



Research Infrastructures and the European Research Area

Octavi Quintana

Principal Adviser
European Commission – DG Research & Innovation

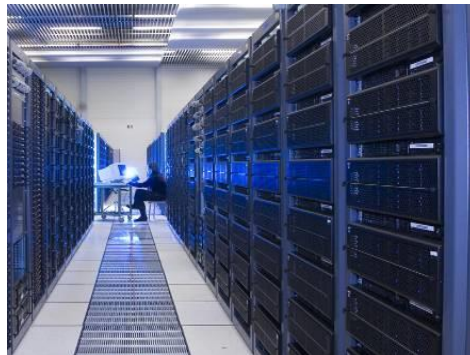
'Research infrastructures'

mean "*facilities, resources and services that are used by the research communities to conduct research and foster innovation in their fields*".

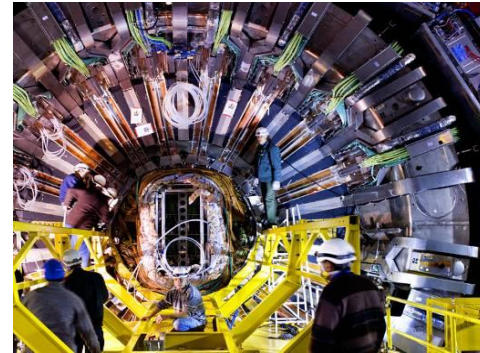
Knowledge-based resources



e-infrastructures



Major scientific equipment



'Research infrastructures'

mean "*facilities, resources and services that are used by the research communities to conduct research and foster innovation in their fields*".

The EU approach for Research Infrastructures

- To **address collectively** the major **societal challenges**
- To **pool the efforts** of the member state to build **complex and costly RIs**
- To achieve **excellence** in highly demanding scientific fields
- To **open access** to the research infrastructures to all European researchers
- To **avoid duplications** and **rationalise the use** of research infrastructures
- To trigger the **exchange of best practice**
- To develop **interoperability** of facilities and resources,
- To develop the **training** of the next generation of researchers
- To develop and operate **global** research infrastructures

THE EUROPEAN RESEARCH INFRASTRUCTURE LANDSCAPE

- **Intergovernmental RIs:** Well established RIs supported by the member states.
- **New Pan-European RIs:** RIs listed in the ***ESFRI Roadmap***
- **Networks of National RIs:** Networks of national and regional RIs open to all European researcher from both academia and industry. These networks of RIs are promoted by the European Commission through *Integrating Activity projects*.

ESFRI

European Strategy Forum on Research Infrastructures



- Set up by the EU Council of Research Ministers in 2002: Representatives of Member States, 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
- Mandated by the EU Council of Research Ministers of November 2004 to develop a **strategic roadmap** identifying new pan-European Research Infrastructures or major upgrades to existing ones

The logo consists of a blue square with the white text "ESFRI" inside.

Section 1

mm/dd/aa

The 2016 ESFRI Roadmap

launched on 10 March 2016

The document contains:

- The ESFRI Roadmap 2016 List:
21 Projects and
29 Landmarks
- An analysis of the role of research infrastructures for European competitiveness

21 ESFRI Projects

15 + 6 new

ENE	ENV	HF	PSE	SCI	e-RI
ECCSEL	EISCAT_3D	EMBRC	CTA		2008
	EPOS	ERINHA			
	SIOS	EU-OPENSREEN			
		Euro-Biolmaging			
EU-SOLARIS		AnaEE			2010
MYRRHA		ISBE			
WindScanner		MIRRI			
	ACTRIS		EST		2016
	DANUBIUS-RI	EMPHASIS	KM3NeT 2.0	E-RIHS	

29 ESFRI Landmarks

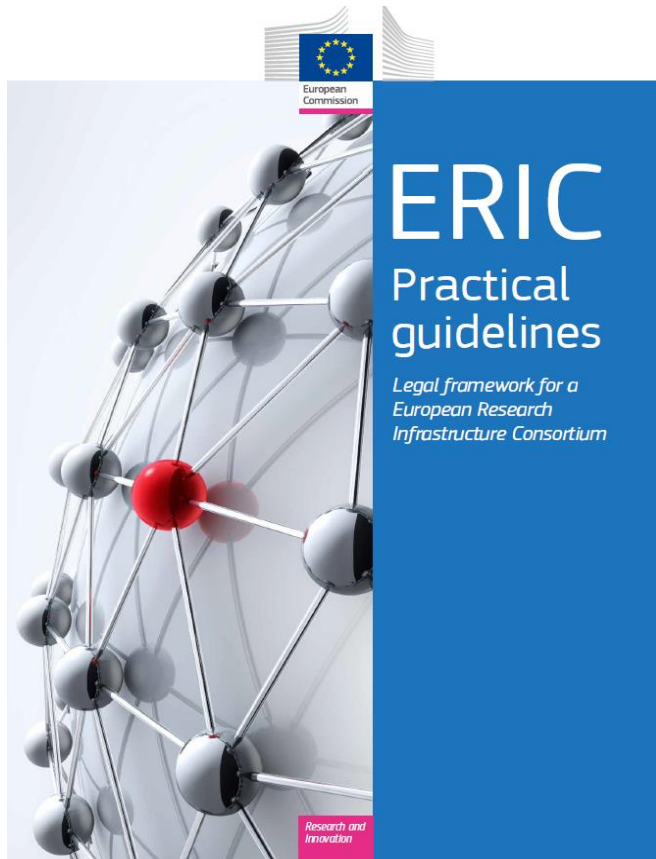
27 + 2 new

ENE	ENV	H&F	PSE	SCI	e-RI
JHR	EMSO	BBMRI ERIC	E-ELT	CESSDA	PRACE
	EURO-ARGO ERIC	EATRIS ERIC	ELI	CLARIN ERIC	
	IAGOS	ECRIN ERIC	European Spallation Source ERIC	DARIAH ERIC	
	ICOS ERIC	INFRAFRONTIER	Eu-XFEL	ESS ERIC	
	LifeWatch	INSTRUCT	FAIR	SHARE ERIC	
		ELIXIR	ILL		
			SKA		
			SPIRAL2		2006
			EMFL		2008
			ESRF-EBS*		
			HL-LHC		2016

* ESRF upgrade was a project in the 2006 roadmap

ERIC - European Research Infrastructure Consortium

*(Council Regulation (EC) No 723/2009 of 25 June 2009
amended by Council Regulation No 1261/2013 of 6 December 2013)*



A **legal instrument** at EU level, to facilitate the joint establishment and operation of RI of European interest.

- ✓ **Legal personality** recognized in all Member States
- ✓ A lighter process than creating a treaty based international organisation
- ✓ **Qualifies as an international organization for the purposes of VAT** (exemption under certain limits and conditions from VAT and excise duties) **and Public Procurement Directives**



ERIC

Practical guidelines

*Legal framework for a
European Research
Infrastructure Consortium*

Research and
Innovation

The Commission has awarded the ERIC status to **12** RIs:
*SHARE, CLARIN, EATRIS, BBMRI, ECRIN, ESS, EURO-
ARGO, CERIC, DARIAH, JIV, European Spallation Source
and ICOS.*

A 13th ERIC is about to be established in 2016, *EMSO*.

It should be followed by other 3 ERICs before the end of
2016/beginning 2017: *CESSDA, ECCSEL, LifeWatch.*

*The 2nd Report on the Implementation of the ERIC Regulation will be
presented by the Commission to the Parliament and the Council in
early 2017*

Consultation on the **Long-term sustainability of Research Infrastructures**

The consultation is in line with the Mission statement of **Commissioner Moedas**:

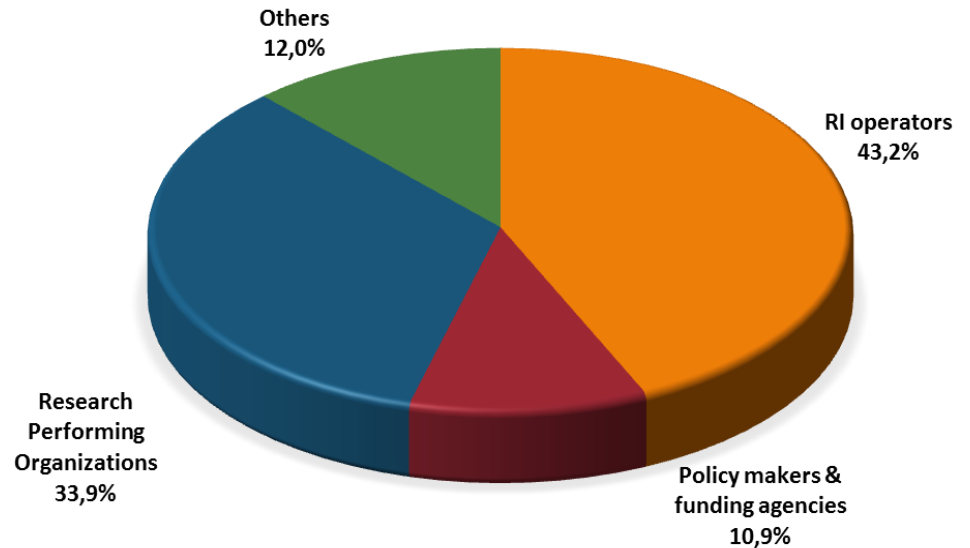
"Improving research infrastructure and making better use of research results is essential to strengthen innovation further, develop new activities and boost the productivity and competitiveness of our economy"

The outcome of the Consultation helps to:

- Build on current **RI best practices**
- Show case possible **solutions** to be considered by the appropriate services and relevant stakeholders,
- Identify potential **new approaches** to policy bottlenecks.

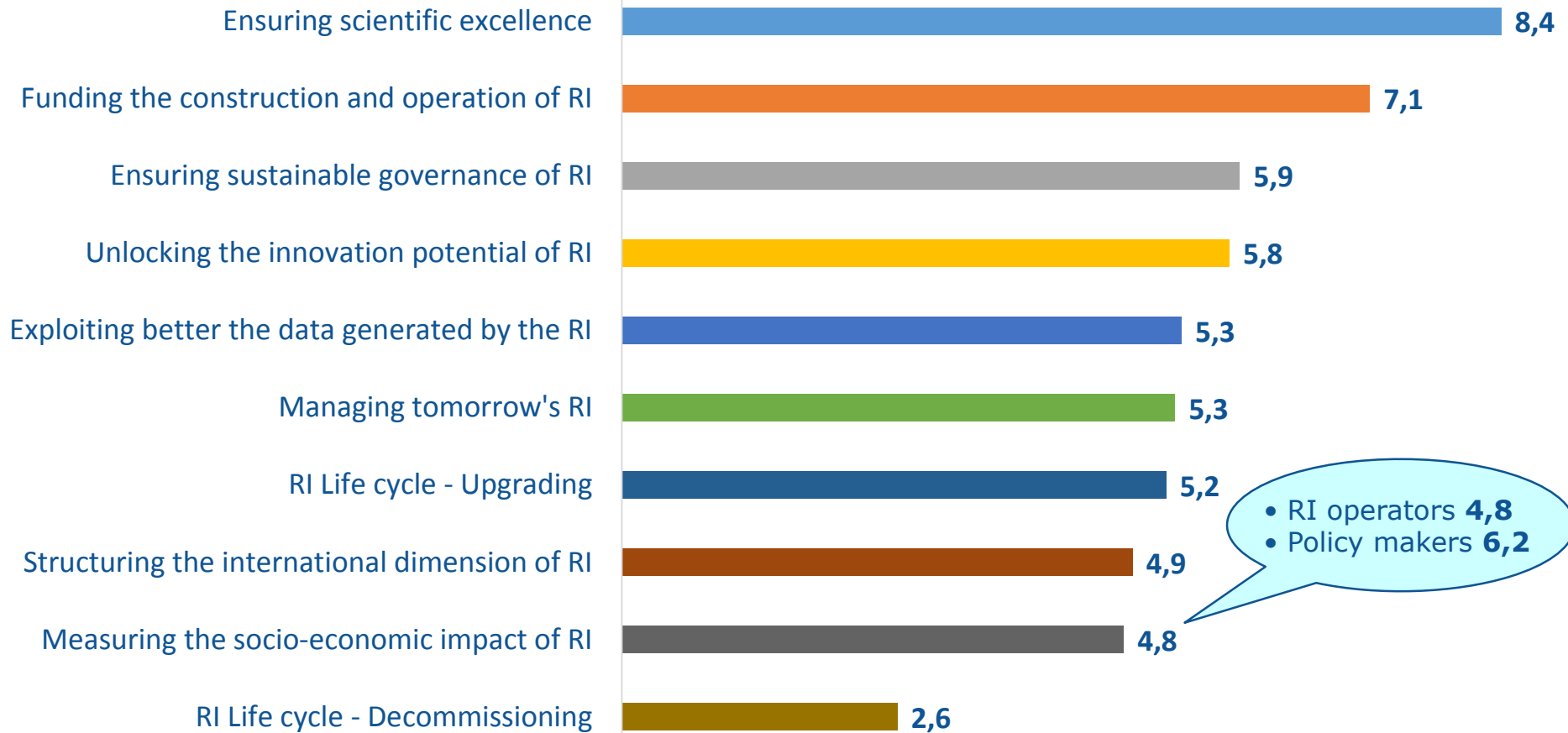
Profile of the respondents

- ERA stakeholders
- ESFRI projects and ERICs
- ESFRI delegations/ PC members, e-IRG
- EIROforum
- International Organizations, RI associations (eg. ERF)
- NCPs (dissemination within key stakeholders)
- Science attaches from strategic third country partners



Pre-conditions ranking

(ranking scale 1-10: averages)



Questionnaire structure

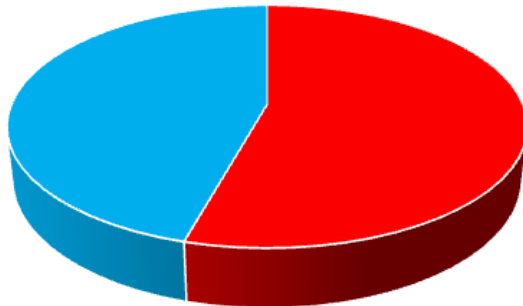
Long Term Sustainability Preconditions:

- Ensuring Scientific excellence
- Skills of managers, operators and users
- ***Unlocking the Innovation potential of RI***
- Measuring socio-economic impact of RI
- Exploiting better the data generated by the RI
- RI Life cycle – Upgrading of RI
- RI Life cycle – Decommissioning of RI
- Ensuring sustainable governance of RI
- ***Funding the construction and operation of RI***
- Structuring the international dimension of RI

Unlocking the innovation potential of RI

Do you have a business model that includes the development of commercial applications of RI services and tools?

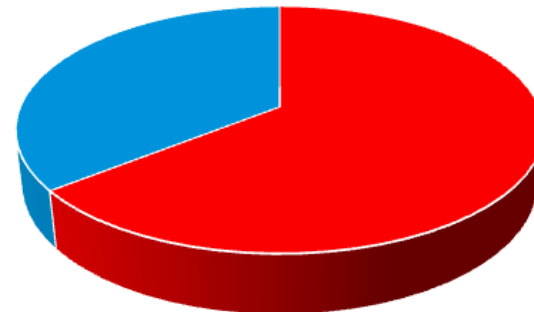
Yes; 45,7



No; 54,3

Do you have an Innovation Advisory Committee with representatives from industry and public sector?

Yes; 35,7

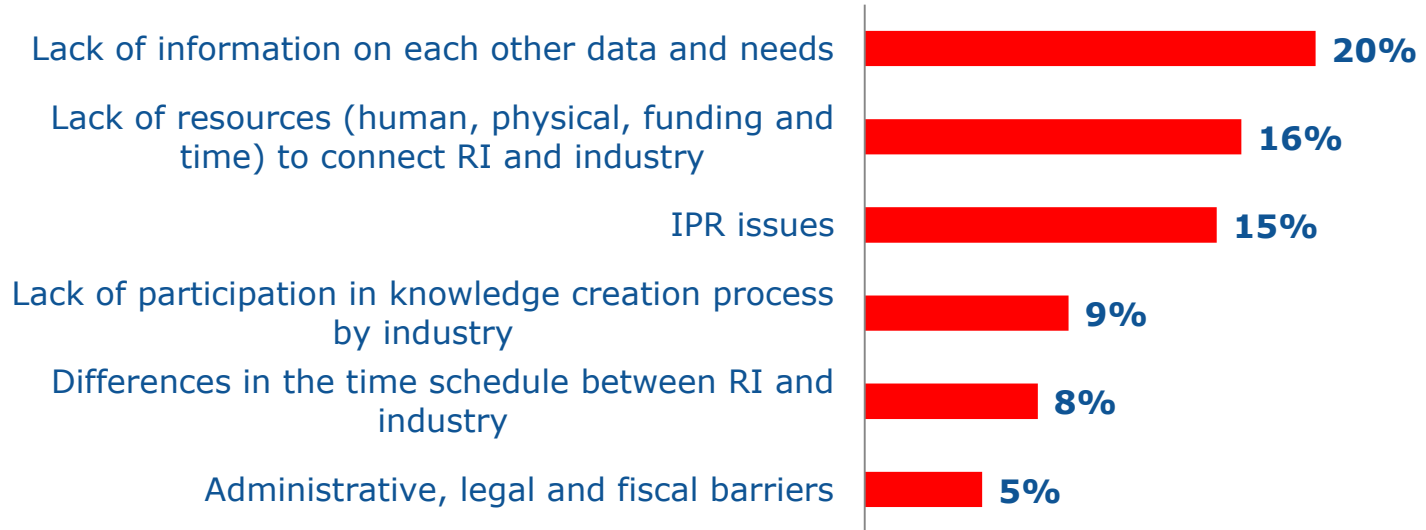


No; 64,3

- **46% do not have a business model** that includes the development of commercial applications of RI services and tools
- **64% do not have an Innovation Advisory Committee** with representatives from industry and public sector

Unlocking the innovation potential of RI

➤ Barriers for cooperation with industry:

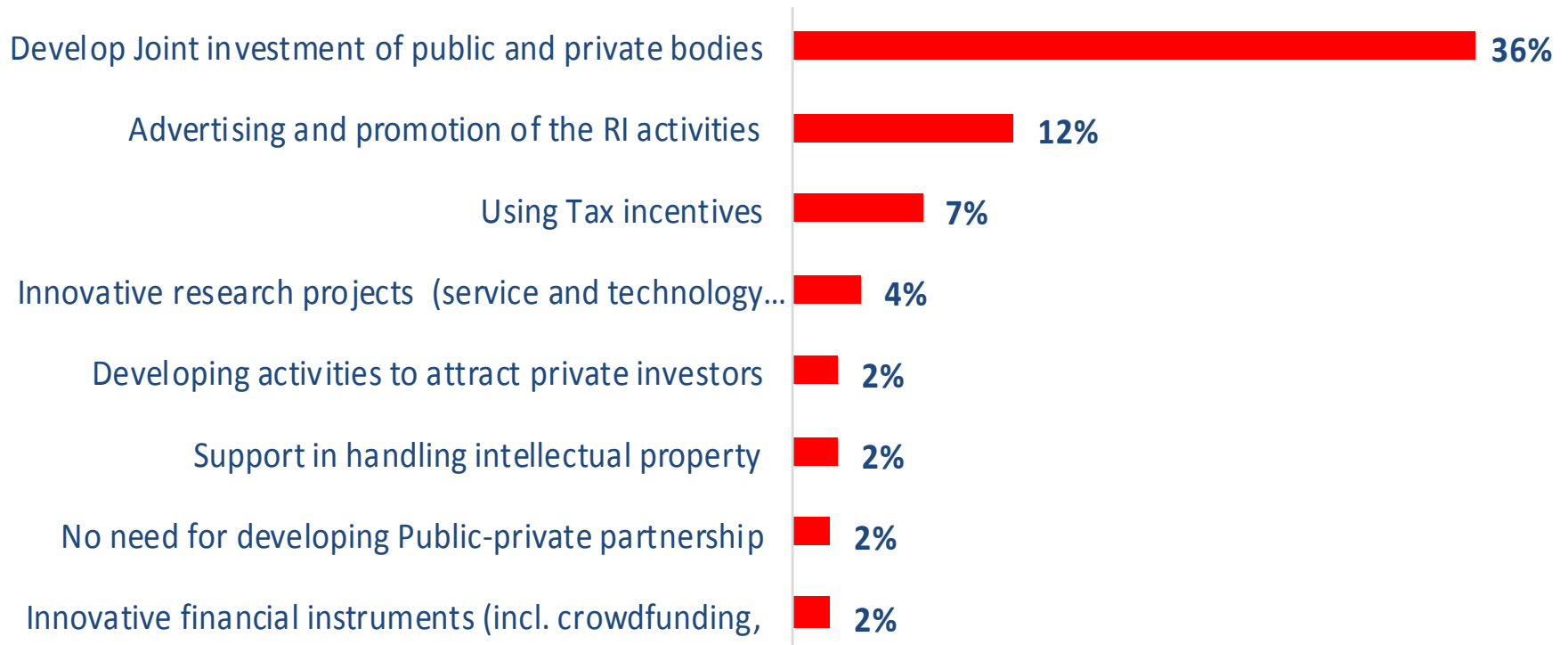


➤ New measures should include:

- ***New funding mechanisms incl. co-investment***
- ***Mediation schemes (technology transfer offices, brokers...)***
- ***Mobility scheme with industry***

Funding the construction and operation of RI

Measures to encourage private funding for the development of commercial technologies and services



Funding the construction and operation of RI

- **More than half** of the RIs have not developed a business plan;
- The respondents put forward as emerging measures to **improve bankability**:
 - ✓ Development of a **credible business model**
 - ✓ Encouragement of **new sources of funding**, including **private funding**
 - ✓ Better channelling of public funding/**structural funds**
 - ✓ Stronger **cooperation with industry**
- **51 %** considered relevant investing in the **joint development of commercial technologies** and services with other RIs, industry and academia

Main Findings

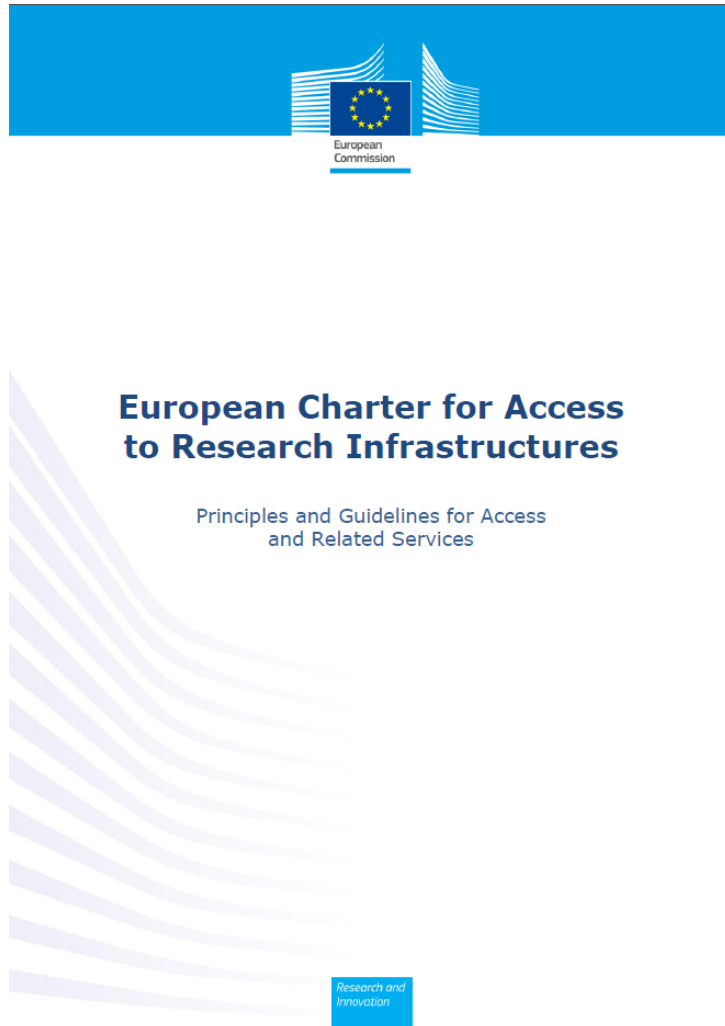
While some results confirmed current understanding, the consultation points to specific challenges that require attention:

- untapped **innovation potential** of RI and increase awareness of the RI operators;
- willingness to use **data repositories**, data management plans and **(open) access** to data;
- need of awareness on the importance of **RI bankability** (operators & funders);
- **limited awareness** of the importance of measuring **socio-economic impact** within the RI community;
- **increase visibility** of RIs and expand their services;
- **staff exchange** programmes for RI managers;

EUROPEAN CHARTER FOR ACCESS TO RESEARCH INFRASTRUCTURES

Policy Context

- **Access to RI** identified as one of the building blocks for the implementation of the European Research Area, ERA
- 2012 ERA Communication launched the process to *develop a **Charter of Access** setting out common standards and harmonised access rules and conditions for the use by researchers of RI across ERA*
- 2012 Council Conclusions welcomed the ERA Communication "as a *basis for a strengthening partnership in the field of research infrastructures*"



The Charter

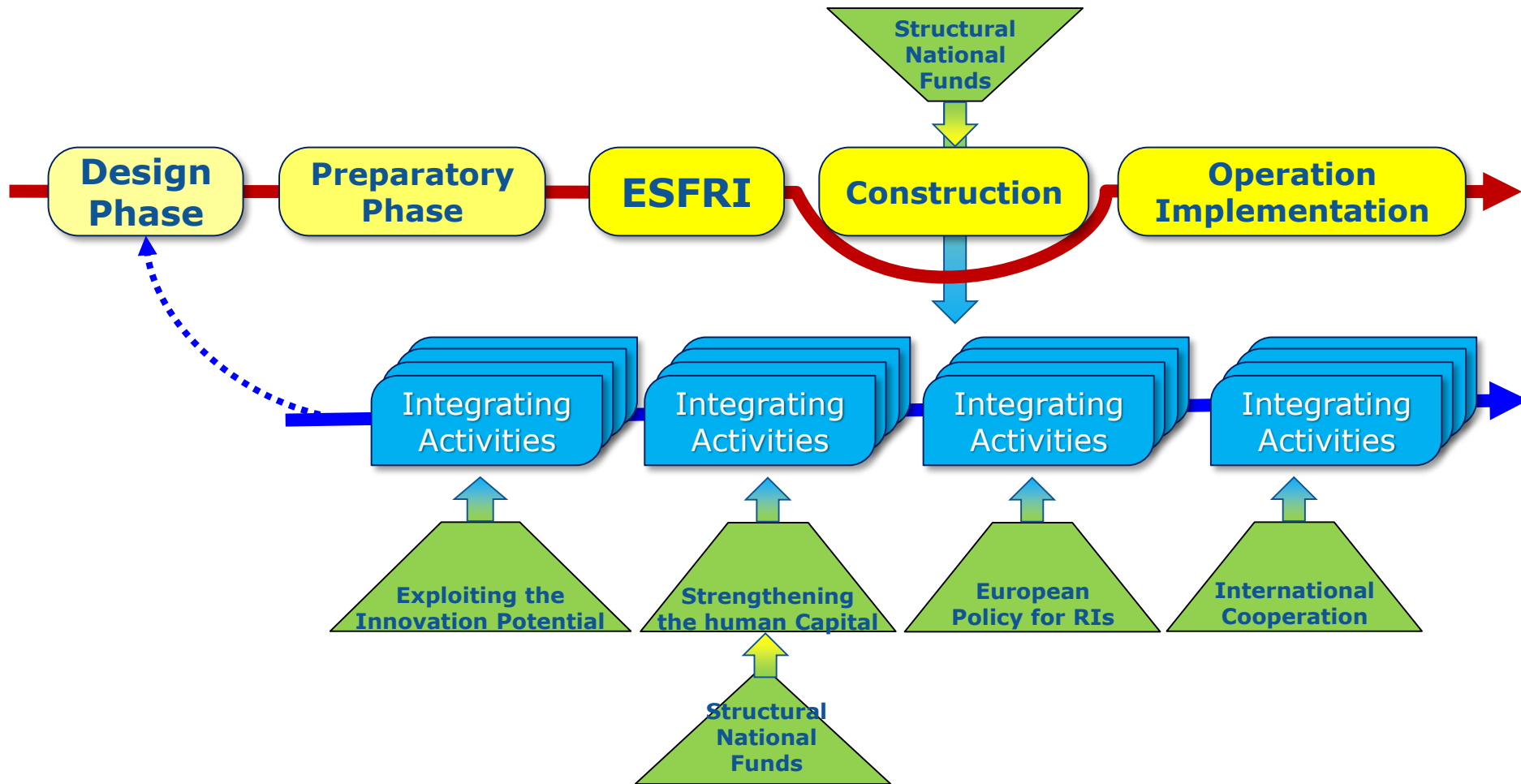
***"sets out non-regulatory
principles and guidelines to be
used as a reference when
defining Access policies for
Research Infrastructures and
related services"***

***Charter for Access to
Research Infrastructures.
Section 1 - Purpose***

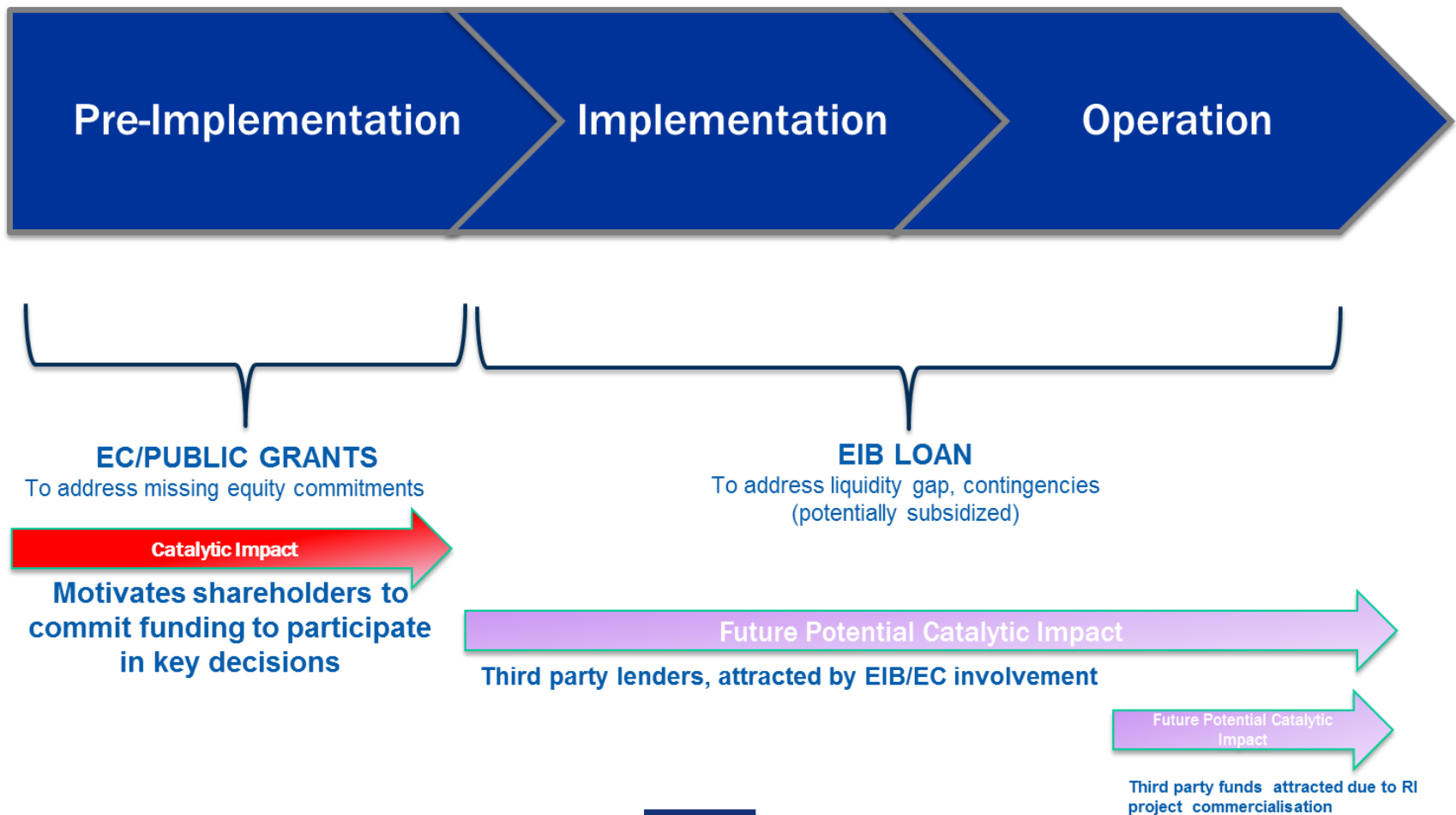
Key features

- **Applicable to all typologies** of Research Infrastructures
- Promotes **common terminology**
- Promotes **Transparency**
- Enables **harmonisation** of standards for **Access Policies**
- Recognises Access for:
 - ✓ Research
 - ✓ Education and training
 - ✓ Doctoral preparation
- Living document
- Offered to **wider international context** (OECD-GSF/GSO...)

Synergies... ESIF



Overview of Possible Funding Solutions RI Project Life Cycle



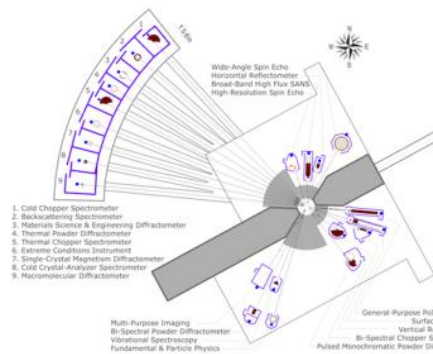


European
Commission

Examples

Research Infrastructure projects part of the ESFRI Roadmap that are supported by FP7, H2020, ESIF and InnovFIN

ESS - European Spallation Source



ELI - extreme light infrastructure



The Group of Senior Officials (GSO) on global Research Infrastructures

The **GSO** was established (1st G8 Science Ministers' meeting, Okinawa, 15 June 2008) to:

- provide a non-binding and open forum for policy exchanges on global research infrastructures and to inform and improve international cooperation;
- share information about existing and planned new infrastructures;
- establish principles for the development of new partnerships.



ICRI - *International Conference on RIs*

Aims:

- provide an international forum for
- discussion on **RIs of Global relevance**;
- facilitate strategic international cooperation between European Research Infrastructures and their **International counterparts**;
- address the impact of research infrastructures for **capacity building**.



Next ICRI: 2016 South Africa