The EU framework for Sustainable Research Infrastructures

Possible actions addressed to the European Research Fleets

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My first approach to LTS of RIs

Drafting Work Package 8
" Foresight: Legacy and Roadmap" of the EF⁺ proposal

The need of this WP was clearly expressed in the Annex 4 "European research infrastructures (including e-Infrastructures)" of the Horizon 2020 – Work Programme 2018-2020 Quoting the document, in particular the "*INFRAIA-01-2018-2019: Integrating Activities for Advanced Communities*" paragraph:

Scope (see page 31): ….. "*in particular for communities supported in the past under three or more integrating activities, the creation of strategic roadmaps for future research infrastructure developments as well as the long-term sustainability of the integrated research infrastructure services provided at European level, need to be properly addressed. The latter requires the preparation of a sustainability plan beyond the grant lifecycle as well as, where appropriate, the involvement of funders.*"

Specific Features for Research Infrastructure
D. Integrating Activities (see page 81)
"*An Integrating Activity shall cover three types of activities: Networking activities, Transnational and/or virtual access activities, and Joint Research activities.*
Networking activities could include (non-exhaustive list):

…
(see page 82): ….
"*promotion of long-term sustainability, including the involvement of funders and the preparation of a business plan beyond the end of the project*"

Background

State of the art **Research Infrastructures** (RIs) are providing **key services to the various scientific communities** allowing them to extend the frontiers of knowledge and thus strengthening Europe's leading role in the international scientific arena.

Long-term Sustainability of RIs has been recognised a **key policy priority** at a European level, mandatory for the EU to remain at the forefront of science and technology and to stay competitive in the global knowledge-based economy.

RIs Long-term Sustainability: *the capacity for a research infrastructure to remain operative, effective and competitive over its lifetime* (definition adopted by the **Organisation for Economic Co-operation and Development - OECD**)

European Science needs to take the next steps for a more comprehensive approach and **long term vision to Research Infrastructure (RI)**, fully using their potential to deliver.

2014

Informal Meeting of EU Ministers of Competitiveness (Research)

Milano, July 21–22, 2014

2014 Italian Presidency of the Council of the European Union

"Research Infrastructures: a European Challenge"

Long-Term
Sustainability

a long debate
….

2015

STRENGTHENING THE EFFECTIVENESS AND SUSTAINABILITY OF INTERNATIONAL RESEARCH INFRASTRUCTURES

OECD SCIENCE, TECHNOLOGY AND INDUSTRY POLICY PAPERS

Report on the Consultation on Long Term Sustainability of Research Infrastructures

OECD expert group on sustainability (**April 2015**): report published in Oct 2017 ([link](#))

Stakeholder consultation on LTS (**Dec 2015**): results presented during ESFRI Roadmap launch event (March 2016) ([link](#))

2016

Council of the European Union

EN

OUTCOME OF THE COUNCIL MEETING

3470th Council meeting

Competitiveness (Internal Market, Industry, Research and Space)

Brussels, 26 and 27 May 2016

Long-Term Sustainability of Research Infrastructures

Conclusions of the Competitiveness Council of 27 May 2016: "… UNDERLINES the importance of ensuring long-term sustainability of Research Infrastructures and INVITES the Commission to prepare together with ESFRI and relevant stakeholders a targeted action plan" ([link](#))

Stakeholders' workshop (**Nov 2016**): report published in March 2017

ESFRI Long-Term Sustainability Working Group: report published in October 2017 (ESFRI scripta Vol II, [link](#))

2017

SUSTAINABLE European Research Infrastructures
A call for action

EU Commission staff working document (DG Research and Innovation)**: "Sustainable European Research Infrastrcutures – A call for Action"** published in October 2017 ([link](#))

2018

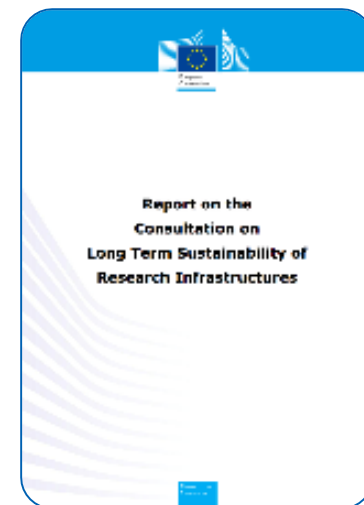European Commission > Research and Innovation >

Bulgarian Presidency Flagship Conference on Research Infrastructures – "Research Infrastructures beyond 2020 – sustainable and effective ecosystem for science and society" 22 – 23 March 2018

Sofia Tech Park, Bulgaria

LTS pre-conditions for Pan-European RIs

STRENGTHENING THE EFFECTIVENESS AND SUSTAINABILITY OF INTERNATIONAL RESEARCH INFRASTRUCTURES

OCED SCIENCE, TECHNOLOGY AND INDUSTRY POLICY PAPERS

OECD expert group on sustainability
April 2015

Science Excellence

Innovation

Skills

Lifecycle: Upgrading & Decommissioning

Research Infrastructure Long-Term Sustainability

Data Challenge

International Dimension

Governance & Funding

Socio-economic Impact

Report on the Consultation on Long Term Sustainability of Research Infrastructures

Stakeholder consultation on Long-term sustainability
December 2015
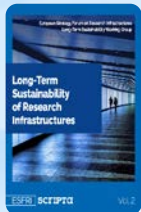
Recommendations and Key elements for the action plan on LTS of RI:
Consolidating ongoing initiatives and practices / Tackling new challenges

Ensuring RI at the forefront of the _science excellence_	• Simplify and harmonise access by encouraging European RI to put in place transparent access policies (i.e. European Charter for Access to RI) • Promote excellence as the main driver for access to RIs, as requirement for funding the access • Encourage RI to put in place multidisciplinary support mechanisms, including training modules to broaden the user base • Whenever possible, guarantee that a share of Excellence driven access is to be granted to the best research projects regardless of their origin and affiliation • Implement effective, robust and systematic evaluation of RI, by developing guidelines for independent international peer-review, such as the establishment of Technical Evaluation and Management Assessment Committees • Assess the quality and impact of the RI and its services, by developing a set of Key Performance Indicators, based on Excellence principles • Require users to systematically acknowledge the contribution of the RI when publishing and disseminating their results, by encouraging the implementation of a tracking system for the RI use
Configuring European RI as _skills development_ and mobility actors	• Encourage short to medium term mobility between RI through dedicated staff exchange programmes • Facilitate cross-border skills development, by reinforcing the support for trans-national access to RI, at European level • Disseminate the opportunities for access and jobs in an RI through a single and centralised portal, such as EURAXESS • Develop a standardised European curricula for training of RI managers and operators, building on the RAMIRI and RITRAIN and other initiatives, by structuring a Sectorial Qualifications Framework, namely on leadership, management and data steward qualifications • Encourage national and regional funding programmes to support cross border access to RI • Increase the visibility of RI services and broaden user communities by developing a European catalogue of RI services • Stimulate an internal European RI job market, by promoting initiatives to harmonise career paths, salaries and pension schemes such as RESAVER, as well as exchange and re-integration schemes between RI, academia, business and industry
Unlocking RI _innovation_ potential and stimulating _industry engagement_	• Support the integration of RIs into their regional and thematic innovation ecosystems • Enhance the role of intermediaries by developing specific mechanisms to facilitate knowledge and technology transfer into industrial, public and commercial environments, such as Industrial Liaison platforms shared between several RIs • Increase RI engagement with industry, SMEs and start-ups, by fostering their direct and early-involvement in RI Advisory Boards and through dedicated training and exchange schemes • Include provisions in RI access policies to facilitate the use of RI services by Industry, business and public sector • Develop instrumentation and technologies in a co-creation process, by stimulating large scale initiatives and pilots involving industry, RI and academia • Develop strategic roadmaps in key technologies required for the construction and upgrades of the pan European RI in synergy other European Research initiatives (such as EIT, KICs and KETs)
Boosting RI _impact, value and benefits_ of RI	• Broaden stakeholders' engagement by developing criteria and narratives to define environmental, social, cultural and political impact and invite RI to communicate better their added value • Reinforce the integration of RI in the regional scientific, economic and social ecosystem by assessing the contribution of RI to national and/or regional research and innovation strategies for smart specialisation (RIS3) • Support the development and uptake of an internationally accepted model and criteria describing the socio-economic impact of RI for the different types of Infrastructures, based on quantitative and qualitative indicators
Enhancing RI as the pillar for _data_ production and sharing	• Encourage research data produced by RI to be as open and accessible (including curation and metadata) as possible and compliant with the FAIR data principles • Stimulate RI to establish transparent Data Management Policies in accordance with the "European Charter for Access to Research Infrastructures", clarifying roles and responsibilities of data production and stewardship and increasing standardisation, interoperability of services and research replicability • Promote the re-use of research data produced by RI for research, innovation and education purposes by supporting the connectivity of RI to the European Open Science Cloud for Research; • Encourage RI to promote the use of Data Management Plans addressing the production, dissemination and curation of data (and metadata) in their entire lifecycle, including their long-term preservation
Ensuring effective _governance_ and sustainable _life-cycle management_	• Encourage the synchronisation of national RI roadmaps/ budgets and their alignment with the European RI road mapping process • Stimulate a dedicated budget for European RI investment at national level • Optimise the use of European Structural and Investment Funds throughout the whole RI lifecycle by fostering the development of RI business plans and support RI to meet regional / national RIS3 priority objectives • Optimise the financial planning of RI by facilitating access to EU financial instruments (EFSI, ESIF and InnovFin), namely through the new instrument InnovFin Science targeting RI • Encourage private funding for development of new services and technologies • Increase transparency in cost calculation and include access to RIs, as an eligible cost in a research grant • Stimulate a stronger early stage involvement of Member States in the development of European RI and develop a stable monitoring system • Provide EU support to newly established ERICs on new services development, interoperability and international outreach; as well as to their operation where there is a clear added-value for EU policy-making • Facilitate the use of the ERIC instrument, by further clarifying the extent to which incentives for investments such as VAT exemption for in-kind contribution can be used by the Member States • Improve bankability of RI by establishing guidelines for the production of RI business plans • Establish guidelines for the termination stage, including provisions for channelling expertise acquired data and research results, know-how from RI users and operators towards other RI
Promoting European RI in the _international arena_	• Promote visibility of European RI and of their services at international level • Encourage the systematic analysis of the international landscape in the national and EU RI roadmapping process so as to identify potential gaps and complementarities • Encourage Europe to take leadership in the dialogues on research infrastructures of global relevance with international partners • Promote the use of EU policies, standards and best practices such as access to RI and data management policies for RI as reference in international fora

Key elements for the action plan on LTS of RI

*[Sustainable European Research Infrastructure, A call for action, **October 2017**]*

Some relevant issues for Research Vessels Operators Community

- Simplify and harmonise access by encouraging European RI to put in place **transparent access policies** (i.e. European Charter for Access to RI)

- Promote **excellence** as the main driver for access to RIs, as **requirement for funding the access**

- Encourage RI to put in place multidisciplinary support mechanisms, including **training modules to broaden the user base**

- Develop **guidelines for independent international peer-review**

- Develop **Key Performance Indicators**, based on Excellence principles, in order to define **environmental and socio-economic impact**

- Encourage **staff exchange** and standardized European curricula

- **Facilitate cross-border skills development, by reinforcing the support for trans-national access (TNA) to RI, at European level**

The is a very broad consensus that the Commission should continue supporting the Trans-National Access scheme and possibly further reinforce it. Many stakeholders concurred that besides the current TNA scheme of the EU Framework Programme, national RI policies should also integrate a support mechanism to fund transnational access of users outside the RI country, namely to support transnational access of users within the members of the distributed Pan-European RI.

Potential interests of a sustained trans-national access

Interests for marine scientists:

- to access to the most adapted MRI to perform their research
- **to be recognized as PIs (not only "guest scientists) working on unique MRI**

Interests for EU countries to improve the cohesion, coordination:

- **to foster the use by research communities of cutting-edge European MRI**
- **to contribute to the so-called "stairways to excellence"**
- to develop common interfaces, standards and inter-calibration methods
- to share best practices

Interests for MRI operators involved in European consortia:

- **to develop joint calls,** to conduct a common peer-review processes, to set-up joint mobility and training scheme, …
- **to learn more about and promote available resources, their use at EU level**
- to contribute to developing common standards and practices to improve MRI shared use
- **to best estimate the future requirements in terms of new and upgraded installations and their distribution in Europe**

Overview of EU projects/initiatives proposing TNA

TNA activity implemented in the frame of the FP7 and *Horizon2020* projects

Project	Marine Research Infrastructure, MRI	Period of access	# MRI	Access provided	Modality of access	Funding
ASSEMBLE *ASSEMBLE plus*	Marine Biological laboratories	2009-2013 *2017-2021*	- *76 installations*	10000 person-day *-*	On-site Remote	
EUROFLEETS EUROFLEETS 2	Research Vessels and large equipment	2009-2013 2013-2017	23 research vessels	168 days (58+109) 201 days	On board	
MESOAQUA *AQUACOM*	Mesocosm facilities	2009-2012 *2018-2020*	- *37 installations*	- *> 11500 person-day*	-	
MARINET *MARINET 2*	Marine renewables infrastructure	2011-2015 *2017-2021*	42 testing facilities *57 testing facilities*	97 projects *5 calls*	-	
AQUAEXCEL *AQUAEXCEL2020*	Aquaculture infrastructures	2011-2015 *2015-2020*	27 infrastructure *39 infrastructure*	- *11 calls*	-	
JERICO *JERICO - NEXT*	Coastal observatories	2011-2015 *2015-2019*	14 facilities *18 facilities*	3 calls – 19 projetcs *2/3 calls – 21 projects*	Remote Partially remote In person/hands-on	
FixO3	Ocean observatories	2013-2017	15 infrastructures	15 projects	Remote Partially remote In person/hands-on	
EMSO-link	Ocean observatories	*2017-2020*	*3 observing systems*	*-*	*-*	
ARICE	Research Vessels	*2018-2021*	*6 icebreakes*	*1 call*	On-site	

Work in progress

Other EU MRI projects/initiatives which offer transnational access or service access in the category of "in situ data acquisition systems" are the ESFRI Infrastructures EURO ARGO and EMSO

Other TNA schemes: Article 185 BONUS, Ocean Facilities Exchange Group (OFEG)

Some recommendations to improve the TNA actions

*[D.42.1. - MRI common management guidelines for joint research activities – SeasEra projects, **March 2013**]*

Better use of ICT tools to increase the visibility of opportunities, better communication on calls and results

Better clarify the level of available support

Need to "market" the infrastructures – to find ways and means to attract more users, including from new areas

Need to improve interactions with the industry

Need to educate and inform researchers and others stakeholders

Need to work together for removing common legal and administrative burdens

Example of a "well-established" network

EUFAR — European Facility For Airborne Research

Created in 2000, EUFAR was born out of the necessity to create a central network for the airborne research community in Europe, after a lengthy period of negotiation, in 2018 **8 European institutions representing 6 different countries** involved in airborne environmental research have signed the necessary Statutes to constitute **EUFAR as an AISBL – an international non-profit association under Belgian law**

The objectives of the AISBL include:

- *promoting efficiency in the operation of airborne research infrastructures through the **exploitation of common instruments, data processing software formats and archiving***
- *development and promotion of **schemes to broaden access** to European airborne research facilities for all European scientists*
- *fostering **coordination between European research funding agencies**, the development of joint priorities for airborne science and the harmonised development of future airborne observing systems, including Unmanned Aerial Systems*
- *promoting **training opportunities** in airborne measurements and their application to researchers across Europe*
- *providing a focus for **collaboration** between the airborne research communities in Europe and elsewhere*

Past and current activities addressed to European RVs

2009-2013

Eurofleets

Towards an Alliance of European Research Fleets

2013-2017

Eurofleets 2

New Operationl steps towards an alliance of European Research Fleets

2018-2019

European MARINE BOARD
Advancing Seas & Oceans Science

European Marine Board Working Group
"Next Generation European Research Vessels"

WP6: Future development of the Research Vessel Fleet Management and Coordination

Current activities addressed to European RVs

Eurofleets +

"**An alliance of European marine research infrastructures to meet the evolving requirements of the research and industrial communities**", proposal responding to the priorities identified in the call H2020-INFRAIA-2018-1 - Research Vessels

WP8 "Foresight: Legacy and Roadmap" activities, which include:

- *to propose a business plan for a long-term sustainable Transnational Access (TA) system of research vessels*

- *to identify pilot groups of a TA system*

- *to fine-tune an integrated system for the coherent, long-term, sustained maintenance and update of outcomes of Networking Activities (NA), TA and Joint Research Activities (JRA) from the Eurofleets projects*

- *to provide an operational proposal toward a sustainable coordination platform for European research vessel fleets*

- *to provide a strategic roadmap and guidelines for the sustainability of the Eurofleets+ platform beyond project lifetime*
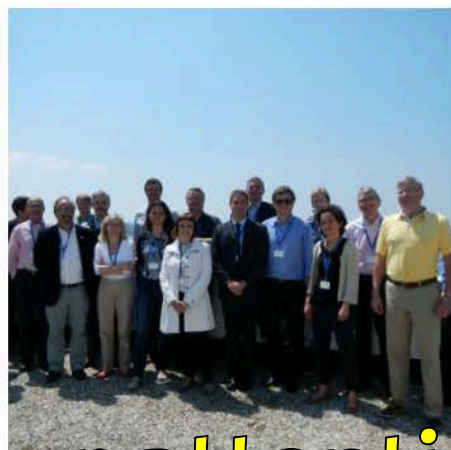
ERVO strengths

Cooperation [Rodi, 2016]

Cost Efficiency approach [Galway, 2015]

Rapid Response [Brest, 2013]

Long live the ERVO Group!

Thanks for your attention!