



# ESFRI, eInfras and EOSC - the evolving landscape

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# ESFRI landscape



# 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 projects supported by Horizon 2020 and Horizon Europe.**

# What is ESFRI?

- An **informal body** composed by representatives of Member States, Associated Countries and the EC on issues related to research infrastructures, **providing advice** to the Council.
- A **platform** giving national authorities the opportunity to be informed of and to explore (i.e. without *a priori* commitments) international and national initiatives of European significance.
- An **incubator** of new RIs, where Member States structure their priorities and negotiate.
- A European **knowledge hub** on research infrastructures – setting standards for roadmap methodology, policy analysis and advice, information hub (COVID-19).



# ESFRI mandate

- Established in 2002 with a mandate from the EU Council (2001) to:
- support a **coherent and strategy-led approach** to policy-making on research infrastructures in Europe
  - **facilitate multilateral initiatives** leading to the better use and development of research infrastructures
  - **establish a European Roadmap** for research infrastructures (new and major upgrades, pan-European interest) for the coming 10-20 years, and update the Roadmap as the need arises (Council 2004, 2007, 2014, 2016);
  - ensure the **follow-up of implementation** of already on-going ESFRI projects after a comprehensive assessment;

# ESFRI Roadmap



## 1st ESFRI Roadmap cycle

- First Roadmap published in 2006, updated in 2008 and 2010, identified **48 Projects** to foster European leadership across a broad range of scientific fields.
- Required major financial investment (~20 b€) and long-term commitment for operation (~2 b€/year)

## 2nd ESFRI Roadmap cycle

- ESFRI Roadmap 2016 and 2018 - **37 ESFRI Landmarks** (~14,5 b€ capital value and ~1,4 b€/year) + **18 ESFRI Projects** (~3 b€ construction costs, 10-year rule) – strategic RIs for the future of ERA + **Landscape Analysis**.
- ESFRI Roadmap update in 2021.

# The 2018 ESFRI Roadmap

## 18 ESFRI Projects (6 new)

ENE	ENV	HF	PSE	SCI	DIGIT
EU SOLARIS		AnaEE			
WIND SCANNER		ISBE			
MYRRHA		MIRRI			
<b>2010</b>					
	ACTRIS	EMPHASIS	EST	E-RIHS	
	DANUBIUS-RI		KM3NeT 2.0		
<b>2016</b>					
IFMIF-DONES	DiSSCo	EU-IBISBA		EHRI	
	eLTER	METROFOOD-RI			
<b>2018</b>					

## 37 ESFRI Landmarks

ENE	ENV	HF	PSE	SCI	DIGIT
JHR	EMSO ERIC	BBMRI ERIC	E-ELT	CESSDA ERIC	PRACE
	EUROARGO ERIC	EATRIS ERIC	ELI	CLARIN ERIC	
	IAGOS	ECRIN ERIC	Eur. Spallation Source ERIC	DARIAH ERIC	
	ICOS ERIC	ELIXIR	EU-XFEL	ESS ERIC	
	LIFEWATCH ERIC	INFRA FRONTIER	FAIR	SHARE ERIC	
		INSTRUCT ERIC	ILL		
			SKA		
			SPIRAL2		<b>2006</b>
ECCSEL ERIC	EISCAT-3D	EMBRC ERIC	EMFL		
	EPOS ERIC	EU-OPEN Screen ERIC	CTA		
		ERINHA			
		EuroBio Imaging			<b>2008</b>
			ESRF-EBS*		
			HL-LHC		<b>2016</b>

\* ESRF Upgrade was a project in the 2006 Roadmap



# ICT based and/or supporting ICT research

*Most ESFRI research infrastructures have a relevant ICT component*

**Fully digital:** supporting ICT and thematic research

➤ **DIGIT:** *PRACE (HPC)*

**With main ICT component:** supporting thematic research (thematic data infrastructures or including data repositories)

➤ **Health & Food:** *ELIXIR, EuroBioImaging, ...*

➤ **Social & Cultural Innovation:** *CESSDA ERIC, CLARIN ERIC, DARIAH ERIC, ...*

➤ **ENVironment:** *LifeWatch ERIC, ICOS ERIC, EPOS ERIC, DiSSCo, ...*



# eINFRA landscape



# Last H2020 projects to start

## - H2020-INFRAEOSC-2020-2

- INFRAEOSC-07: Increasing the service offer of the EOSC Portal (24 mio):
  - **EGI-ACE** (a1: Distributed and cloud computing resources)
  - **DICE** (a2: Data services)
  - **OpenAIRE Nexus** (a3: Services supporting scholarly communication and open access)
  - **C-SCALE & RELIANCE** (a6: Additional research enabling services)
- INFRAEOSC-03: Integration and consolidation of the existing pan-European access mechanism to public research infrastructures and commercial services through the EOSC Portal (40 mio)
  - **EOSC FUTURE**

# Horizon Europe – Pillar 1 WP 2021-2022

- **Destination #1:** Developing, consolidating and optimising European Research Infrastructures to maintain global leadership
- **Destination #2:** Enabling an operational, open and FAIR EOSC ecosystem
- **Destination #3:** RI services to support health research, accelerate the green and digital transformation, and advance frontier knowledge
- **Destination #4:** Next generation of scientific instruments, tools and methods and advanced digital solutions
- **Destination #5:** Network connectivity – Enabling collaboration without boundaries

EOSC

# What is the SRIA?

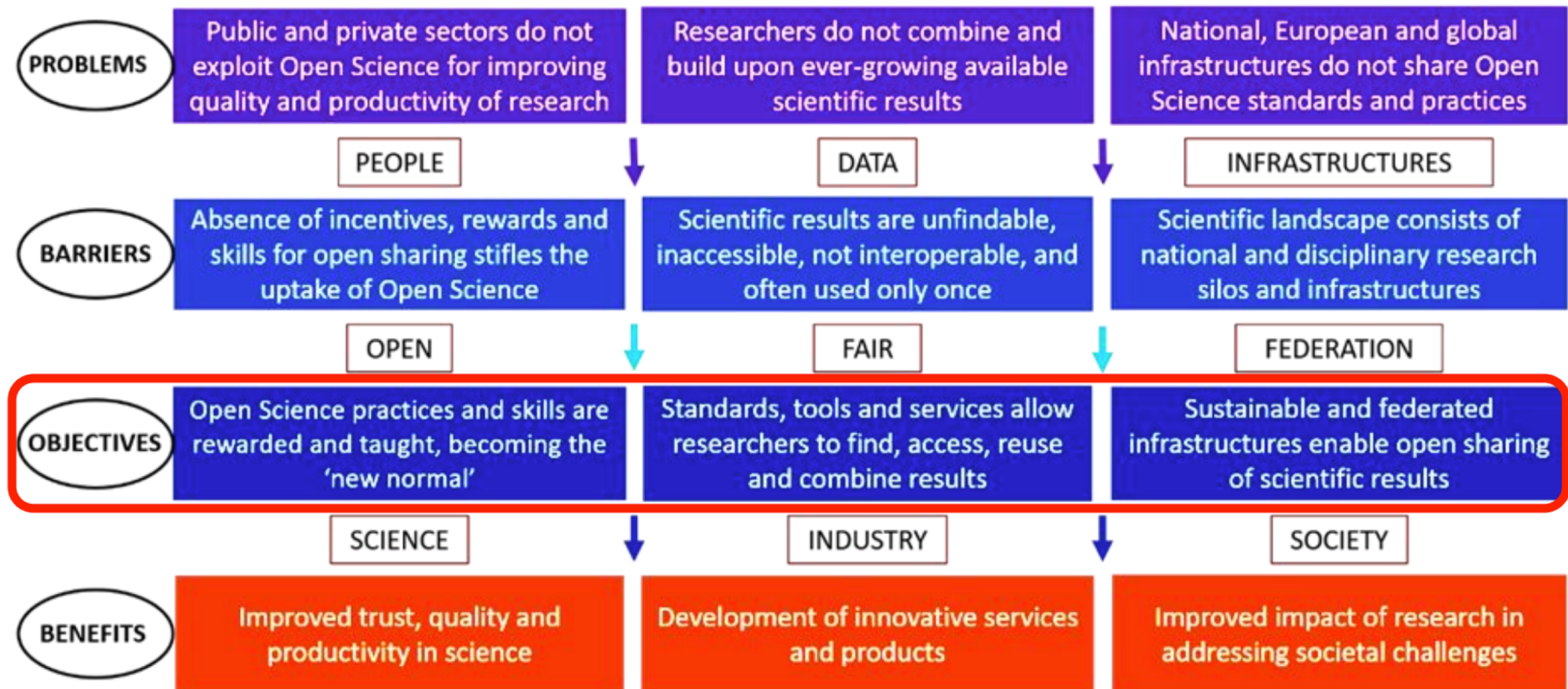
**A strategic roadmap identifying key challenges and priorities for investment over the next funding period**

- The EOSC SRIA will be used by the European Commission, Member States and Associated Countries to inform the Horizon Europe and related work programme
- Evolving instrument of strategic planning
- EOSC Partnership, EOSC Association, tripartite governance

# Development of the SRIA



# Strategic objectives





# Guiding Principles

- Research-community centred
- Multi-stakeholderism
- Openness
- FAIR principles
- Federation of infrastructure
- Machine-actionable



# 14 Action Areas

## Implementation challenges

- Identifiers
- Metadata and ontologies
- FAIR metrics and certification
- Authentication and Authorisation Infrastructure
- User environments
- Resource provider environments
- EOSC Interoperability Framework

## Boundary conditions

- Rules of Participation
- Landscape monitoring
- Funding models
- Skills and training
- Rewards and recognition
- Communication
- Widening to public and private sectors and going global

# Roadmap

2021  
2022

- Enabling the EOSC-Core to allow federation of infrastructures
- Development towards added value from a functional federation of infrastructures

2023  
2024

- Expansion to production that generates added value
- Support full scientific workflow in key thematic areas

2025  
2027

- Expansion to develop impact from Open Science
- Cross-border, interdisciplinary, societal returns, recognised and rewarded

# Key Commission Strategies



Digital Strategy



Industrial Policy Strategy



European Green Deal



EuroHPC Strategy



Data Strategy

# Challenge?

*"However, while an instrumented, interconnected and intelligent world has unprecedented potential to solve the key challenges of the time, this potential will only be realised if research infrastructures are evolving to allow scientists to make the best use of the available information"*