

# Research Infrastructures in **HORIZON 2020** and possible actions to increase the synergies

## e-IRG Workshop

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*European Commission*

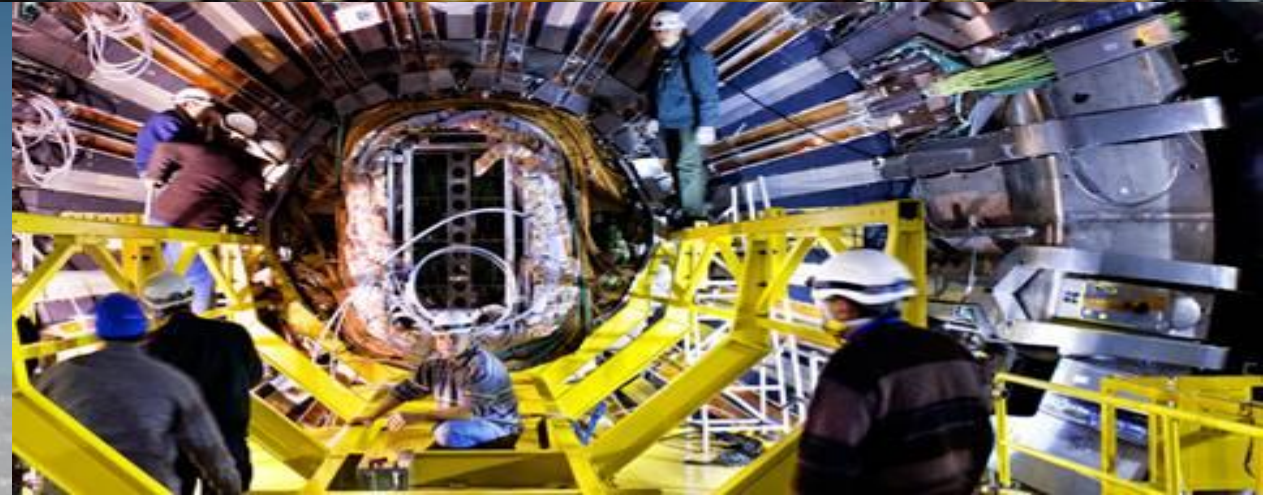
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**Research Infrastructures** are facilities where **basic research** as well as **applied research** are interacting to generate innovations for our daily life



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# RIs at the core of an efficient Research & Innovation Strategy

- ❑ RIs designed and operated to attract / host best researchers in the world (open access) play important roles in the advancement of knowledge and technology
- ❑ To respond to challenges they need innovation and world-level quality in all aspects of their activities: scientific, educational, technological and managerial
- ❑ This liberates the creative potential of the staff, the users and the providers, from scientists to industries and thus becomes a crucial socio-economic and innovation driver

RIs **are the backbone in the construction of the European Research Area (ERA).**



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# RIIs need world-level quality in all aspects of their activities

- ✓ Science & technology: top researchers are attracted by unique facilities (and data) allowing them to gather scientific information beyond the frontiers of knowledge
- ✓ Education and Technology Transfer:
  - knowledge acquired should be disseminated and preserved;
  - the developments occurring in RIIs should not be lost;
  - these are key responsibilities of RIIs
- ✓ Management: efficiency of RI eco-systems often need integrated approaches, leading to the development of distributed RIIs, boosted by the increasing capability of **ICTs**



# Specific impact of e-Infrastructures: interconnecting communities



Innovation  
Union  
EU 2020

# Development of World-Class RIs & RPFs

Regional  
Policy in  
EU 2020

- ❖ Develop world-class research and **ICT** infrastructures building on existing regional scientific excellence through Structural Funds support.
- ❖ Develop Regional Partner Facilities (RPF).
- ❖ Help responding to **Grand Challenges** (*energy supply, climate change, healthcare for all*) but need **world-level quality** in all aspects of their activities: scientific, educational, technical and managerial.
- ❖ “By 2015, the Member States together with the Commission should have completed or launched the construction of 60% of the ESFRI projects”

[Europe 2020 Flagship Initiative-Innovation Union, COM(2010)]



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# Green Paper Consultation on the Research Infrastructures

<b>RIs</b>	<b>ERA</b>
	<b>ESFRI</b>
	<b>Funding</b>
	<b>e- infrastructures</b>
	<b>Integrating Activities</b>
	<b>Emergence of new RIs</b>
	<b>Industry</b>



# Key headline messages for.....

## e- infrastructures

- **Many** of the respondents raised the importance of **e-infrastructures** for the future of the European research and innovation.
- e-Science, virtual environments and **Open Access** to data and publications will provide many opportunities to improve the (for some responders Open) innovation process and to tackle the scientific challenges.
- The potential of e-infrastructures should be exploited as **knowledge** and **innovation enablers**, considering the needs of data and computing-intensive research, data management, networking, application development, training and education.
- E-Infrastructure should be coordinated at EU level to provide **seamless services** to researchers, including for **international cooperation**.
- Promoting the use of e-infrastructures to more disciplines (notably **Social Sciences** and **Humanities**) addressing also multidisciplinary challenges.





# The CSF (2014-2020)

## “Excellence in the science base”

### Research Infrastructures

#### Developing the European RIs for 2020 and beyond

- *ESFRI and other world-class research infrastructures*
- *Integrating and opening national RIs of pan-European interest*
- *Development, deployment and operation of ICT based e-Infrastructures*

**Main part**

#### Fostering the innovation potential of RIs & their human capital

- *Strengthening the innovation potential of RIs*
- *Strengthening the human capital of RIs*
- *Contributing to a world-class level of human resources*

**Increased emphasis**

#### Reinforcing European RI policy and international cooperation

- *Supporting partnerships between policy makers / funding bodies*
- *Facilitating the development of a true European RI policy*
- *Facilitating strategic international cooperation*

**Essential EC actions**



# Possible RI – EU actions (I)

## Developing the European RIs for 2020 and beyond

- **Fostering the development of pan-European projects (ESFRI) and other world-class RIs. The EU funding will contribute to and leverage, as appropriate**
  - *The preparatory, implementation and the operation phase*
  - *Design studies*
- **Integration of - access - to national RIs of pan-EU interest**
  - *European RIs integrated networks to structure better, on a European scale (amount of networks by 2020 ~ 150 / 30,000 researchers accessing them per year)*
- **Development, deployment and operation of ICT-based e-infrastructures**
  - *To achieve by 2020 a single and open European space for online research*
  - *Support to: global research and education networks providing advanced and standardised services on demand; grid and cloud infrastructures; an ecosystem of supercomputing facilities; and an interoperable, open and rich scientific data infrastructure.*

Improved access to  
scientific information  
(e.g. scientific digital libraries)

Consistency & synergies  
between funding  
sources  
(during life cycle)

Consistent management  
of RIs in Europe  
(RIs are Knowledge Industries)



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# Possible RI – EU actions (II)

## Fostering the RI innovation potential and their human capital

- ***Strengthening the EU technological Innovation potential***
  - *Fostering public-private R&D partnerships and coordinated actions*
  - *Encouraging RIs to act as early adopter of technology*
  - *Promoting R&D partnership with industry, facilitating their industrial use*
  - *Encouraging the creation of innovation clusters by integrating research infrastructures into local, regional and global innovation ecosystems*
- ***Strengthening the human capital of RIs in Europe***
  - *Training of staff managing and operating RIs*
  - *Staff mobility across such facilities*
  - *Exchanging of best practices and education of the next generation of researchers*

**Improved innovation  
around RIs**  
(e.g. better links with industry)

**Improved  
awareness about  
RIs** (at national and EU levels)

**Improved impacts at  
all levels**  
(local, regional, national, EU)



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# Possible RI – EU actions (III)

## Reinforcing European RI policy and international cooperation

- ***Strengthening the EU – RI policy***
  - *Assisting partnerships between policy makers / funding bodies*
  - *Supporting synergies with other policies (e.g. REGIO, EMPL, HEALTH)*
  - *Monitoring of RIs in Europe*
  - *Supporting assessment of RIs in Europe*
- ***Strengthening the strategic International cooperation***
  - *Facilitating the development of global RIs*
  - *Facilitating the cooperation of European RIs with their non-European counterparts*
  - *Ensuring the coordination with international bodies such as the UN and the OECD*

Greater coherence in  
policy- & decision making  
at all levels

Improved mapping &  
monitoring  
(at national and EU levels)

Speaking with one  
voice at int'l level  
(e.g. RI “Ambassadors”)



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RI actions  
within CSF  
"Horizon 2020"

**ESFRI  
projects &  
other large  
scale RIs;  
reinforced  
regional  
potential**

**Integration  
of and  
access to RIs**

**Development  
& operation of  
ICT-based e-  
infrastructures**

**Technological  
Innovation  
potential  
of RIs**

*The matricial approach of the EU-RI actions  
will enable serving all actions under CSF*

**Human  
Innovation  
potential  
of RIs**

*Shared objectives and principles*

**Tackling Societal Challenges**

**Creating Industrial Leadership  
& Competitive Frameworks**

**Excellence in the Science Base**  
Research infrastructures incl. e-Infrastructures

*Common rules, toolkit of funding schemes*

**Support to policy coordination**

**International cooperation**



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# HORIZON 2020: .... “And strengthening complementarities with the Structural Funds”

[€86 billion allocated (2007-13) to R&D and innovation, entrepreneurship, ICT and human capital development]

## Linkages

Regional Policy in Europe 2020	HORIZON 2020
<ul style="list-style-type: none"><li>- To unlock the growth potential of EU, by promoting innovation in all regions</li></ul>	<ul style="list-style-type: none"><li>- Fostering the RI innovation potential and their human capital</li></ul>
<ul style="list-style-type: none"><li>- Is a key means of turning the priorities of the Innovation Union into practical actions on the ground</li></ul>	<ul style="list-style-type: none"><li>- One of the objective of the Innovation Union flagship is to complete or initiate 60% of the ESFRI projects.</li></ul>
<ul style="list-style-type: none"><li>- Cohesion policy aims at more balanced distribution, with impact on regional growth/catch-up</li></ul>	<ul style="list-style-type: none"><li>- To foster the emergence of Regional Partner Facilities and to support less performing M-S and regions to involve in these initiatives.</li></ul>
<ul style="list-style-type: none"><li>- To further development and use of ICT-based e-infrastructures</li></ul>	<ul style="list-style-type: none"><li>- Development, deployment and operation of ICT-based e-infrastructures (supporting e-Science)</li></ul>



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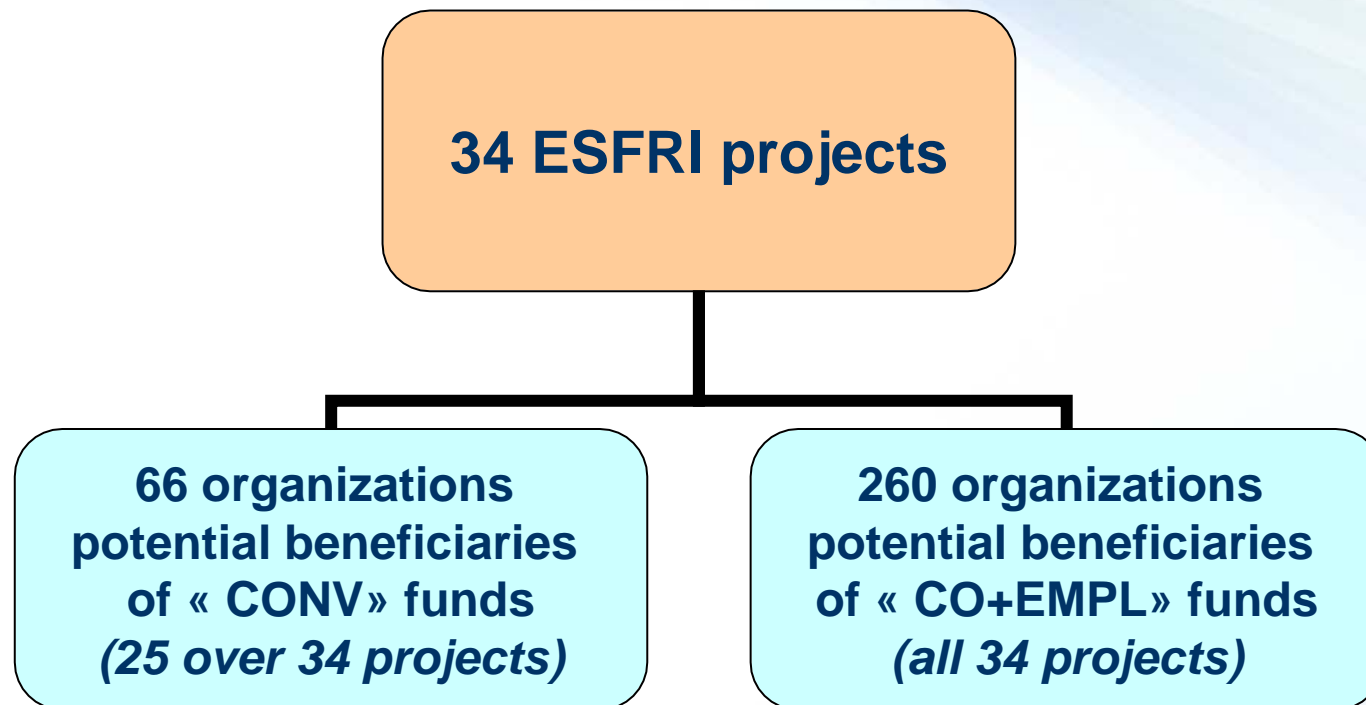
# EU Cohesion Policy and RIs

- **Focus on Convergence Regions is essential for Cohesion Policy to Reducing Regional disparities.**
- **Through a Smart Specialisation Strategy, the Cohesion Policy, would provide effective support to regions to create a “staircase to excellence” for research and innovation facilities and businesses.**
- **Fields of intervention of Cohesion Policy: transport, environment, energy, tourism, culture, education, health, RTD, Innovation, Entrepreneurship and Information Society.**
- **So far, research infrastructures very unevenly distributed across the EU; Cohesion Policy aims at more balanced distribution, with impact on regional growth/catch-up.**



# There are strong opportunities to develop synergies between Research and Regional policies

An analysis of the ESFRI projects comes to the conclusion that the use of Structural Funds is clearly possible for developing RIs and/or Regional Partner Facilities.



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# SF Allocation to RTD-I for RIs

**€ 86 billion** (i.e. 25% of total SFs), **allocated to RTD-I (2007-2013), of which:**

- **€ 50 billion:** RTD and innovative capacity of businesses.
- **€ 26 billion:** ICTs, support for business start-ups, skills development etc.
- **€ 9.74 billion** (i.e. 11.4% of total RTD-I), **allocated under Code 02:** *"Research and development Infrastructures and centres of competence in a specific technology"* **to RIs: Exclusively from DG REGIO,** broken down:

**75.8%,** in favour of **Convergence regions**

**22.9%,** in favour of **Competitiveness and Employment regions**

**1.3% for** exploiting RIs across borders, i.e. **European Territorial Cooperation**





# Role of National / Regional Authorities implementing the different EU policies

- Exploiting the potential for synergies
- **Fostering co-ordinated access to the EU funds:**  
*possible support of ESFRI projects under SF (e.g. ELI), to be explored with MAs (ad hoc template)*
- Ensuring communication & information
- Updating a database of projects
- Preventing financial irregularities

**Attention!!** *It is critical, in discussions between the Managing Authorities and/or RI owners/managers to explore and assess the impact of facilities (RIs) on the economy of the region, in particular in terms of creation and development of innovative businesses (including spin-offs, start-ups, etc).*



# ESFRI known examples to date (1)

- ❑ **Extreme Light Source (ELI):** The first three ELI facilities will be co-funded from the ERDF.
  - The **ELI Beamline** facility to be located in the **Czech Republic**, was approved for the funding by the EC on 20 April 2011 (236 M€ out of the total 290 M€ budget being funded by SF), allowing the launch of construction activities.
  - Discussions are ongoing between RO authorities and DG-Regio, to explore the feasibility of using 280M€ from SF for the **ELI Nuclear Physics** facility with a budget of 341 M€, to be located in **Romania**.
  - Discussions are ongoing between HU authorities and DG-Regio, in order to modify the HU OP and to allow for SF use for the **ELI Attosecond** facility, with a budget of 245 out of 254 M€, in **Hungary**; application due in mid 2012.



# ESFRI known examples to date (2)

❑ **LIFEWATCH**: Structural funds from the Andalusia region (**ES**) are being used, for the Spanish hub.

A study demonstrating both the feasibility and sustainability of the **GR** hub (provided Structural Funds are granted for the first 4-5 years of operation), has been completed and will be submitted to the GR authorities

❑ **INFRAFRONTIER – EUROBIOIMAGING – INSTRUCT**: **CZ** nodes to be built with ERDF funds

❑ **BBMRI (ES) - NEUTRON ESS (SE) – SPIRAL2 (FR-HU-PL)**:

Are known to be exploring the potential use of SF





# Non-ESFRI known RI examples to date (1)

- ❑ WROCLAW Research Centre EIT+, in PL: has been co-funded by the Region of Lower Silesia and the City of Wroclaw
- ❑ CEITEC and BIOCEV, both in CZ: construction of the CEITEC facilities financed by ERDF Brno Region (OPRDI); BIOCEV core facilities also supported by ERDF (Central Bohemian Region)
- ❑ POTSDAM – GOLM Science Park in DE: supported with 74 M€ (1997-2007) from ERDF funds
- ❑ NENCKI Institute in PL: about 250 M€ investments from PL OPs between 2007-2013
- ❑ UNIVERSITE DE MEDITERRANEE in FR: has been co-financed between: 50% ERDF, 20% University (own funds), 13% Région PACA, 13% Conseil Général de Bouches du Rhône and 4% Mairie de Marseille



# Non-ESFRI known e-RI examples to date (2)

## **Renewal of the Hungarian NREN (NIIFI/HUNGARNET):**

- The National Information Infrastructure Development Institute (NIIFI) is the Hungarian National Research and Education Network (NREN): responsible for developing and operating the research network and the e-Infrastructure for the entire Hungarian academic and research networking community and the public collections
- The HU NREN is part of the EU-funded high-speed research network GÉANT since 2000
- In 2007 three National Development Plan (NDP) projects were funded with ~ HUF 4.7b (~€18 million) to upgrade the existing NREN and create a super high-speed research network
- HU developed one of the most advanced research and education networks in Europe via an effective and complementary use of National and European financial instruments (FP ~ 2M€ and SFs ~ 18M€)



# The role of the EU...

- ❑ **EU would be able to play a more leveraging role ...**
  - ✓ but more resources are needed, even if this role would be limited to a coordination role
  - ✓ ...need to convince Member States ...and their Finance Ministers...
- ❑ **EU would be able to help developing a framework for an efficient European Research Area**
  - ✓ the implementation of such a policy implies constant dialogue / concerted actions between stakeholders notably for the support of methodological & technical developments (role of ESFRI and its working groups)
- ❑ **EU would gain in developing better industrial access to facilities, as well as better links with regional clusters**
- ❑ **The Commission has already joined forces with the European Investment Bank to promote the use of the Risk Sharing Finance Facility (RSFF) for the construction/upgrading of RIs.**



***Merci*** ***Grazie***

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**Thank you!**

***Paldies***

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***Aitäh***

***Tack***

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