Research Infrastructures in

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

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What is Horizon 2020

Commission proposal for a 80 billion euro research and innovation funding programme (2014-2020)

A core part of Europe 2020, Innovation Union & European Research Area:

- Responding to the economic crisis **to invest in future jobs and growth**
- Addressing peoples' concerns **about their livelihoods, safety and environment.**
- Strengthening the EU's global position **in research, innovation and technology**

What's new

A single programme bringing together three separate programmes/initiatives*

Coupling research to innovation - from research to retail, all forms of innovation

Focus on societal challenges facing EU society, e.g. health, clean energy and transport

Simplified access, for all companies, universities, institutes in all EU countries and beyond.

**The 7th research Framework Programme (FP7), innovation aspects of Competitiveness and Innovation Framework Programme (CIP), EU contribution to the European Institute of Innovation and Technology (EIT)*

The three pillars of Horizon 2020

Excellence in the Science Base

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

Tackling Societal Challenges

- Health, demographic change and wellbeing
- Food security, bio-economy
- Secure, clean and efficient energy
- Smart, green and integrated transport
- Climate action and resource efficiency
- Inclusive, innovative and secure societies.

Creating Industrial Leadership

- ICT, nanotechnologies, advanced materials, biotechnology, advanced manufacturing and processing, and space;
- Access to risk finance
- Support innovation in for SMEs

European Research Council Frontier research by the best individual teams	*13 268*
Future and Emerging Technologies Collaborative research to open new fields of innovation	*3 100*
Marie Curie actions Opportunities for training and career development	*5 572*
Research infrastructures (including e-infrastructure) **Ensuring access to world-class facilities**	***2 802***

Proposed funding (million euro, 2014-20)

- *Facilities, resources, organisational systems and services that are used by the research communities to conduct research and innovation in their fields*

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

Objective

- Endow Europe with **world-class research infrastructures** which are **accessible to all researchers** in Europe and beyond and fully **exploit their potential for scientific advance and innovation**"

  - Addresses core commitments of the **Innovation Union flagship initiative**, to develop world-class research infrastructures for ground-breaking research and innovation

  - Addresses key actions of the **Digital Agenda for Europe flagship initiative**, to reinforce Europe's e-infrastructures

Why a EU approach?

- *To open access to the research infrastructures existing in the individual Member State to all European researchers*
- *To avoid duplication of effort and to coordinate and rationalise the use of these research infrastructures*
- *To trigger the exchange of best practice, develop interoperability of facilities and resources, develop the training of the next generation of researchers*
- *To connect national research communities and increase the overall quality of the research and innovation*
- *To help pooling resources so that the Union can also acquire and operate research infrastructures at world level*

Commitments within Innovation Union

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

1. *Developing the European RIs for 2020 and beyond*
   - **1.1 Developing new world-class RIs**
   - **1.2 Integrating and opening national RIs of pan-European interest**
   - **1.3 Development, deployment and operation of ICT based e-Infrastructures**

Main actions

2. *Fostering the innovation potential of RIs & their human capital*
   - **2.1 Strengthening the innovation potential of RIs**
   - **2.2 Strengthening the human capital of RIs**

Specific actions

3. *Reinforcing European RI policy and international cooperation*
   - **3.1 Reinforcing European policy for RIs**
   - **3.2 Facilitating strategic international cooperation**

Policy actions

To endow Europe with world-class RIs which are accessible to all researchers in Europe and beyond and fully exploit their potential for scientific advance and innovation

1.1 Developing new world-class RIs

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

EU support to contribute to:

- the **implementation and operation** of the RIs on the ESFRI Roadmap 2010 that have set up a European governance, e.g. ERIC

and also to:

- the **preparatory phase** of newly identified RIs

- **design study** for new RIs of European-wide relevance

ESFRI roadmap 2010

48 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
European Social Survey	ECRIN	INFRA FRONTIER	LIFEWATCH	IAGOS	Windscanner	EMFL	SPIRAL2	CTA	
CESSDA	INSTRUCT	EATRIS	EMS	EPOS	EU-SOLARIS	European XFEL	E-ELT	SKA	
CLARIN	EU-OPENSCREEN	EMBRC	SIAEOS	EISCAT_3D	JHR	ESRF Upgrade	KM3NeT	FAIR	
DARIAH	Euro BioImaging	ERINHA BSL4 Lab		COPAL	IFMIF	NEUTRON ESS	SLHC-PP*	ILC-HIGRADE*	
	ISBE	MIRRI			HiPER	ILL20/20 Upgrade			
	ANAEE				MYRRHA				

Distributed research infrastructures

Single sited research infrastructures

Implementation and operation

EU funding to contribute to (leverage effect, no capital investment) e.g.:

- R&D activities, engineering work, technology transfer activities
- Central coordinating hub for distributed RIs
- Extension of membership and coordination with other stakeholders (e.g. JPIs)
- Outreach, training and international cooperation activities
- Access
- Data collection, curation and archiving
- **Development of regional partner facilities** in synergy with DG REGIO actions (structural funds and social funds)

1.2 Integrating and opening national RIs of pan-European interest

Objective: The aim is to open up key national research infrastructures to all European researchers and to ensure their optimal use and joint development

EU will contribute to the creation of “European Research Infrastructures Networks” bringing together infrastructures in a given field and ensure access for all European researchers.

(Continuation and reinforcement of the successful FP7 Integrating Activities and FP6 I3s)

Main characteristics

- **All fields of science and technology**
  - New communities of research infrastructures
  - Communities that benefited from previous efforts for integration
- **Three mandatory types of activities**
  - Access, very important... 15.000 researchers/year to be supported
  - Joint research activities, important to keep facilities up-to-date and/or to develop prototypes
  - Networking (e.g. international cooperation, training of users, best management practices, outreach to industry and universities, creating links with relevant public authorities, creating links with JPIs or any other EU or international relevant initiatives)

European Commission

Some evolutions

- **Innovation potential and Human capital**
  - Strengthening links with industry (e.g. technology transfer, use by industrial researchers)
  - Strengthening human capital
- **Duration of the projects**
  - Towards longer grant agreements (up to 5 years)
- **Maximum EC contribution**
  - According to needs (e.g. size of the community of users, maturity of the community of RIs, number of RIs, operating costs)
- **Simplification of reporting**
  - Costs linked to access, without mandatory usage of « user fees »
  - No more rule of « EC contribution not exceeding 20% of costs for providing the total quantity of access »

A more strategic approach

- Identification of topics, based on:
  - Analysis of the performance of FP7 funded projects
  - Identification of new communities of RIs, through calls for expressions of interest
  - Assessment of user needs (e.g. by consulting ERC grantees)
  - Specific needs for addressing societal challenges, JPIs, etc.

- Setting-up an advisory body of high level experts

Specific actions

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

Objectives:

- *To stimulate innovation both in the RIs themselves and in their supplier and user industries*
  - **R&D partnerships with industries to develop Union capacities in high-tech areas such as scientific instrumentation**
  - **pre-commercial procurement by RI actors**
  - **Stimulate the use of RIs by industry**
  - **Encourage the integration of RIs into local, regional and global innovation ecosystems**
- *To strengthen the **human capital** of RIs*
  - **Support for the training of staff managing and operating RIs, exchanges of staff and best practices between facilities**

Political actions

3. Reinforcing European RI policy and international cooperation

- *Reinforcing **European policy** for RIs*
  - **Partnerships between relevant policymakers and funding bodies**
  - **Surveys, monitoring and assessments of RIs at Union level**
  - **Policy studies and communication tasks**

- *Facilitating strategic **international cooperation***
  - **Cooperation for global RIs**
  - **Cooperation of European RIs with their non-European counterparts:**
  - **Ensuring their global interoperability and reach**
  - **Pursuing international agreements on the reciprocal use, openness or co-financing of RIs**

From FP7 to Horizon 2020

- *An **increased budget**, from 1715 M€ (FP7) to 2802 M€ (Horizon 2020)*
- *New activities to support the **implementation and operation** of world-class infrastructures such as **ESFRI** infrastructures*
- ***Continuation** of the successful FP7 **Integrating Activities***
- ***Reinforcement** of the support to **e-infrastructures***
- *New objective of better exploiting the **innovation potential and human capital** of infrastructures*
- *How the setting up of infrastructures through the Structural Funds would be achieved and what type of infrastructures would be eligible in this context?*

Next steps

Ongoing: *Parliament and Council negotiations on the basis of the Commission proposals*

Ongoing: *Parliament and Council negotiations on EU budget 2014-20 (including overall budget for Horizon 2020)*

Mid 2012: *Final calls under 7th Framework Programme for Research to bridge gap towards Horizon 2020*

Mid 2013: *Adoption of legislative acts by Parliament and Council on Horizon 2020*

1/1/2014: ***Horizon 2020 starts; launch of first calls***

Other relevant information

FP7 and Capacities Specific Programme

- http://cordis.europa.eu/fp7/
- http://cordis.europa.eu/fp7/capacities/
- www.ec.europa.eu/research/horizon2020

Research Infrastructures on Europa website

- http://ec.europa.eu/research/infrastructures/

ESFRI on CORDIS

- http://cordis.europa.eu/esfri/

Thank you for your attention!