# ROADMAP 2021

- Aggiornamento della *Landscape Analysis*
- Valutazione *New Proposals* e selezione dei nuovi *Progetti 2021*
- Monitoraggio dei *Progetti 2010* ➡ status Landmark e *Progetti 2016* ➡ progressi verso l'implementazione

Projects that do not wish to be monitored have to give ESFRI an official communication at the latest by October 31st. This will imply withdrawal from the Roadmap.

ESFRI

ESFRI PROJECTS AND LANDMARKS

5 ESFRI Roadmap Cycles starting 2006 led to a portfolio of

- 18 Projects in the Preparatory Phase
- 37 Landmarks in the Implementation (15) and Operation Phase (22)
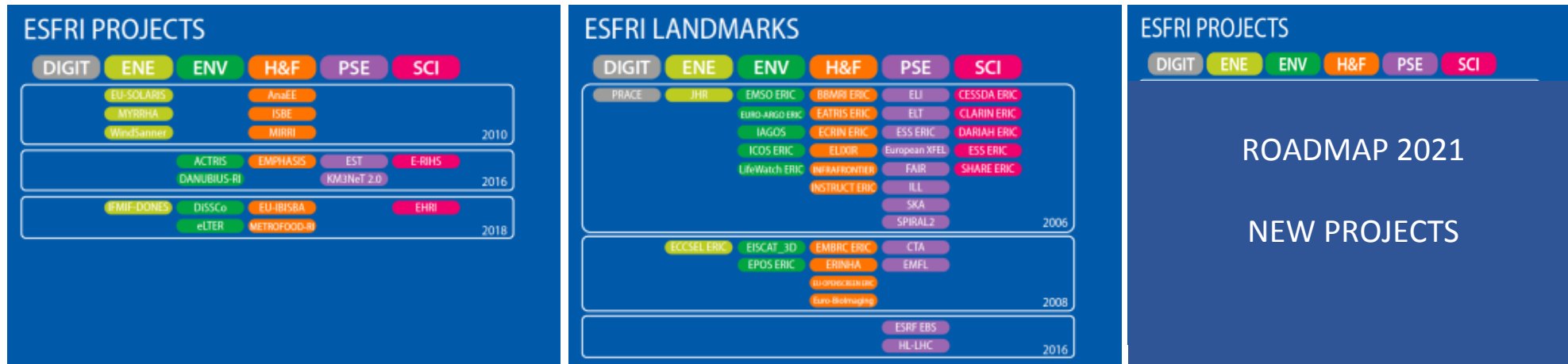
6 reference scientific domains represented by the SWGs

ENERGY - ENVIRONMENT – HEALTH & FOOD – PHYSICAL SCIENCES & ENGINEERING – SOCIAL & CULTURAL INNOVATION – DATA, COMPUTING AND DIGITAL RESEARCH INFRASTRUCTURES

QUESTIONNAIRE FOR SUBMISSION OF PROPOSALS FOR ROADMAP 2021

This questionnaire consists of three parts:

– PART A: GENERAL INFORMATION is used for the eligibility check by the EB and – if selected – for the public description of the Project in the Roadmap 2021.

– PART B: SCIENTIFIC CASE is used by the SWG(s) to evaluate the scientific case of the proposal.

– PART C: IMPLEMENTATION CASE is used by the IG to assess the implementation case of the proposal.

NEW PROPOSALS

New Proposals of RI are candidate projects to the Roadmap 2021 which, if selected by positive evaluation of SCIENTIFIC CASE and IMPLEMENTATION CASE, will reach Implementation Phase within the ten-year term

Member States, Associated Countries and EIROforum Members are eligible to submit proposals for the ESFRI Roadmap 2021

ELIGIBILITY CONDITIONS

- ✓ Proof of political support by the lead Member State or Associated Country or a resolution of the Council for EIROforum organisation and at least two additional MS/AC or EIROforum organisations
- ✓ Expression of funding commitment by the lead Member State or Associated Country or a resolution of the Council for EIROforum organisations
- ✓ Inter-institutional and multi-lateral agreement signed by the core partners formally involved in the consortium.
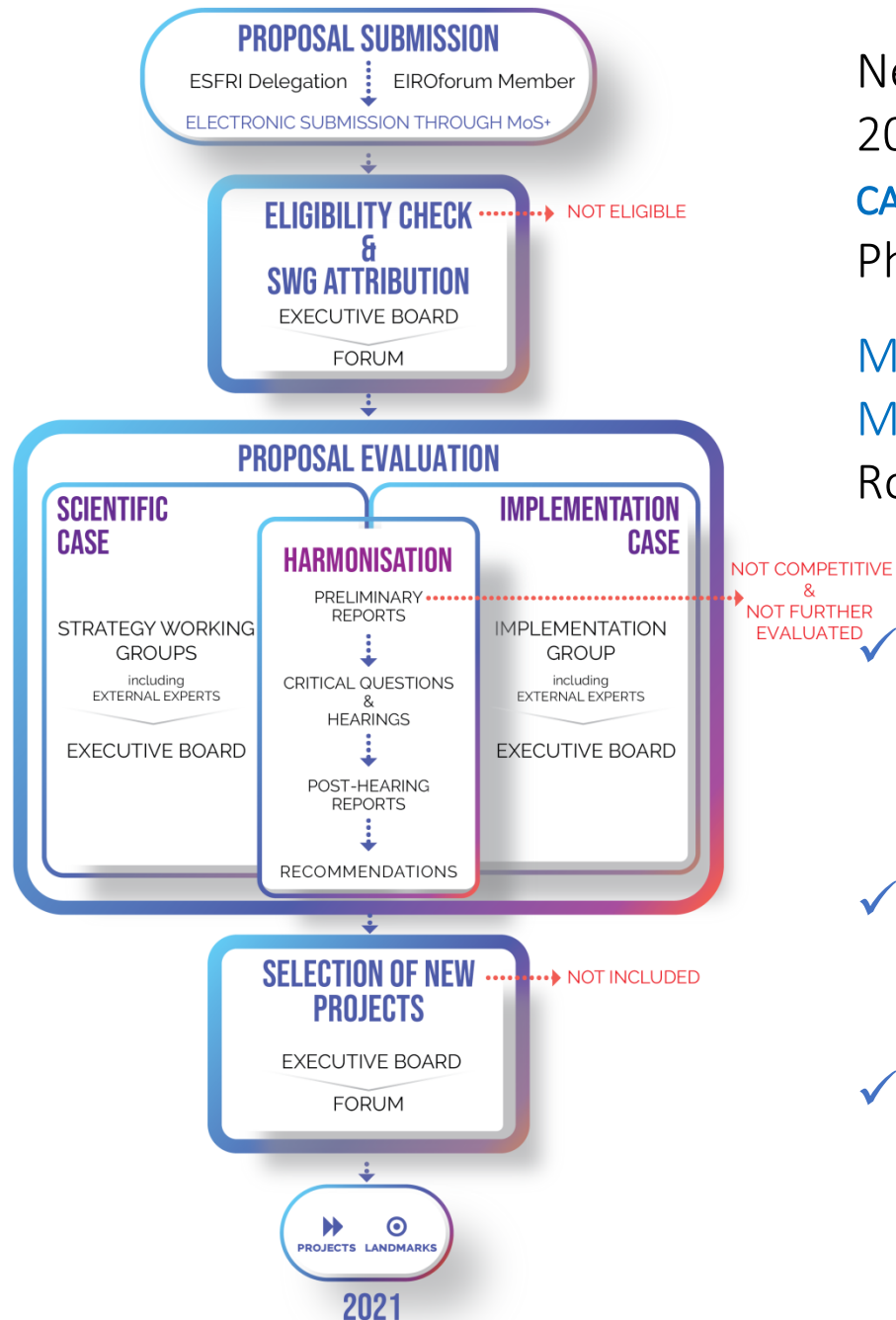
ASSESSMENT OF MATURITY OF NEW PROPOSALS – MKR SCIENCE

The SWGs evaluate the SCIENTIFIC CASE according to 5 specific dimensions

	PHASE				
	DESIGN	PREPARATION	IMPLEMENTATION	OPERATION	TERMINATION
SCIENTIFIC EXCELLENCE					
PAN EUROPEAN RELEVANCE					
SOCIO-ECONOMIC IMPACT					
USER STRATEGY & ACCESS POLICY					
E-NEEDS					

3. PREPARATION
Preparatory Phase, business & construction plan, political and financial support secured, data policy & data management, cost book plan, legal entity identification

2. DESIGN
design study, business case, political and financial support obtained, common access policy, top-level breakdown of costs, governance and HR policy

1. CONCEPT DEVELOPMENT
concept screening, consortium formation, access policy and funding concept, scientific and project leadership

- PROPOSAL that meet the MKRs for the PREPARATION Phase may be considered as PROJECTS
- MKRs serve as the basis for the scoring in the evaluations
- Meeting MKRs is necessary, but not sufficient to be automatically listed in the Roadmap

ASSESSMENT OF MATURITY OF NEW PROPOSALS – MKR IMPLEMENTATION

The IG evaluates the IMPLEMENTATION CASE, according to 5 specific dimensions

	PHASE				
	DESIGN	PREPARATION	IMPLEMENTATION	OPERATION	TERMINATION
STAKEHOLDER COMMITTMENT					
PREPARATION WORK & PLANNING					
GOVERNANCE, MANAGEMENT & HUMAN RESOURCES					
FINANCES					
RISKS					

3. PREPARATION
Preparatory Phase, business & construction plan, political and financial support secured, data policy & data management, cost book plan, legal entity identification

2. DESIGN
design study, business case, political and financial support obtained, common access policy, top-level breakdown of costs, governance and HR policy

1. CONCEPT DEVELOPMENT
concept screening, consortium formation, access policy and funding concept, scientific and project leadership

- PROPOSAL that meet the MKRs for the PREPARATION Phase may be considered as PROJECTS
- MKRs serve as the basis for the scoring in the evaluations
- Meeting MKRs is necessary, but not sufficient to be automatically listed in the Roadmap

SCIENTIFIC EXCELLENCE	SOCIO-ECONOMIC IMPACT
• scientific vision and mission outlined • (multidisciplinary) scientific new frontier outlined • scientific leadership recruited • science concept tested and found feasible • services for the scientific community described • technical maturity and feasibility tested and achieved • cutting edge science and technology described • availability of scientific human resources proven	• case for impact made: supporting innovation, other types of benefits such as services for society, cultural aspects and attraction of business, industry and public services etc.
	USER STRATEGY & ACCESS POLICY
	• Identified user categories • Survey executed demonstrating expected user community and description of it in terms of origin and size • Identified services based on a clear identification of user demands and needs • Single entry point for users outlined
PAN-EUROPEAN RELEVANCE	**E-NEEDS**
• positioning in the RI landscape defined • case for European added value defined • research capacity and current/potential geographical distribution defined • links to relevant RI and other large pan-European programmes identified	• conceptual design of e-infrastructure ready • contributions of e-infrastructure resources at all levels (institutional, regional, national, international) described • access policy and Data Management Plan (DMP) outlined • compliance with FAIR principles

WHEN DECLARING THE **SCIENTIFIC MATURITY** OF YOUR **NEW PROPOSAL**, EMPHASIZE...

SCIENTIFIC EXCELLENCE

- multidisciplinary frontiers
- scientific leadership recruited
- availability of scientific human resources

PAN EUROPEAN RELEVANCE

- filling gaps
- clear European added value

SOCIO-ECONOMIC IMPACT

- as arising from the scientific development

USER STRATEGY & ACCESS POLICY

- identified services based on a clear identification of user demands and needs

E-NEEDS

- conceptual design of e-infrastructure ready
- access policy and Data Management Plan (DMP) outlined

Strategy Report on Research Infrastructures
ROADMAP 2021

ESFRI

STAKEHOLDER COMMITTMENT	GOVERNANCE, MANAGEMENT & HUMAN RESOURCES
• political support provided by a satisfactory number of prospective members • satisfactory inter-institutional and multi-lateral agreement, e.g. a Memorandum of Understanding (MoU) signed by all core partners - being research institutions - formally involved in the consortium • clear strategy about how to gather necessary commitments at institutional and governmental level	• satisfactory project organisation and management for preparation and implementation with clearly defined skills and staffing plans, responsibilities and reporting lines approved • measurable and satisfactory Key Performance Indicators identified • governance for operation with clearly defined responsibilities and reporting lines outlined, including Supervisory and other Advisory Boards • Human resources policy for implementation and operation to gather necessary competences, hiring, equal opportunities, secondments, education and training outlined
PREPARATORY WORK & PLANNING	
• design/feasibility study successfully completed • clear business case developed • clear strategy about how to tackle technological and construction issues • detailed plan for preparation and implementation agreed, including relevant investment decisions • overall plan for operation and decommission defined	**FINANCES**
	• financial commitment by lead country or EIROforum member and possible other entities satisfactorily covering the preparation and implementation phases. • top-level breakdown of cost elements with overall order of magnitude estimates (including for Central Hub, National Nodes and main upgrades) • estimates and confidence levels available for each element • funding opportunities identified for the whole lifecycle • in-kind contribution policy outlined
RISKS	
clear identification of major risks involved and appropriate mitigation strategies described	

WHEN DEMONSTRATING **IMPLEMENTATION MATURITY** OF YOUR **NEW PROPOSAL**, PROVIDE PROOF OF...

➢ Political support, i.e. Expression of political Support (EoS) by lead country & satisfactory number of prospective members

➢ Satisfactory inter-institutional and multi-lateral agreement, e.g. Memorandum of Understanding (MoU) signed by all core partners (research institutions) formally involved in the consortium

➢ Financial commitment by lead country or EIROforum member, and possible other entities satisfactory covering the preparation and inplementation phases.

➢ Clear strategy how to gather necessary commitment at institutional and governmental level

✓ Identified measurable and satisfactory Key Performance Indicators

✓ Governance with clearly defined responsibilities and reporting lines

✓ Human resources policy for implementation and operation to gather necessary competences (hiring, equal opportunities, training etc)

THE ASSESSMENT OF **MATURITY** OF NEW PROPOSAL: SCIENTIFIC AND IMPLEMENTATION CASE

➢ MKRs serve as the basis for the scoring in the evaluations. Meeting minimal requirements is necessary, but not sufficient to be automatically listed in the Roadmap

➢ Scoring values are attributed to each dimension following MKRs for Science & Implementation

- VERY HIGH ➡ key requirements are outstandingly met
- HIGH ➡ key requirements are comprehensively met
- MEDIUM ➡ key requirements are partly met, but the proposal shows weaknesses with regard to specific requirements. Enhancing the RI's future success requires (significant) changes to (specific parts of) the proposal/plans
- LOW ➡
  future success of the RI is not convincing

THE ASSESSMENT OF **MATURITY** OF NEW PROPOSAL: SCIENTIFIC AND IMPLEMENTATION CASE

- A proposal that meets the key requirements for the Preparation Phase and scores a grading of at least 'High' for both the SCIENTIFIC CASE and the IMPLEMENTATION CASE can be considered as a Project. The status of each RI on the Roadmap is a strategic decision of the Plenary Forum that takes into account the outcomes of the evaluations.

- The scientific excellence is evaluated on the perspective of Maturity of the project, i.e. the main goal is to be sure that in the period of 10 years the project is implemented.

EVALUATION PROCESS

SWG & IG

- **External** experts (2-5 with relevant reports)

- **Internal** evaluation group (subgroup of 3-5 people, with a "rapporteur"), taking into account technical profile and CoI/Confidentiality

- **Coordination** with the different SWG for multidisciplinary RI and horizontal aspects (i.e. data policy)

- **Independent** evaluation by Implementation Group, with very strong coordination and harmonization meetings in the different steps

- **Harmonized** evaluation report with conclusions and recommendations (Scientific and Implementation) to ESFRI-EB

EVALUATION PROCESS

- The **EB** presents the result to the ESFRI **Plenary Forum**

- The Plenary Forum discusses the status, the conclusions and the recommendations per proposal and will decide upon **new Projects** to be included in the Roadmap 2021.

- Projects are RI's in their **preparation phase**, which have been selected for the **excellence** of their scientific case and for their **maturity**, according to a sound expectation that the Project will reach the **implementation phase within the ten-year term**

Principles

- <u>INDEPENDENCE</u>: involved persons carry out the evaluations in a personal capacity and they represent neither their employer nor their country.

- <u>IMPARTIALITY</u>: persons must treat all proposals, Projects and Landmarks equally and evaluate them impartially on their merits, irrespective of their origin or the identity of the applicants and coordinators.

- <u>OBJECTIVITY</u>: involved persons evaluate each proposal or questionnaire as submitted; meaning on its own merit, not its potential if certain changes were to be made.

- <u>ACCURACY</u>: involved persons make their judgment solely against the formal evaluation criteria and the relevant ESFRI documentation.

*ESFRI checks any **CoI** with all SWG and IG Members and with all external experts, which must declare **non-conflict of interest and confidentiality** on the proposals, Projects or Landmarks they are evaluating. Strict rules for confidentiality apply.*

MONITORING PROJECTS AND LANDMARKS

Roadmap 2021: Projects submitted 2010 and 2016 will be monitored

- **2010** Projects will be assessed based on their last ESFRI evaluation with the aim to obtain **Landmark status**
- **2016** Projects will be assessed based on their initial 2016 evaluation in order to identify their **progress towards implementation**

Projects that do not wish to be monitored have to give ESFRI an official communication at the latest by October 31st. This will imply withdrawal from the Roadmap.

✓Monitoring is based on **Questionnaires** sent to the projects

✓Questionnaires reflect the **Minimal Key Requirements** for the **Implementation phase** and further questions on the **project progress**

✓Monitoring involves a **Scientific Case** and an **Implementation Case**

ASSESSMENT OF PROJECTS FOR LANDMARKS & PROGRESS – MKR SCIENCE

The SWGs evaluate the SCIENTIFIC CASE according to 5 specific dimensions

PHASE					
	DESIGN	PREPARATION	IMPLEMENTATION	OPERATION	TERMINATION
SCIENTIFIC EXCELLENCE					
PAN EUROPEAN RELEVANCE					
SOCIO-ECONOMIC IMPACT					
USER STRATEGY & ACCESS POLICY					
E-NEEDS					

4. IMPLEMENTATION
site construction and deployment of organisation and legal entity, recruitment, IPR & innovation policies, operation and upgrade plan, secure funding for operation

5. OPERATION
frontier research results, services to scientific community, outreach, continuous upgrade of instrumentation and methods, political and financial support for long-term operation

6. TERMINATION
e.g. dissolution, dismantling of facilities and resurrection of site, reuse, merger of operation and organisation, or major upgrade

- PROPOSAL that meet the MKRs for the IMPLEMENTATION Phase may be considered as LANDMARKS
- MKRs serve as the basis for the scoring in the evaluations
- Measurements of general progress along the lifecycle

ASSESSMENT OF PROJECTS FOR LANDMARKS & PROGRESS

The IG evaluates the IMPLEMENTATION CASE according to 5 specific dimensions

PHASE					
	DESIGN	PREPARATION	IMPLEMENTATION	OPERATION	TERMINATION
STAKEHOLDER COMMITTMENT					
PREPARATION WORK & PLANNING					
GOVERNANCE, MANAGEMENT & HUMAN RESOURCES					
FINANCES					
RISKS					

4. IMPLEMENTATION
site construction and deployment of organisation and legal entity, recruitment, IPR & innovation policies, operation and upgrade plan, secure funding for operation

5. OPERATION
frontier research results, services to scientific community, outreach, continuous upgrade of instrumentation and methods, political and financial support for long-term operation

6. TERMINATION
e.g. dissolution, dismantling of facilities and resurrection of site, reuse, merger of operation and organisation, or major upgrade
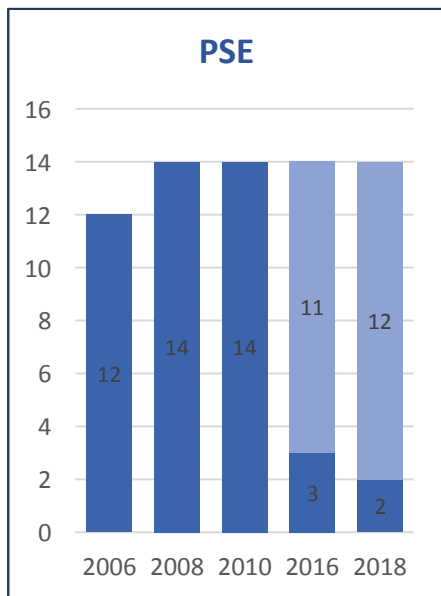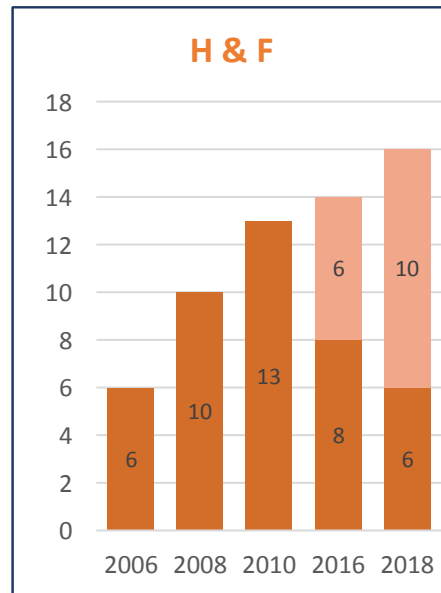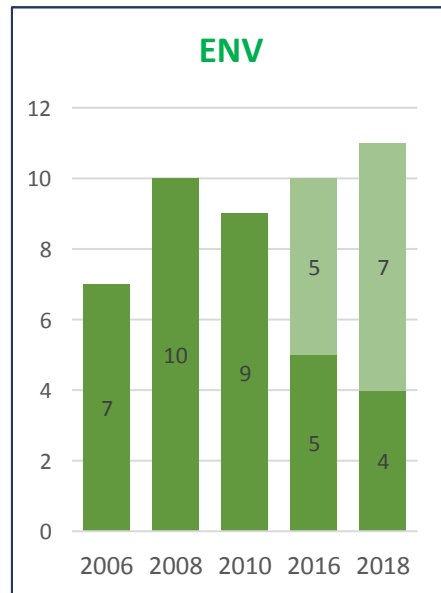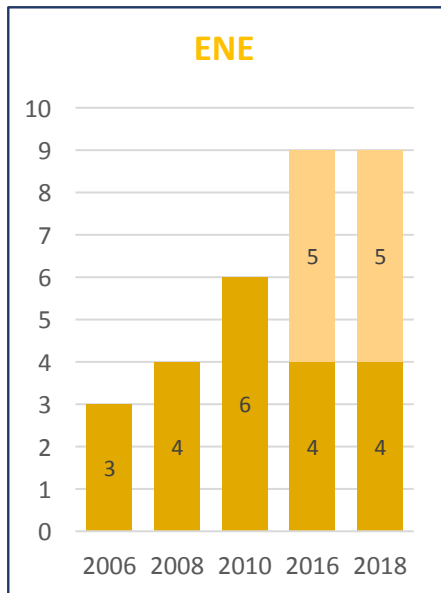
- PROPOSAL that meet the MKRs for the IMPLEMENTATION Phase may be considered as LANDMARKS
- MKRs serve as the basis for the scoring in the evaluations
- Measurements of general progress (From agreements to commitments; From strategies to decisions)
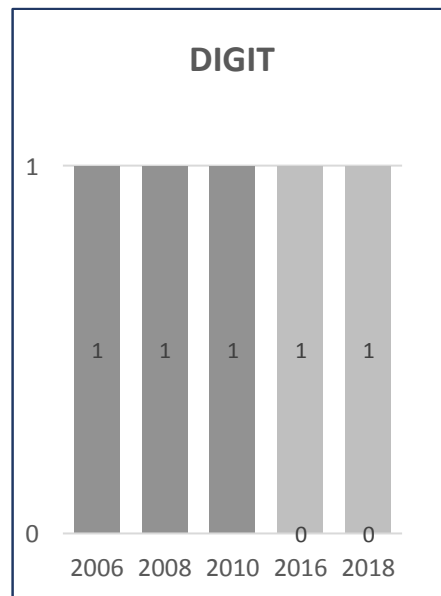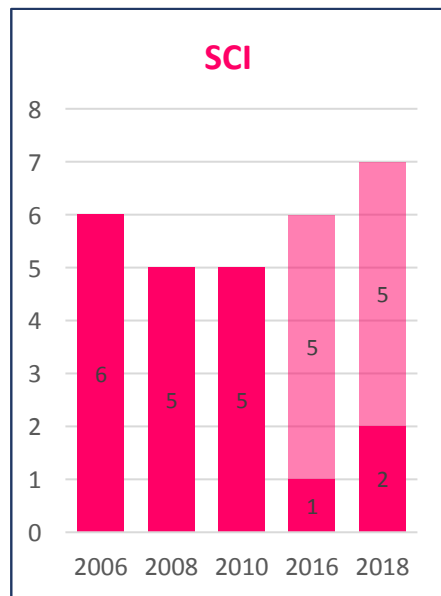
TIME EVOLUTION OF PROJECTS INTO LANDMARKS PER SCIENTIFIC AREA

A FUTURE INSTRUMENT: KPI

- In the meeting of 29 May 2018, the Competitiveness Council adopted conclusions on *Accelerating knowledge circulation in the EU* which: *"...; INVITES Member States and the Commission within the framework of ESFRI to develop a common approach for monitoring of their (RIs) 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"*.

- Recent studies aimed to establish a set of parameters to describe or quantify the *performance*, and in some cases also the *impact* of RIs

ESFRI PROJECTS

DIGIT	ENE	ENV	H&F	PSE	SCI

	EU-SOLARIS		AnaEE		
	MYRRHA		ISBE		
	WindSanner		MIRRI		**2010**

| | | ACTRIS | EMPHASIS | EST | E-RIHS |
| | | DANUBIUS-RI | | KM3NeT 2.0 | **2016** |

| IFMIF-DONES | DiSSCo | EU-IBISBA | | | EHRI |
| | eLTER | METROFOOD-RI | | | **2018** |

ESFRI LANDMARKS

DIGIT	ENE	ENV	H&F	PSE	SCI

2006

DIGIT	ENE	ENV	H&F	PSE	SCI
PRACE	JHR	EMSO ERIC	BBMRI ERIC	ELI	CESSDA ERIC
		EURO-ARGO ERIC	EATRIS ERIC	ELT	CLARIN ERIC
		IAGOS	ECRIN ERIC	ESS ERIC	DARIAH ERIC
		ICOS ERIC	ELIXIR	European XFEL	ESS ERIC
		LifeWatch ERIC	INFRAFRONTIER	FAIR	SHARE ERIC
			INSTRUCT ERIC	ILL	
				SKA	
				SPIRAL2	

2008

DIGIT	ENE	ENV	H&F	PSE	SCI
	ECCSEL ERIC	EISCAT_3D	EMBRC ERIC	CTA	
		EPOS ERIC	ERINHA	EMFL	
			EU-OPENSCREEN ERIC		
			Euro-BioImaging		

2016

DIGIT	ENE	ENV	H&F	PSE	SCI
				ESRF EBS	
				HL-LHC	

Day
ussels

ESFRI PROJECTS

Category	NAME	FULL NAME	TYPE	LEGAL STATUS (Y)	ROADMAP ENTRY (Y)	OPERATION START (Y)	CONSTRUCTION COSTS (M€)	OPERATION COSTS (M€/Y)
ENERGY	EU-SOLARIS	European Solar Research Infrastructure for Concentrated Solar Power	distributed		2010	2020*	6	0.2
ENERGY	IFMIF-DONES	International Fusion Materials Irradiation Facility - DEMO Oriented NEutron Source	single-sited		2018	2029*	420	50
ENERGY	MYRRHA	Multi-purpose hYbrid Research Reactor for High-tech Applications	single-sited		2010	2027*	1,352	74
ENERGY	WindScanner	European WindScanner Facility	distributed		2010	2021*	6.1	2
ENVIRONMENT	ACTRIS	Aerosols, Clouds and Trace gases Research Infrastructure	distributed		2016	2025*	190	50
ENVIRONMENT	DANUBIUS-RI	International Centre for Advanced Studies on River-Sea Systems	distributed		2016	2022*	222	28
ENVIRONMENT	DiSSCo	Distributed System of Scientific Collections	distributed		2018	2025*	69.4	12.1
ENVIRONMENT	eLTER	Long-Term Ecosystem Research in Europe	distributed		2018	2026*	94	35
HEALTH & FOOD	AnaEE	Infrastructure for Analysis and Experimentation on Ecosystems	distributed	ERIC Step1, 2018	2010	2019*	1.1	0.8
HEALTH & FOOD	EMPHASIS	European Infrastructure for Multi-scale Plant Phenomics and Simulation	distributed		2016	2021*	73	3.6
HEALTH & FOOD	EU-IBISBA	Industrial Biotechnology Innovation and Synthetic Biology Accelerator	distributed		2018	2025*	11	65.1
HEALTH & FOOD	ISBE	Infrastructure for System Biology Europe	distributed		2010	2019*	10	5.2
HEALTH & FOOD	METROFOOD-RI	Infrastructure for promoting Metrology in Food and Nutrition	distributed		2018	2019*	78.8	31
HEALTH & FOOD	MIRRI	Microbial Resource Research Infrastructure	distributed		2010	2021*	0.8	0.7
PHYSICAL SCIENCES & ENGINEERING	EST	European Solar Telescope	single-sited		2016	2029*	200	12
PHYSICAL SCIENCES & ENGINEERING	KM3NeT 2.0	KM3 Neutrino Telescope 2.0	distributed		2016	2020*	151	3
SOCIAL & CULTURAL INNOVATION	E-RIHS	European Research Infrastructure for Heritage Science	distributed		2016	2025*	20	5
SOCIAL & CULTURAL INNOVATION	EHRI	European Holocaust Research Infrastructure	distributed		2018	2022*	0.8	2
DIGIT								

NA-Not Available

*expected

ESFRI LANDMARKS

Category	NAME	FULL NAME	TYPE	LEGAL STATUS (Y)	ROADMAP ENTRY (Y)	OPERATION START (Y)	CAPITAL VALUE (M€)	OPERATION COSTS (M€/Y)
ENERGY	ECCSEL ERIC	European Carbon Dioxide Capture and Storage Laboratory Infrastructure	distributed	ERIC, 2017	2008	2016	1,000	0.85
ENERGY	JHR	Jules Horowitz Reactor	single-sited		2006	2022*	1,800	NA
ENVIRONMENT	EISCAT_3D	Next generation European Incoherent Scatter radar system	single-sited	EISCAT Scientific Association, 1975	2008	2022*	123	5.1
ENVIRONMENT	EMSO ERIC	European Multidisciplinary Seafloor and water-column Observatory	distributed	ERIC, 2016	2006	2016	100	20
ENVIRONMENT	EPOS	European Plate Observing System	distributed	ERIC Step2, 2018	2008	2020*	500	18
ENVIRONMENT	EURO-ARGO ERIC	European contribution to the international Argo Programme	distributed	ERIC, 2014	2006	2014	10	8
ENVIRONMENT	IAGOS	In-service Aircraft for a Global Observing System	distributed	AISBL, 2014	2006	2014	9.2	7
ENVIRONMENT	ICOS ERIC	Integrated Carbon Observation System	distributed	ERIC, 2015	2006	2016	116	24.2
ENVIRONMENT	LifeWatch ERIC	e-Infrastructure for Biodiversity and Ecosystem Research	distributed	ERIC, 2017	2006	2017	150	12
HEALTH & FOOD	BBMRI ERIC	Biobanking and BioMolecular Resources Research Infrastructure	distributed	ERIC, 2013	2006	2014	195	3.5
HEALTH & FOOD	EATRIS ERIC	European Advanced Translational Research Infrastructure in Medicine	distributed	ERIC, 2013	2006	2013	500	2.5
HEALTH & FOOD	ECRIN ERIC	European Clinical Research Infrastructure Network	distributed	ERIC, 2013	2006	2014	5	5
HEALTH & FOOD	ELIXIR	A distributed infrastructure for life-science information	distributed	ELIXIR Consortium Agreement, 2013	2006	2014	125	95
HEALTH & FOOD	EMBRC ERIC	European Marine Biological Resource Centre	distributed	ERIC, 2018	2008	2017	164.4	11.2
HEALTH & FOOD	ERINHA	European Research Infrastructure on Highly Pathogenic Agents	distributed	AISBL, 2017	2008	2018	5.8	0.7
HEALTH & FOOD	EU-OPENSCREEN ERIC	European Infrastructure of Open Screening Platforms for Chemical Biology	distributed	ERIC, 2018	2008	2019*	82.3	1.2
HEALTH & FOOD	Euro-BioImaging	European Research Infrastructure for Imaging Technologies in Biological and Biomedical Sciences	distributed	ERIC Step2, 2018	2008	2016	90	1.6
HEALTH & FOOD	INFRAFRONTIER	European Research Infrastructure for the generation, phenotyping, archiving and distribution of mouse disease models	distributed	GmbH, 2013	2006	2013	180	80
HEALTH & FOOD	INSTRUCT ERIC	Integrated Structural Biology Infrastructure	distributed	ERIC, 2017	2006	2017	400	30
PHYSICAL SCIENCES & ENGINEERING	CTA	Cherenkov Telescope Array	single-sited	gGmbH, 2014	2008	2024*	400	20
PHYSICAL SCIENCES & ENGINEERING	ELI	Extreme Light Infrastructure	distributed	AISBL, 2013	2006	2018	850	80
PHYSICAL SCIENCES & ENGINEERING	ELT	Extremely Large Telescope	single-sited	ESO#	2006	2024*	1120	45
PHYSICAL SCIENCES & ENGINEERING	EMFL	European Magnetic Field Laboratory	distributed	AISBL, 2015	2008	2014	170	20
PHYSICAL SCIENCES & ENGINEERING	ESRF EBS	European Synchrotron Radiation Facility Extremely Brilliant Source	single-sited	ESRF#	2016	2023*	128	82
PHYSICAL SCIENCES & ENGINEERING	European Spallation Source ERIC	European Spallation Source	single-sited	ERIC, 2015	2006	2025*	1,843	140
PHYSICAL SCIENCES & ENGINEERING	European XFEL	European X-Ray Free-Electron Laser Facility	single-sited	European XFEL#	2006	2017	1,490	118
PHYSICAL SCIENCES & ENGINEERING	FAIR	Facility for Antiproton and Ion Research	single-sited	GmbH, 2010	2006	2025*	NA	234
PHYSICAL SCIENCES & ENGINEERING	HL-LHC	High-Luminosity Large Hadron Collider	single-sited	CERN#	2016	2026*	1,408	136
PHYSICAL SCIENCES & ENGINEERING	ILL	Institut Max von Laue-Paul Langevin	single-sited	ILL#	2006	2020*	188	97
PHYSICAL SCIENCES & ENGINEERING	SKA	Square Kilometre Array	single-sited		2006	2027*	1,000	77
PHYSICAL SCIENCES & ENGINEERING	SPIRAL2	Système de Production d'Ions Radioactifs en Ligne de 2e génération	single-sited	GANIL	2006	2019*	281	6
SOCIAL & CULTURAL INNOVATION	CESSDA ERIC	Consortium of European Social Science Data Archives	distributed	ERIC, 2017	2006	2013	117	39
SOCIAL & CULTURAL INNOVATION	CLARIN ERIC	Common Language Resources and Technology Infrastructure	distributed	ERIC, 2012	2006	2012	NA	14
SOCIAL & CULTURAL INNOVATION	DARIAH ERIC	Digital Research Infrastructure for the Arts and Humanities	distributed	ERIC, 2014	2006	2019*	NA	0.7
SOCIAL & CULTURAL INNOVATION	ESS ERIC	European Social Survey	distributed	ERIC, 2013	2006	2013	NA	2.5
SOCIAL & CULTURAL INNOVATION	SHARE ERIC	Survey of Health, Ageing and Retirement in Europe	distributed	ERIC, 2011	2006	2011	250	18
DIGIT	PRACE	Partnership for Advanced Computing in Europe	distributed	AISBL, 2010	2006	2010	500	60

NA-Not Available

*expected

EIROforum member

ANNEX II: LIST OF MINIMAL KEY REQUIREMENTS FOR SCIENTIFIC CASE

The following table contains the **minimal key requirements** to a phase in the life cycle of RI on the five dimensions of the scientific case:

	PHASE				
	DESIGN	PREPARATION*	IMPLEMENTATION**	OPERATION	TERMINATION
SCIENTIFIC EXCELLENCE	– long term science programme defined – scientific community well-established – scientific leadership described – cutting edge science and technology outlined	– scientific vision and mission outlined – (multidisciplinary) scientific new frontier outlined – scientific leadership recruited – science concept tested and found feasible – services for the scientific community described – technical maturity and feasibility tested and achieved – cutting edge science and technology described – availability of scientific human resources proven	– vision, mission and identity fully defined – multidisciplinary scientific new frontier established – scientific leadership consolidated – services delivered to scientific community – cutting edge science and technology fully defined	– vision, mission and identity consolidated – leading RI landscape and multidisciplinary scientific new frontier achieved – scientific leadership and impact visible at global level – continuous upgrade planned and undertaken - if relevant – cutting edge science and technology consolidated	–
PAN-EUROPEAN RELEVANCE	– pan-European approach for scientific area outlined – targeted user community is pan-European – national/international facilities with complementary or synergistic potential	– positioning in the RI landscape defined – case for European added value defined – research capacity and current/potential geographical distribution defined – links to relevant RI and other large pan-European programmes identified	– positioning in the RI landscape fully described – case studies or other evidence of emerging European-added value achieved – research capacity and geographical distribution consolidated – joint strategies, common services with relevant RI and other large pan-European programmes being implemented	– European added value consistently being delivered – research capacity and geographical distribution consolidated/expanding – common services with relevant RI and other large pan-EU programmes in place	–

see Public Roadmap 2021 Guide

SOCIO-ECONOMIC IMPACT	– relevance to societal challenges identified and potential economic impact predicted including innovation aspects	– case for impact made:, supporting innovation,, other types of benefits such as services for society, cultural aspects and attraction of business, industry and public services etc.	– socio-economic impact cases emerging – capacity building impact proven – contributing to tackling the societal challenges – innovation oriented activities agreed – ability to develop an open innovation culture established	– impact demonstrated consistently – new communities involved – innovation oriented activities operational – private users involved – policies on key societal challenges, e.g. climate change, influenced	–
USER STRATEGY & ACCESS POLICY	– Vision about user community – Access modes described	– Identified user categories – survey executed demonstrating expected user community and description of it in terms of origin and size – Identified services based on a clear identification of user demands and needs – Single entry point for users outlined	– user community in terms of origin and size consolidated – Mechanism of exchange/engagement with users – Accommodation of user needs/feedbacks – Catalogue of initial services for users – User strategy consolidated (including training aspects) – common access policy –excellent driven access taken into account / transparent process, international research programmes, etc. – organisational structure and procedure for regulating access – including single entry point for users - decided and approved	Common Access management plan including: – Solid mechanism of exchange with users – Established catalogue of services for users – operational single entry point for access established – Assistance to users for the entire process (from the proposal till after the access) – IPR policies fully established – dissemination programmes in place, including innovation actions	– deployed IPR beyond decommissioning
E-NEEDS	– vision on e-infrastructure requirements, including access policy and security measures ready – interfacing with communication networks or distributed calculation or HPC/HTC	– conceptual design of e-infrastructure ready – contributions of e-infrastructure resources at all levels (institutional, regional, national, international) described – access policy and Data Management Plan (DMP) outlined – compliance with FAIR principles	– technical design of e-infrastructure ready and approved – draft operational planning for e-infrastructure service delivery – agreements with parties delivering core e-infrastructure services (Central Hub) drafted – access policy and DMP approved, including plan for sustainability of data – security policy defined and approved – implementing FAIR	– operational plan ready and approved – agreements with service provisioning parties signed – DMP implemented and security policy deployed – Operational application of FAIR	– deployed sustainability of data beyond decommissioning

Texts in blue only apply to single-site RI.

Texts in green only apply to distributed RI.

* Proposals that meet the minimal key requirements for the 'preparation' phase may be considered as Projects.

** Projects that meet the minimal key requirements for the 'implementation' phase may be considered as Landmarks.

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ANNEX III: LIST OF MINIMAL KEY REQUIREMENTS FOR THE IMPLEMENTATION CASE

The following table contains the **minimal key requirements** to a phase in the life cycle of RI on the five dimensions of the evaluation of the implementation case:

	PHASE				
	DESIGN	**PREPARATION***	**IMPLEMENTATION**	**OPERATION**	**TERMINATION**
STAKEHOLDER COMMITMENT	– institutional Letters of Intent (LoI) signed – formal agreement amongst partners for design study agreed upon (e.g. Consortium Agreement)	– political support provided by a satisfactory number of prospective members – satisfactory inter-institutional and multi-lateral agreement, e.g. a Memorandum of Understanding (MoU) signed by all core partners - being research institutions - formally involved in the consortium – clear strategy about how to gather necessary commitments at institutional and governmental level	– RI included in all relevant national RI roadmaps or similar political documents – commitment of a) MS and AC and b) core institutes and partners secured through signed legally binding document (e.g. statutes) – role and funding of Central office (Central Hub) agreed in legally binding document (e.g. statutes)	– budget to financially support operation and use for at least five years by all countries involved agreed – break-down of budget of nodes and relative resources with respect to their (potential) double accounting as national RI and nodes of international RI	– institutional, political and financial commitment on major upgrade/decommission/merger obtained
PREPARATORY WORK & PLANNING	– concept screening successfully completed and described in a conceptual design – overall project plan for design study with major milestones and deliverables approved	– design/feasibility study successfully completed – clear business case developed – clear strategy about how to tackle technological and construction issues – detailed plan for preparation and implementation agreed, including relevant investment decisions – overall plan for operation and decommission defined	– preparatory phase successfully completed – sound and reviewed business plan agreed – all investment decisions for implementation have been effectively taken and those for operation are clearly planned – communication programmes are in place – decision on site taken – building licence obtained – procurement strategy clearly identified and procurement task force in place – tenders and commitments to fund construction approved – decision on hosting of central hub taken – services to users at national level and services from Central Hub to National Nodes delivered – detailed plan for scientific, technical and organisational implementation validated	– achieving research results delivering relevant services to scientific community – utilisation of RI monitored and reported – construction effectively completed – medium term operations and upgrade plan approved and secured – procedure to winding up established	– detailed and validated plan for decommission, major upgrade or merger approved

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GOVERNANCE, MANAGEMENT & HUMAN RESOURCES	– project organisation approved – scientific leadership, project manager and required staff identified	– satisfactory project organisation and management for preparation and implementation with clearly defined skills and staffing plans, responsibilities and reporting lines approved – measurable and satisfactory Key Performance Indicators identified – governance for operation with clearly defined responsibilities and reporting lines outlined, including Supervisory and other Advisory Boards – Human resources policy for implementation and operation to gather necessary competences, hiring, equal opportunities (including gender balance and diversity), secondments, education and training outlined	– legal entity established – organisation for implementation in place – robust Key Performance Indicators for operation, management, administration and facilitation agreed – key managers and staff for implementation recruited and necessary skills trained – viable organisation for operation with adequate staffing and independent monitoring approved – human resources policy to gather necessary competences for operation, hiring, equal opportunities (including gender balance and diversity), secondments, education and training approved	– planning and reporting mechanisms in place – staff for operation and management recruited and necessary skills trained – all human resources policies and instruments in place	– organisation of decommission/merger/upgrade approved – organisation and social plan for decommission approved
FINANCES	– funding concept and potential partners (e.g. nature of partnership, in-kind versus cash) contributions outlined – budget for design study approved	– financial commitment by lead country or EIROforum member and possible other entities satisfactorily covering the preparation and implementation phases. – top-level breakdown of cost elements with overall order of magnitude estimates (including for Central Hub, National Nodes and main upgrades) – estimates and confidence levels available for each element – funding opportunities identified for the whole lifecycle – in-kind contribution policy outlined	– formal commitment for funding of implementation obtained – cost book with costs based on supplier discussions or quotes and accounting principles approved – financial reporting set up – Work Packages and in-kind contributions fully detailed and centrally budgeted – validated projection on operation costs for at least five years and agreement on how to cover them – costs for decommission identified – funding for Central Hub and firm projection on operation costs for at least five years	– funding for operation secured – auditing of accounting and budget systems in place	– budget and liability for decommission/merger/major upgrade approved and covered
RISKS	– conceptual ideas about scientific, technological, political and financial risks	– clear identification of major risks involved and appropriate mitigation strategies described	– detailed risk inventory established and appropriate mitigation measures for implementation in place	– appropriate risk management and mitigation policies for operation in place	– risks involved in decommission/upgrade/merger described and mitigation strategies in place

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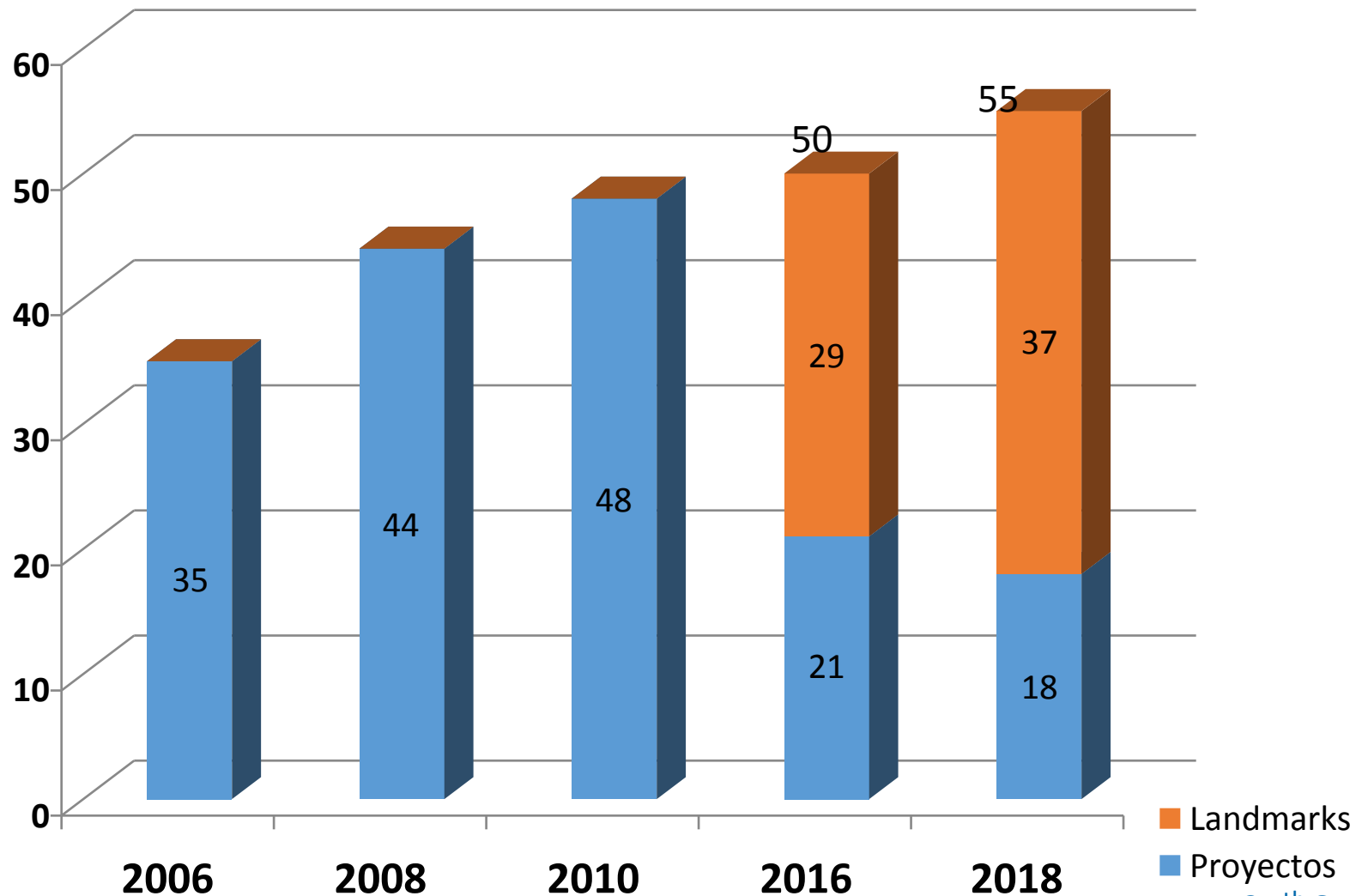
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Objectives of Project Monitoring

1. CHECK OF THE OVERALL PROGRESS
   Projects have a maximum of 10 years of residency on the roadmap to reach implementation. The progress according to the fulfilment of Minimal Key Requirements (MKR) as defined in the ESFRI Roadmap has therefore to be monitored.

2. CHECK ADRESSING OF RECOMMENDATIONS
   Check whether previous recommendations have been addressed from Monitoring (for 2010) or Evaluation (for 2016).

3. RECOMMENDATIONS TO THE FORUM
   The final decision on the status of the project and recommendations are made by the forum.
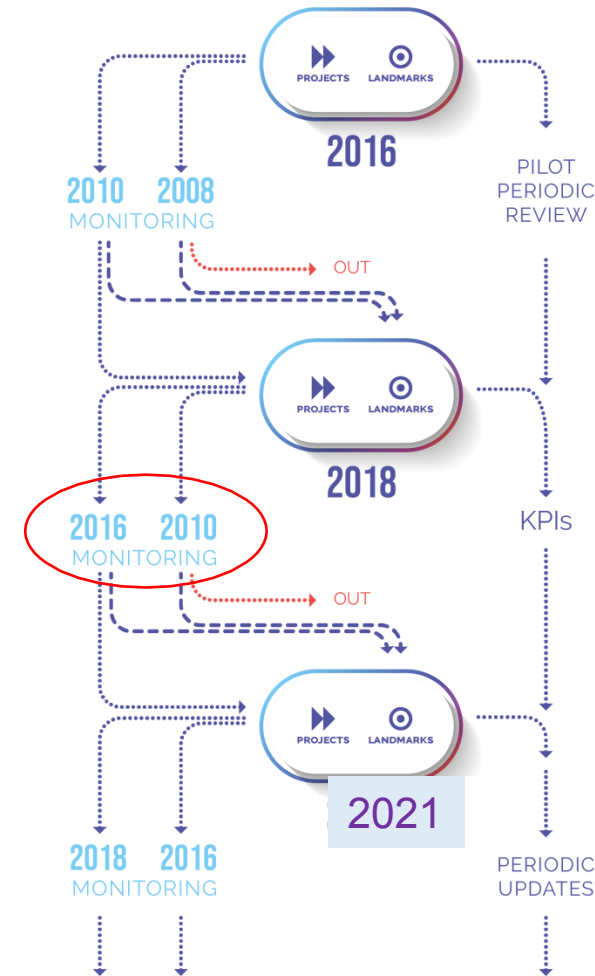
Projects & Landmarks evolution

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