

Strategy Report on Research Infrastructures  
**ROADMAP 2021**

**Il processo ESFRI per la Roadmap 2021**

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ESFRI Roadmap 2021 - Giornata informativa  
MIUR, Roma 22 ottobre 2019



# OVERVIEW

Research Infrastructure

Role of ESFRI

ESFRI Instruments

ESFRI Roadmaps

Roadmap 2021

- Content
- Methodology
- Process and timeline



# RESEARCH INFRASTRUCTURES

*A European Research Infrastructure is a facility or (virtual) platform that provides the scientific community with resources and services to conduct top-level research in their respective fields. These research infrastructures can be single-sited or distributed or an e-infrastructure, and can be part of a national or international network of facilities, or of interconnected scientific instrument networks.*

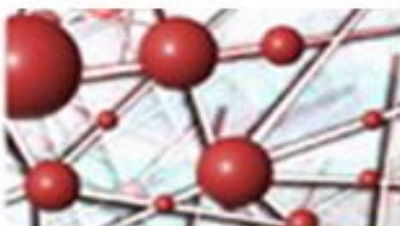
## A BROAD CONCEPT

- Great scientific equipment or set of instruments.
- Scientific collections, archives and structured information.
- Electronic infrastructures (e-infrastructures).
- Any other entity of a unique nature necessary for research.

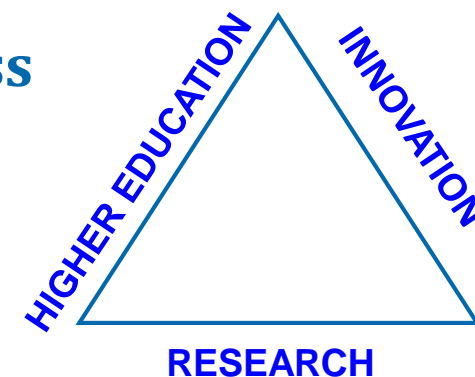
## CENTRALIZED, DISTRIBUTED OR VIRTUAL.



# RESEARCH INFRASTRUCTURES



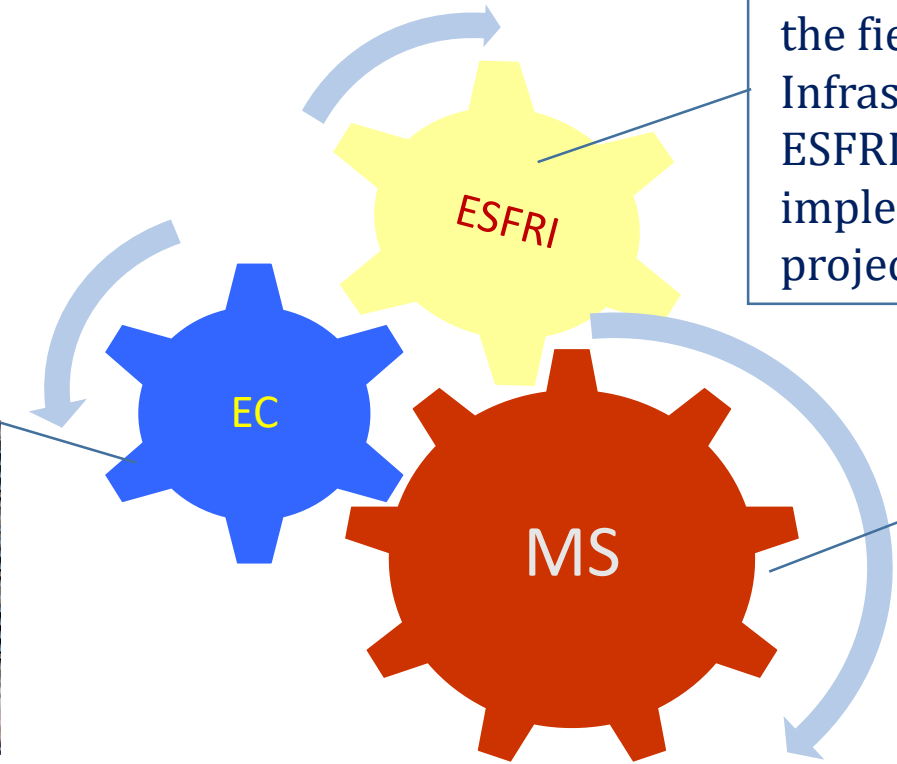
- One of the pillars of the European Research Area (ERA Priority 2b).
- Essential for European researchers to remain at the forefront of R&I
- Key element for European competitiveness
- At the centre of the knowledge triangle
- **MAIN CHALLENGES:**
  - Overcoming European fragmentation
  - Facing increasing costs and complexity
  - Improve the efficiency of services and access offered by the facilities
  - Develop the full potential of data and e-infrastructures





# Actors in the definition of policies in RI

Funds actions for implementation through European R&I Framework Programme.



Support to the establishment of policies in the field of Research Infrastructures. ESFRI helps to achieve the implementation of the projects of the "Roadmap".

Commitment of national resources for the construction and sustainability of Research Infrastructures.







# ROLE OF ESFRI

The European Strategy Forum on Research Infrastructures (ESFRI) was established in 2002 with a mandate from the Council of the European Union 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

ESFRI brings together representatives of Ministers of the 28 Member States, 12 Associated States, and of the European Commission that are the decision makers and financiers of the ESFRI Research Infrastructures

- indicates strategies for the necessary major financial investment (~20 b€) and long-term commitment for operation (~2 b€/year, +15% of current effort)
- upon mandate of Competitiveness Council of the European Union, ESFRI has completed the ESFRI Roadmap 2018 and starts now the update process that will lead to the **ESFRI ROADMAP 2021**

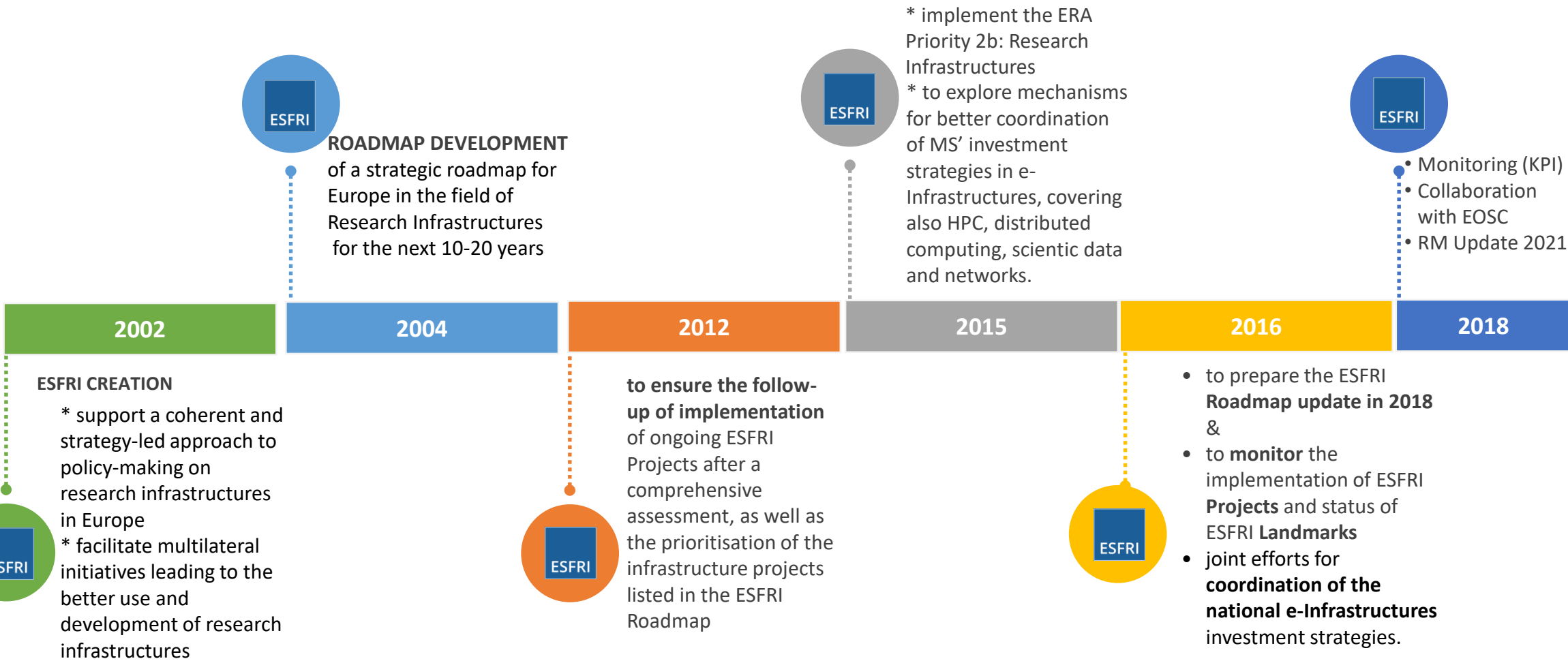
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# ESFRI INSTRUMENTS

- **EXECUTIVE BOARD** – elected by ESFRI FORUM – prepares strategic documents and gives recommendations to the FORUM
- **STRATEGIC WORKING GROUPS** – in six scientific domains – perform the evaluation of the scientific excellence of the Research Infrastructure Projects and Landmarks and provide the Landscape Analysis in each domain
- **IMPLEMENTATION GROUP** performs the assessment of the maturity of the Research Infrastructure Projects and the implementation progress of the Landmarks
- **AD HOC WORKING GROUPS** – mandated by ESFRI FORUM – provide vision and advise on specific issues of general interest for RIs

# Mandate of the Competitiveness Council evolution







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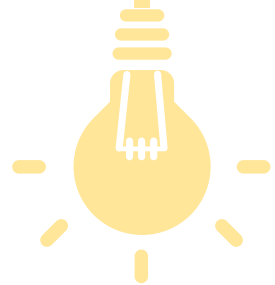
**ESFRI**

# ESFRI RM EVOLUTION

**Hans Chang**  
2002



2002



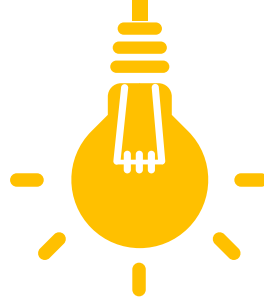
**ESFRI Creation**

established in 2002 with a **mandate** from the **Council of the European Union**

**John Wood**  
2006



2006

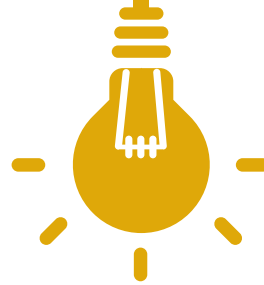


**ESFRI published its first roadmap** for the construction and development of the next generation of pan-European research infrastructures.

**Carlo Rizzuto**  
2008



2008



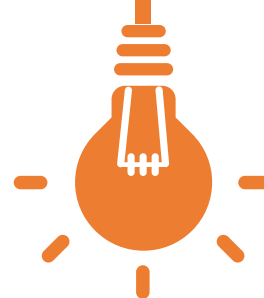
**1<sup>st</sup> update**

Increasing the number of RIs of pan-European relevance

**Beatrix Vierkorn-Rudolph**  
2010



2010

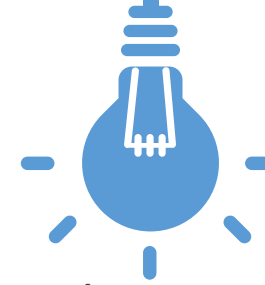


**update of the ESFRI Roadmap,** focusing on Energy, Food and Biology,

**John Womersley,**  
2016



2016



**update process**

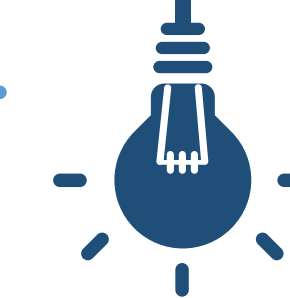
identified projects that were expected to move to implementation in less than 10 years from their first inclusion on the Roadmap.

Landmark  
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**Giorgio Rossi**  
2018



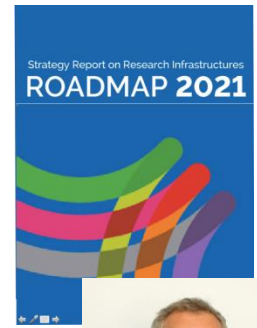
2018



**Consolidation**

& incorporation of the mandates of Council: sustainability, innovation, and hub of funders of e-infra

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2021



**Jan Hrusak**  
2021



## ESFRI PROJECTS

DIGIT	ENE	ENV	H&F	PSE	SCI
	EU-SOLARIS MYRRHA WindSanner		AnaEE ISBE MIRRI		
		ACTRIS DANUBIUS-RI	EMPHASIS	EST KM3NeT 2.0	E-RIHS
	IFMIF-DONES	DiSSCo eLTER	EU-IBISBA METROFOOD-RI		EHRI
					2010 2016 2018

# ESFRI ROADMAP 2018

18 ESFRI PROJECTS  
37 ESFRI LANDMARKS

## ESFRI LANDMARKS

DIGIT	ENE	ENV	H&F	PSE	SCI
PRACE	JHR	EMSO ERIC EURO-ARGO ERIC IAGOS ICOS ERIC LifeWatch ERIC	BBMRI ERIC EATRIS ERIC ECRIN ERIC ELIXIR INFRAFRONTIER INSTRUCT ERIC	ELI ELT ESS ERIC European XFEL FAIR ILL SKA SPIRAL2	CESSDA ERIC CLARIN ERIC DARIAH ERIC ESS ERIC SHARE ERIC
	ECCSEL ERIC	EISCAT_3D EPOS ERIC	EMBRC ERIC ERINHA EU-OPENSOURCE ERIC Euro-BiImaging	CTA EMFL	
				ESRF EBS HL-LHC	
					2006 2008 2016



# ROADMAP 2021 UPDATE

*With the Roadmap 2021 ESFRI will update the strategy on European RIs aimed at strengthening the competitiveness and value (excellence and impact) of European research.*

The ESFRI Roadmap 2021 update will cover:

- landscape of RIs in Europe and globally;
- gaps in the European RI ecosystem;
- new pan-European RI Projects;
- synergies with regional, national, European and international RI and strategies for optimal use;
- links between and integration of RIs;
- e-Infrastructure needs and integration of RI in open e-networks;
- continuous upgrade (if necessary), long-term sustainability and end of life perspectives;
- innovation potential and socio-economic benefit analysis;
- global opportunities and science diplomacy aspects – where appropriate.

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# ROADMAP 2021

In order to realise the Roadmap 2021, ESFRI will:

- update the *Landscape Analysis*;
- monitor all *Projects 2010* and *Projects 2016*;
- evaluate *New Proposals* and decide upon *new Projects 2021*;
- monitor and evaluate and the effectiveness and efficiency of its methods and procedures, including definitions and models



# LANDSCAPE ANALYSIS

The *Landscape Analysis* is a key ingredient of the Roadmap 2021.

It provides an overview of the European RI ecosystem by identifying the main RIs operating transnational access in Europe, in all fields of research, and major new or ongoing projects, as well as an outlook to the global landscape of relevance.

The *Landscape Analysis* is a reference document and does not imply a prioritisation by ESFRI nor any national financial and political commitments.

The SWG draft the *Landscape Analysis* broadening the view of ESFRI beyond the RIs in its Roadmap.

The thorough knowledge of the RI Landscape and of its dynamics is a prerequisite for developing optimal strategies in the field of RI aimed at strengthening the competitiveness and value (excellence and impact) of European research.



# MONITORING OF ESFRI PROJECTS 2010 AND 2016

Monitoring is used to describe the evaluation of the SCIENTIFIC CASE and of the IMPLEMENTATION CASE of the *Projects* on the Roadmap.

ESFRI will monitor the *Projects 2010* and *Projects 2016* and will not monitor the six *Projects 2018*.

The goals of the monitoring of the *Projects 2010* and *Projects 2016* are to:

- check the overall progress towards implementation, i.e. to what degree they fulfil the minimal key requirements for the phases of lifecycle and what the plans are for reaching full implementation;
- check and report on whether and how the *Projects 2010* have addressed the conclusions and followed up on the recommendations from the 2018 evaluation of implementation and proposal evaluations for the *Projects 2016*;
- propose a status, conclusions and recommendations on the *Projects 2010* to the Plenary Forum, including the possible transition from Project to Landmark;
- update all public information on all Projects for the Roadmap 2021.

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# PERIODIC UPDATE OF ESFRI LANDMARKS

The Council Conclusions of 29<sup>th</sup> May 2018 on *Accelerating knowledge circulation in the EU* that “**Stresses the importance of human resources and training skills as key factors in the success for Research Infrastructures and ACKNOWLEDGES the need for Research Infrastructures to strengthen a service-driven approach; invites Members States and the Commission within the framework of ESFRI to develop a common approach for monitoring of their performance and INVITES the Pan-European Research Infrastructures, on a voluntary basis, to include it in their governance and explore options to support this through the use of Key Performance Indicators**”.

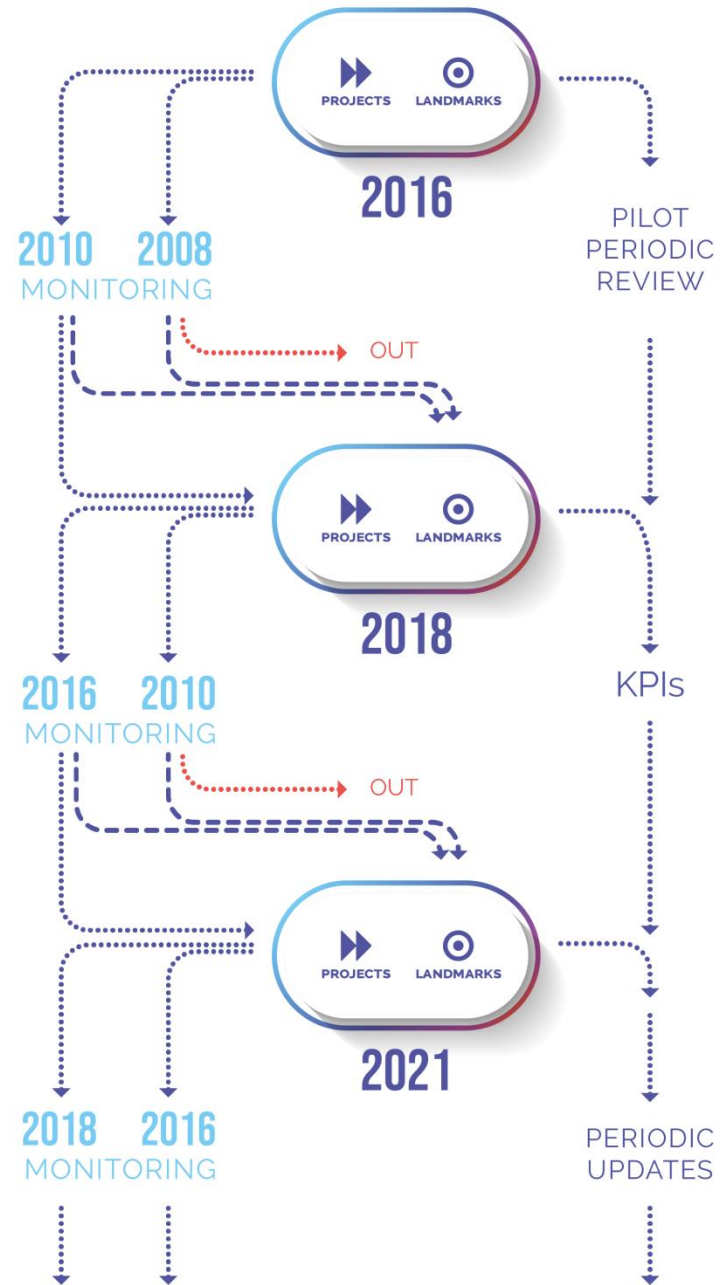
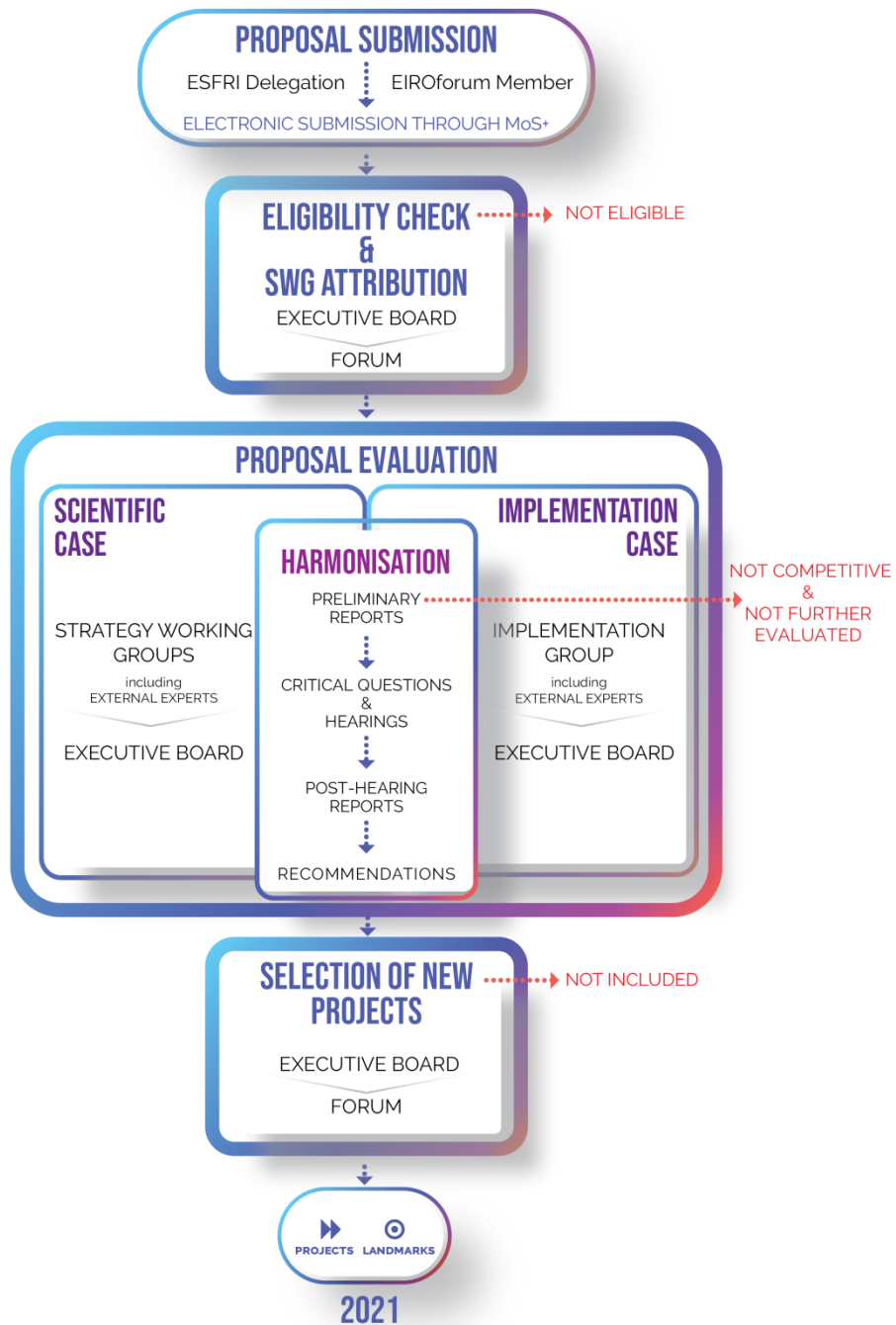
In order to implement this mandate, ESFRI has set up an ad hoc **Working Group on Monitoring of Research Infrastructure Performance** – MONITORING WG – and organised two workshops in November 2018 and July 2019 to collect feedback from the ESFRI RIs and other stakeholders and to present the preliminary findings and recommendations of the WG MONITORING.

Based on the final report of the WG MONITORING, including a proposal on the methodology to be adopted for the ESFRI Landmark periodic update as well as a proposal on the monitoring methodology and set of KPIs to be adopted, on voluntary basis, by RIs and funding authorities, ESFRI will finalise its methodology on periodic review of Landmarks.

This methodology and its foreseen time line for implementation will then be communicated to the ESFRI Research Infrastructures.

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# ESFRI ROADMAP EVOLUTION/METHODOLOGY



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**ESFRI**

data informativa  
12 ottobre 2019



# SCIENTIFIC CASE

Six reference scientific domains represented by the following SWGs:

ENE SWG - ENERGY

ENV SWG - ENVIRONMENT

H&F SWG – Health & Food

PSE SWG – PHYSICAL SCIENCES & ENGINEERING

SCI SWG – SOCIAL & CULTURAL INNOVATION

DIGIT SWG – DATA, COMPUTING AND DIGITAL RESEARCH INFRASTRUCTURES

The SWGs evaluate the **SCIENTIFIC CASE** along five dimensions:

- scientific excellence
- pan-European relevance
- socio-economic impact
- user strategy and access policy
- e-needs

When evaluating the **SCIENTIFIC CASE**, the SWGs take the dimensions of the **IMPLEMENTATION CASE** into account.

# IMPLEMENTATION CASE

The Implementation Group (IG) evaluates the **IMPLEMENTATION CASE** along five dimensions:

- stakeholder commitment
- preparatory work and planning
- governance, management & human resources
- finances
- Risks

When evaluating the **IMPLEMENTATION CASE**, the IG takes the dimensions of the **SCIENTIFIC CASE** into account.





# MKRs

ESFRI applies minimal key requirements on all the considered dimensions and along the RI life cycle.

For the **SCIENTIFIC CASE**, these are described in ANNEX II and for the **IMPLEMENTATION CASE** in ANNEX III.

These minimal key requirements serve as the basis for the scoring in the evaluations.

Meeting minimal key requirements is necessary, but not sufficient to be automatically listed in the Roadmap.

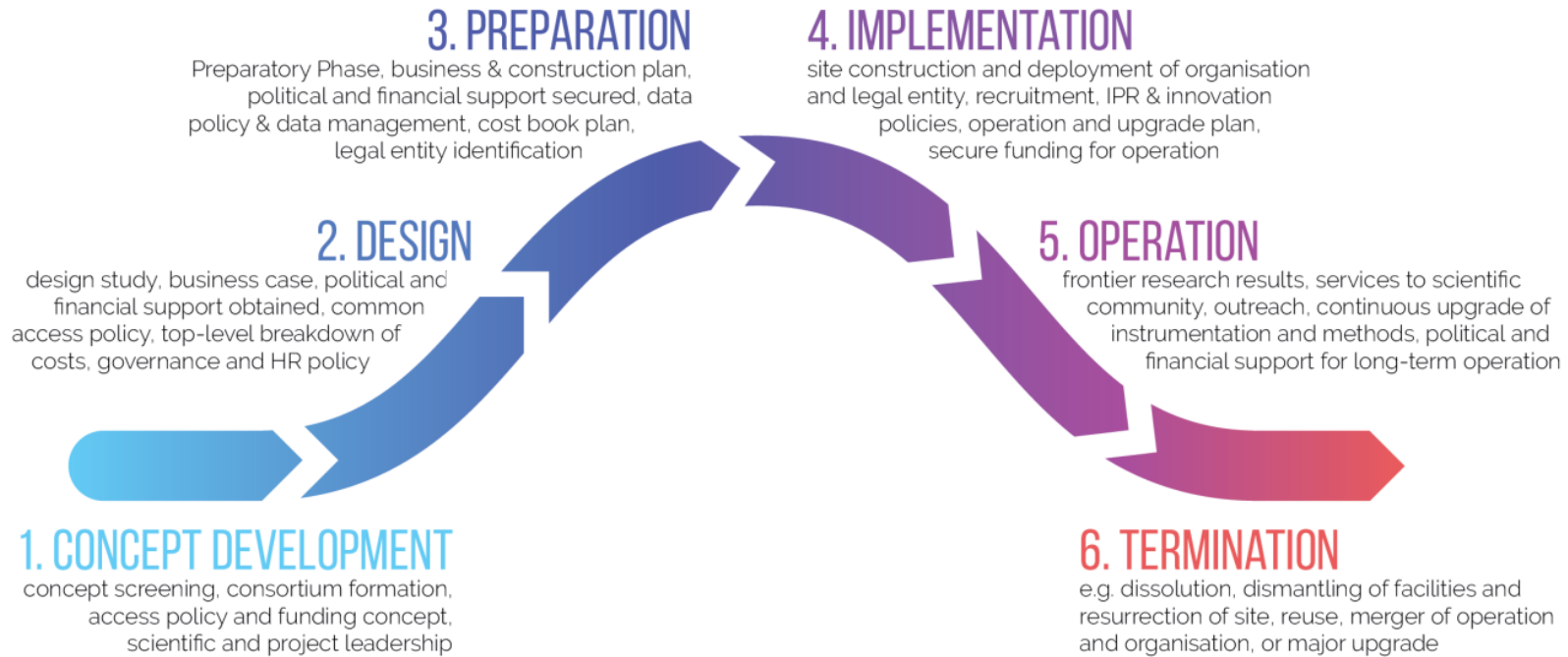
*see Public Roadmap 2021 Guide*

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# LIFECYCLE APPROACH



# Timeline

## NEW PROPOSALS

STEPS	DATE (RANGE)
INFODAY	25 September 2019
Open Call for proposals	25 September 2019
SUBMISSION OF PROPOSALS	5 May 2020
CRITICAL QUESTIONS & INVITATION TO HEARINGS	October 2020
HEARINGS	November – December 2020
ESFRI FORUM DECISION	June-September 2021
ESFRI ROADMAP Launch	October-November 2021

# Timeline

## MONITORING OF PROJECTS 2016

<b>STEPS</b>	<b>DATE (RANGE)</b>
INFODAY	25 September 2019
CUSTOMIZED QUESTIONNAIRE SENT TO THE PROJECTS	November 2019
SUBMISSION OF QUESTIONNAIRE	February 2020
ESFRI FORUM DECISION	June 2020
ESFRI ROADMAP Launch	October-November 2021

# Timeline

## MONITORING OF PROJECTS 2010

STEPS	DATE (RANGE)
INFODAY	25 September 2019
CUSTOMIZED QUESTIONNAIRE SENT TO THE PROJECTS	January 2020
SUBMISSION OF QUESTIONNAIRE	June 2020
CRITICAL QUESTIONS & INVITATION TO HEARINGS	January 2021
HEARINGS	February - March 2021
ESFRI FORUM DECISION	June 2021
ESFRI ROADMAP Launch	October-November 2021



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Thank you for the attention!