills and lifelong learning
11. Increased institutional capacity and effectiveness of public administration
<table>
<thead>
<tr>
<th>Thematic objectives</th>
<th>Ex ante conditionality</th>
<th>Criteria for fulfilment</th>
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<tbody>
<tr>
<td>1. Strengthening research, technological development and innovation (R&amp;D target) (referred to in Article 9(1) )</td>
<td>1.1. Research and innovation:</td>
<td>A national or regional research and innovation strategic policy framework is in place that:</td>
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<td>The existence of a <strong>national or regional research and innovation strategic policy framework</strong> for smart specialisation in line with the National Reform Programme, to leverage private research and innovation expenditure.</td>
<td>– is <strong>based on a SWOT analysis</strong> to concentrate resources on a <strong>limited set of research and innovation priorities</strong>;</td>
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<td>For research infrastructures only:</td>
<td>– outlines measures to <strong>stimulate private RTD investment</strong>;</td>
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<td>1.2 The existence of a multi-annual plan for budgeting and prioritization of investments.</td>
<td>– contains a <strong>monitoring mechanism</strong>.</td>
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<td>An indicative <strong>multi-annual plan for budgeting and prioritization of investments</strong> linked to EU priorities and, where appropriate, the European Strategy Forum on Research Infrastructures – ESFRI has been adopted</td>
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Important novelties for R&I in proposed Regulations (1)

- **SMEs only!** Large Firms only in connection with R&TD+I. Art. 3 (ERDF Reg.): "The ERDF shall support productive investment, which contributes to creating and safeguarding sustainable jobs, through direct aid to investment in SMEs"

- **No physical infrastructures in rich regions (except R&I):** Art. 3 (ERDF Reg.): "In more developed regions, the ERDF shall not support investments in infrastructure providing basic services to citizens in the areas of environment, transport, and Next Generation Access (NGA)/ICT".

  Attention: under discussion in Council
Σας ευχαριστώ!