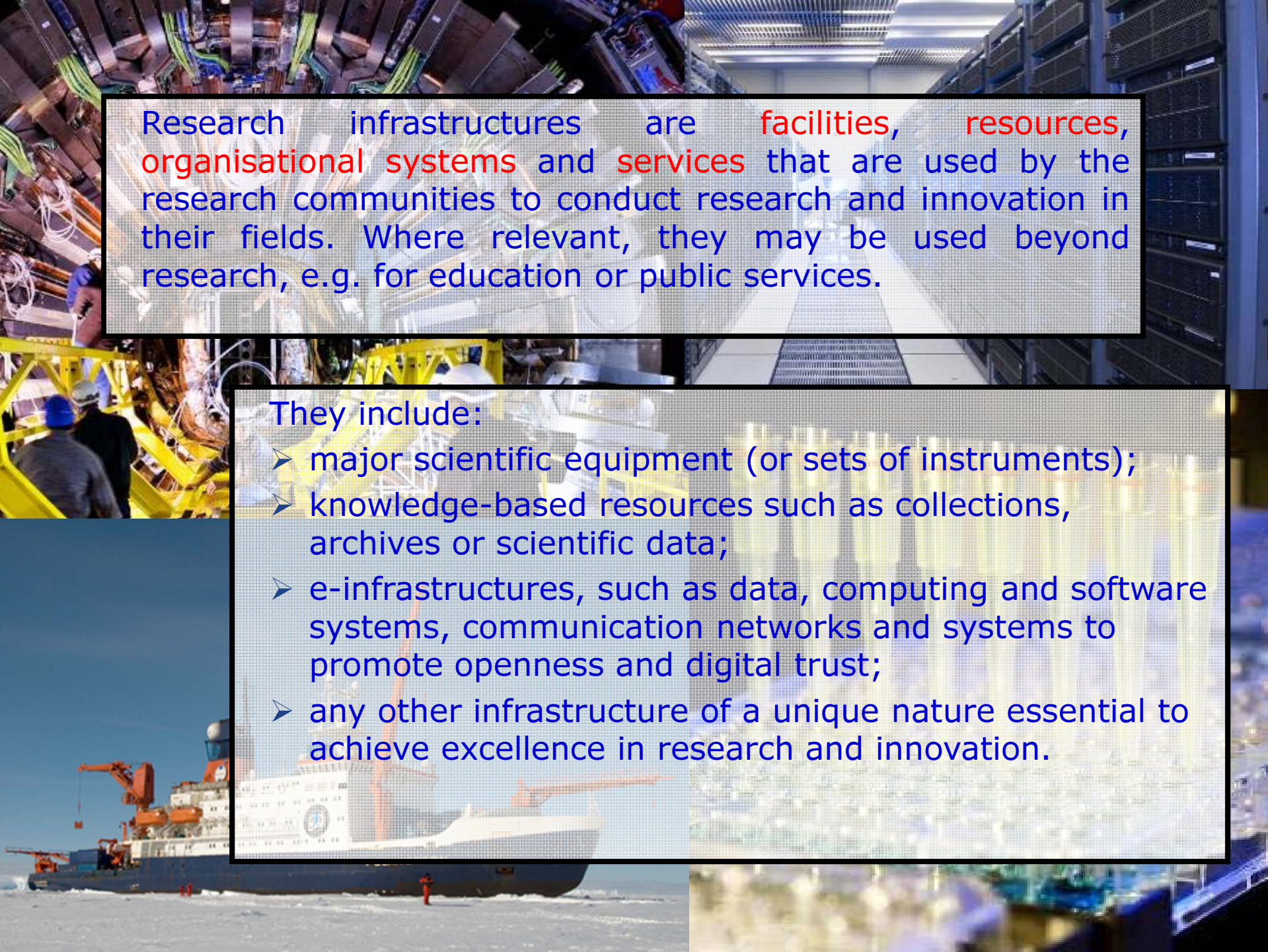




Research Infrastructures in Horizon 2020

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Research Infrastructures



Research infrastructures are facilities, resources, organisational systems and services that are used by the research communities to conduct research and innovation in their fields. Where relevant, they may be used beyond research, e.g. for education or public services.

They include:

- major scientific equipment (or sets of instruments);
- knowledge-based resources such as collections, archives or scientific data;
- e-infrastructures, such as data, computing and software systems, communication networks and systems to promote openness and digital trust;
- any other infrastructure of a unique nature essential to achieve excellence in research and innovation.



Why an EU Approach for Research Infrastructures?

- To **open access** to the research infrastructures existing in the individual Member State to all European researchers
- To **avoid duplication of efforts** 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 **globally**





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, 14 Associated States, and of the European Commission**
- **To support the development of a European policy for Research Infrastructure and discuss a long term vision at European level**
- **To facilitate multilateral initiatives leading to the better use and development of Research Infrastructures, at EU and international level**



ESFRI – The Roadmap mandate



- **Mandated by the EU Council of Research Ministers of November 2004 to develop a strategic roadmap in the field of Research Infrastructures for Europe**
- **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)





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
ES Survey	ECRIN	INFRA FRONTIER	LIFEWATCH	IAGOS	Windscanner	EMFL	KM3NeT	CTA	
CESSDA	INSTRUCT	EATRIS	EMSO	EPOS	EU-SOLARIS	European XFEL	E-ELT	SKA	
CLARIN	EU-OPENSREEN	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				

RI's in the implementation phase

ERIC

 Distributed research infrastructures
 Single sited research infrastructures



Commitments within Innovation Union Flagship initiative

- « ... **opening** of Member State operated research infrastructures to the full European user community...»
- « By 2015 (...) have completed or launched the construction of 60% of the priority European research infrastructures currently identified by the **ESFRI** (...) facilitate the use of cohesion policy money for this purpose.
- « The European Union should step up its **cooperation** on the roll-out of the **global** research infrastructures. »





European Research Area (ERA)

- **ERA Communication adopted on 17/07/2012**
- **Framework proposal to create a single market for knowledge research and innovation**
- **ERA priorities:**
 - More effective national research systems;
 - Optimal transnational co-operation and competition;
 - An open labour market for researchers;
 - Gender equality and gender mainstreaming in research;
 - Optimal circulation, access to and transfer of scientific knowledge including via digital ERA
- **To be completed by 2014**
- **Section on Research Infrastructures under "transnational co-operation and competition"**





RI in the ERA Communication

COM(2012) 392 final, adopted on 17/07/2012

Actions targeted to Member States:

- Confirm financial commitments for the construction and operation of ESFRI projects;
- Remove legal and other barriers to cross-border access to RIs

Actions targeted to European Commission:

- Support through Horizon 2020 access to RIs as well as the on-going overall integration of EU RIs particularly those awarded ERIC status
- Encourage Member States to link RI roadmaps to the ESFRI roadmap and smart specialisation strategies in Structural Funds,
- Develop in cooperation with ESFRI, e-IRG and other stakeholders:
 - a Charter of Access setting out common standards and harmonised access rules and conditions for the use of RIs
 - common evaluation principles, impact-assessment criteria and monitoring tools to help combine funds from different sources



FP7 - Status of implementation

- 73 Integrating Activity networks (553 MEuro) supporting in particular access
 - to about 800 research infrastructures
 - for about 7000 users per year
- 67 e-Infrastructure projects (370 M€)
- 18 design studies for new research infrastructures (46 M€)
- 45 preparatory phases of ESFRI projects (190 M€)
- Support to the construction of ESFRI projects (92 M€)





Aeronautics Infrastructure Actions

- **EUFAR** brings together 32 European institutions and companies involved in airborne research, operating 21 instrumented aircraft and providing access to 6 hyper-spectral instruments
- **COPAL** aims at providing a long-endurance heavy payload multidisciplinary research aircraft
- **IAGOS** operates an infrastructure for long-term observations of atmospheric composition, aerosol and cloud particles on a global scale from a fleet of long-range airline aircraft
- **PRACE** carries out simulations of advanced jet-engine and turbine designs



From FP7 to Horizon 2020

Increased budget (from € 1715 million to ?)

New activities to support the implementation and operation of world-class infrastructures such as ESFRI infrastructures

Continuation of the successful FP7 integrating activities

More support to e-infrastructures

Exploiting the innovation potential and human capital of infrastructures





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***





1.1 Developing new world-class RIs

- **Objective: To ensure the 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, development of regional partner facilities, etc.)
 - ✓ 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: To open up key national RIs to all European researchers and to ensure their optimal use and joint development**
- **EU funding will support “European Research Infrastructures 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





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

- *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**





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**



Thank you for your Attention!



HORIZON 2020

Find out more:

www.ec.europa.eu/research/horizon2020