Research Infrastructures in Horizon 2020

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ELIXIR Launch Event – Brussels – 18/12/2013

From FP7 to Horizon 2020

- ➢ More focused support to the implementation and operation of world-class infrastructures such as ESFRI projects
- ➢ Broader access to and deeper integration of European research infrastructures
- ➢ Foster the innovation potential of research infrastructures
- ➢ Widen the participation to pan-European research infrastructures
- ➢ More support to e-infrastructures
- ➢ Reinforce policy support to European strategy on research infrastructures
- ➢ Develop international dimension of the actions

Horizon 2020 – Framework Programme
for Research and Innovation (2014-2020)

Excellent science

- European Research Council
- Future and Emerging Technologies
- Marie Curie actions
- **European Research infrastructures (including e-infrastructures) – 2.488 M€**

Societal challenges

- Health, demographic change, 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

Research Infrastructures in Horizon 2020

1. Developing the European RIs for 2020 and beyond
   ➢ Developing new world-class RIs
   ➢ Integrating and opening national and regional RIs of European interest
   ➢ Development, deployment and operation of ICT based e-Infrastructures

2. Fostering the innovation potential of RIs and their human resources

3. Reinforcing European RI policy and international cooperation

ESFRI roadmap 2010

10+38 new - or major upgrade of - Research Infrastructures of pan-European interest

(+ 3 additional projects from the CERN Council strategic roadmap for particle physics *)

Social Sc. & Hum. (5)	Life Sciences (13)		Environmental Sciences (9)		Energy (7)	Material and Analytical Facilities (6)	Physics and Astronomy (10)		e-Infra-structures (1)
SHARE	BBMRI	ELIXIR	ICOS	EURO-ARGO	ECCSEL	EUROFEL	ELI	TIARA*	PRACE
ESS Survey	ECRIN	INFRA FRONTIER	LIFEWATCH	IAGOS	Windscanner	EMFL	KM3NeT	CTA	
CESSDA	INSTRUCT	EATRIS	EMSO	EPOS	EU-SOLARIS	European XFEL	E-ELT	SKA	
CLARIN	EU-OPENSCREEN	EMBRC	SIAEOS	EISCAT_3D	JHR	ESRF Upgrade	SPIRAL2	FAIR	
DARIAH	Euro BioImaging	ERINHA BSL4 Lab		COPAL	IFMIF	NEUTRON ESS	SLHC-PP*	ILC-HIGRADE*	
	ISBE	MIRRI			HiPER	ILL20/20 Upgrade			
	ANAEE				MYRRHA				

ERIC established

ERIC in preparation

RIs in the implementation phase

Distributed research infrastructures

Single sited research infrastructures

Commitments within the Innovation Union

- *By 2015 (…) have completed or launched the construction of 60% of the priority European research infrastructures currently identified by ESFRI (…).*

- *… opening of Member State operated research infrastructures to the full European user community …*

- *The European Union should step up its cooperation on the roll-out of the global research infrastructures…*
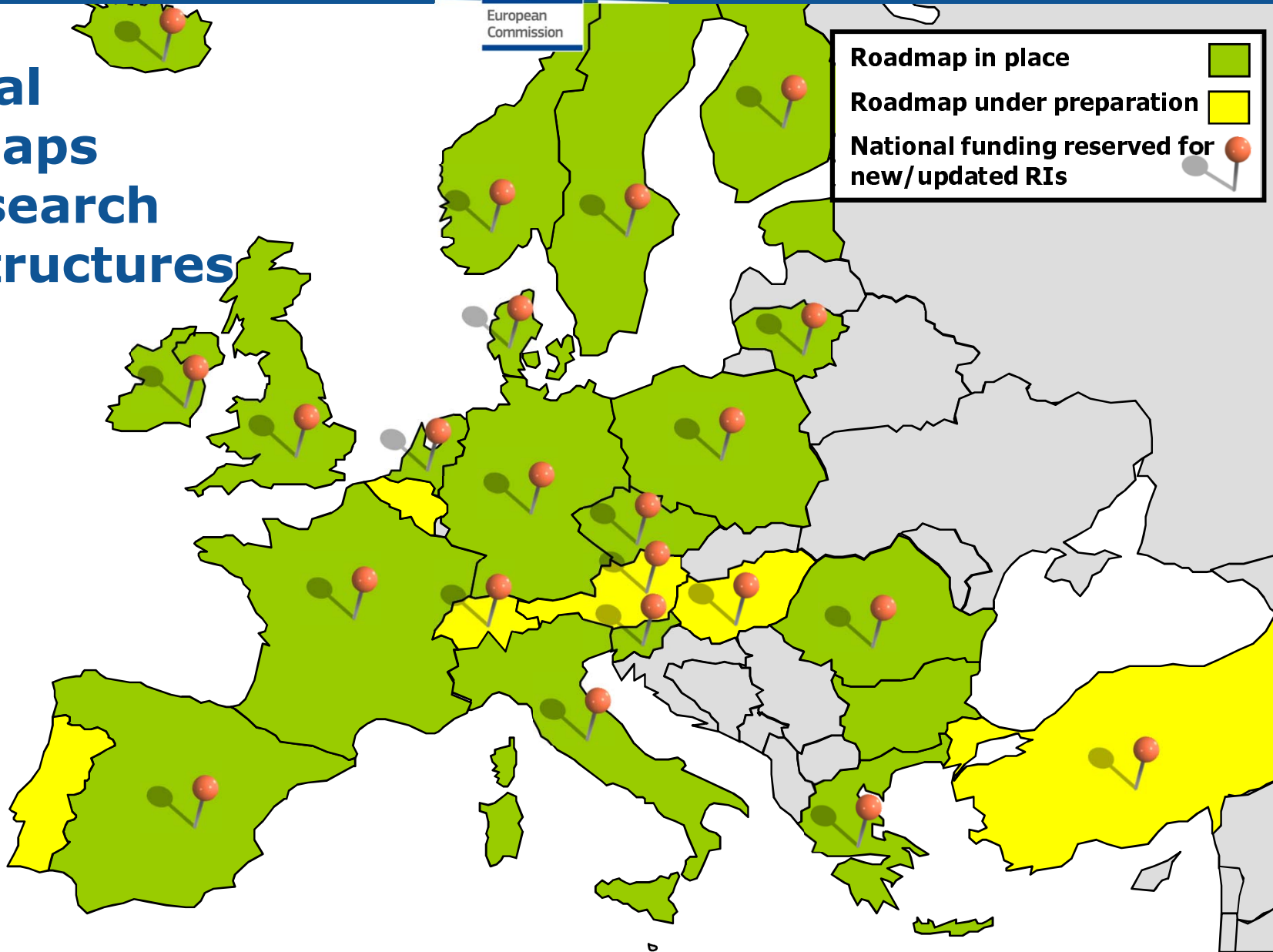
ERIC: European Research Infrastructure Consortium

- **A new legal framework, at EU level, to facilitate the joint establishment and operation of Research Infrastructures of European interest among several countries**

- **A legal personality recognised in all EU Member States**

- **Current status:**
  - First two ERIC status awarded to **SHARE** on March 2011, and **CLARIN** on February 2012, both *hosted by NL*
  - Four furher ERIC status awarded to **EATRIS**, *hosted by NL*, **BBMRI**, *hosted by AT*, **ECRIN** *hosted by FR*, **ESS**, *hosted by UK*, in November 2013

National Roadmaps for Research Infrastructures

European Commission

Roadmap in place

Roadmap under preparation

National funding reserved for new/updated RIs

2014-2015 Research Infrastructures WP

4 Calls - 22 topics in total

1. Developing new world-class Research Infrastructures

2. Integrating and Opening RI of pan-European Interest

3. *e-Infrastructures*

4. Innovation, Human resources, Policy and International cooperation for research infrastructures

Developing New world-class RIs
Concept & Preparatory Phases

Help Europe respond to challenges in science, industry & society:

- Support the design study of new research infrastructures, which are of a clear European dimension and interest:

  - ➢ **bottom-up process**

- Support the preparatory or pre-implementation phase of ESFRI projects:

  - ➢ **targeted approach, list based on ESFRI recommendations**

Developing New world-class RIs
Implementation & Operation Phases

Facilitate and support the implementation, long-term sustainability and efficient operation of the ESFRI & other world-class RI (OWCRI):

➤ Individual ESFRI projects and selected OWCRI with established or establishing a legal structure and governance such as ERIC

  ➤ **targeted approach, list based on ESFRI recommendations**

➤ Clusters: joint activities and implementation of common solutions for RI in specific domains

  ➤ **bottom-up, clusters address ESFRI together with OWCRI, IA, e-infrastructures**

Developing New world-class Ris

Clusters

Exploit synergies for joint activities, optimise technological implementation of common solutions, ensure a larger harmonisation, interoperability between research facilities such as:

- Development of common devices and/or critical components for data handling

- Common data policies

- Training RI managers

- Developing the innovation capacities of RI

Integrating and Opening
National RI of pan-European Interest
Integrating Activities

To open up key national and regional research infrastructures to all European researchers and to ensure their optimal use and joint development:

➢ Networking;

➢ Transnational / Virtual Access;

➢ Joint Research Activities for the improvement of RI services.

And emphasis on management efficiency, innovation capacity (technology transfer, participation of SMEs, instrumentation development), international dimension, management of generated data…

Strong support to life science research (9 identified areas)

Development, deployment, operation of ICT-based e-Infrastructures

Achieve by 2020 a single and open European space for online research where researchers enjoy leading-edge, ubiquitous and reliable services for networking and computing, and seamless and open access to e-Science environments and global data resources;

- **Centres of Excellence** for computing applications
- **GEANT**
- Ecosystem of **HPC** facilities
- e-Infrastructure for **open access**
- Core services across e-infrastructure
- Virtual research environments (**VRE**)
- Managing **Big** research **data: GRID, Clouds, RDA**

Exploiting the innovation potential of research infrastructures

- **R&D partnerships with industry** to develop Union capacities and industrial supply in high-tech areas such as scientific instrumentation or ICT;

- Stimulate the **use of research infrastructures by industry**

- Encourage the integration of research infrastructures into local, regional and global **innovation systems**;

- Pilot **Pre-Commercial Procurement (PCP)** and **Public Procurement of Innovation (PPI)** schemes (e.g. in the field of instrumentation).

Strengthening the human capital of RI

Support the training of staff managing and operating RI of pan-European interest, the exchange of staff and best practices between facilities, and the adequate supply of human resources in key disciplines, including the emergence of specific education curricula.

Policy measures for RI

➢ Support partnerships between relevant policy makers, funding bodies or advisory groups such as ESFRI & e-IRG, support cooperation and exchange of good practises between managers of research infrastructures and stakeholder networks; support survey, monitoring and assessment of the implementation and operation of research infrastructures.

➢ Support the development of a comprehensive database targeted at policy-makers on research infrastructures of more than national relevance in Europe.

Strategic international cooperation

Facilitate the development of global research infrastructures and the cooperation of European RI with their non-European counterparts, ensuring their global interoperability and reach, and to pursue international agreements on the reciprocal use, openness or co-financing of infrastructures.

➤ **Support to GSO activity on global research infrastructures**

➤ **Support bilateral cooperation with Africa, Russia (Mega Science projects)**

➤ **Support multilateral cooperation with ENP (mapping) and US, Canada, Russia etc… on Arctic research, Marine science and biodiversity**

Time schedule

- Publication first calls: 11 December 2013

- Deadlines in 2014:

    15 April 2014 : e-Infrastructure for open access (13 M€)

    14 May 2014 :   NCP network (2 M€)

    2 September 2014:

    - **Design studies (15 M€), Clusters (80 M€), Integrating Activities (140 M€),**

    - **e-Infrastructures for Big Data (55 M€), RDA (4 M€), HPC (15 + 2 M€),**

        Core services (6 M€), GEANT FPA

- Deadlines in 2015:

    14 January 2015 :

    - *Preparatory Phase (14 M€), Individual support to ESFRI (90 M€), ,*

    - *Centres of excellence for computing applications (40 M€), VRE (42 M€),*

    - *PCP/PPI pilot for instrumentation (14 M€); e-skills (2,5 M€)*