



European Strategy Forum
on Research Infrastructures

ESFRI recommendation on coordination of Member States' investment strategies in e- Infrastructures

CONFERENZA GARR 2017 – THE DATA WAY TO SCIENCE
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INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Ad hoc Working Group on e-INFRA

The Working Group on Investment Strategies in e-Infrastructures – **e-INFRA WG** – was active in 2015/2016 in order to prepare the response to the Conclusions of the Council of the European Union of 29th May 2015 that

“INVITES ESFRI to explore mechanisms for better coordination of Member States’ investment strategies in e-Infrastructures, covering also HPC, distributed computing, scientific data and networks”.

ESFRI adopted the recommendation during its 59th Plenary Forum that took place on 9th December 2016 in Brussels.

Name	Affiliation	Country
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BRONNIMAN Peter	State Secretariat of Education, Research and Innovation	CH
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INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Ad hoc Working Group on e-INFRA

The Council took note of recommendation made by the European Strategy Forum on Research Infrastructures (ESFRI) to improve coordination of member states' investment strategies in e- infrastructures for research.

ESFRI therefore must implement its mandate as follows.

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INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (1)

- ESFRI aims to contribute to an effective and efficient approach to e-Infrastructure and services (vertical and horizontal) for European science and its competitiveness in the global scene ***building on existing Research Infrastructures and electronic Infrastructures.***

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (1)

ACTIONS:

identify Landmarks and Projects that can, perhaps through the cluster calls, address the optimization of the current data standards, data policies, medium and long term storage technologies, far-end services (retrieval of data from tapes, formatting data...), develop in a coordinated way with EOSC, the optimal Metadata that will provide an **interoperable catalogue** at Coupled level. If large data-set producers of homogeneous and neighbouring fields cooperate on this great advances can be reached quickly.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (2)

- ESFRI advises to establish *urgently a convergent policy of funding mechanisms* for e-Infrastructures at the various levels (institutional, regional, national, European). Such policy could include ***support and financing of e-Infrastructures*** for scientific users, providing incentives to researchers to generate ***FAIR and reproducible (+R) data***, as well as the development of enabling e-tools/e-technologies and the mainstreaming of support actions addressing e-needs of all levels of intervention.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (2)

ACTIONS:

identify the best way to contribute to the overall EOSC Governance making sure that all the key ingredients for an effective EOSC are in from the beginning and that the full depth of field of EOSC implications is put in focus. National science communities, e-Infrastructures, research infrastructures, data based civil services, educational resources should be adequately engaged in order to properly define the borders and reciprocal tributes between the EOSC interface to public and the supporting hard infrastructure. Participation to EOSC calls only by high level representative bodies or consortia and not be single projects.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (3)

- ESFRI suggests to act as **STRATEGY FORUM OF FUNDERS** of the e-Infrastructures for European science as a key element of support of a coherent approach to policymaking on Research Infrastructure in Europe.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (3)

ACTIONS: as Strategy Forum of Funders ESFRI should be part of the EOSC Governance in order to build a coherent and strategy lead system that includes and attributes responsibility to the Research Infrastructures for the best design of the data pipeline from the hard bed to the EOSC. The large participation to the SWG-DIGIT indicates that Member States are ready and willing to use ESFRI for addressing the issues of the mandate.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (4)

- ESFRI could be effective in facilitating the ***coordination of national and European efforts in e-Infrastructures*** for research and innovation, following the model that has been put in place for Research Infrastructures. The global dimension of e-Infrastructures shall also be addressed in a coherent way.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (4)

- **ACTIONS:** ESFRI will use ad-hoc groups exploiting internal resources (SWGs, Forum Delegations) as well as invited resources from the Landmarks and Projects and other large infrastructures (with no geographical boundaries) to identify methodologies and practices to enable an advanced data management system of RIs to interface the EOSC, maintaining the quality standard. The national roadmaps will be involved aiming to spread the coherent approach at all levels.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (5)

- ESFRI advises to proceed by building on the EOSC HLEG vision and by ***strengthening the data FAIR+R generator role of Research Infrastructures*** and the coordination of science and innovation communities also at broad international level as described by the e-IRG roadmap.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (6)

ACTIONS:

ESFRI will collaborate with the e-IRG to develop the best data quality check protocols and permanent data quality control, and to develop a “service on demand” economical practice. These important aspects should develop in time as trusted tools to align the large amount of data from the long tail of science that do not have built-in resources to certify their own data. Protocols should be developed and tested at RIs and then percolate through the users to the whole science community.

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INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (6)

- ESFRI advises that urgent actions must be taken to support ***the training and hiring of e-infrastructure experts/scientists*** and to expand the ***data literacy*** at all levels of education and innovation activities to enable the return from the investment in e-Infrastructures and Research Infrastructures and maximize societal benefits.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (6)

ACTIONS:

ESFRI will stimulate the role of RIs, Landmarks and Projects, as advanced training labs for data scientist. ESFRI will also stimulate the RIs of the Roadmap, but also very importantly the organizations that are taking shape like LEAPS in the domain of analytical science, to dialogue with Universities and post-doctoral schools, in order to implement a roadmap towards the fulfilment of the data-scientists and data-practitioners needs of Europe and beyond. A first action could be to establish a dialogue with LERU and to work out a credit system that could facilitate the interplay of the key actors in the data economy.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (7)

- ESFRI advises that deploying strategic joint e-services, including standardization and assisted open access, can be ***most efficiently done at least at European level.***

ACTIONS:

ESFRI will establish a working platform with the Landmarks and Projects to identify the needs to reach the level of interoperability that is expected by EOSC: the question is what is transferred to EOSC and what EOSC can ask back to RIs.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (8)

- ESFRI recognizes that the capacity of distributed High Performance and High Throughput Computing, of communication networks for scientific data, and of transversal e-services, ***should be strengthened by building on national resources*** and adding an effective coordination and a possible additional funding such to realize a full European-scale impact.

ACTIONS:

ESFRI should analyse and quantify the computing (HPC, HTC) by the scientific community that are generated by the RI data and the economic implications.

INVESTMENT STRATEGIES IN e-INFRASTRUCTURES

Recommendation (9)

- ESFRI recognizes that the funding approach to ***HPC Tier-Zero facilities*** bears challenges similar to more centralised large-scale Research Infrastructure facilities with direct industrial policy implications and should be dealt with accordingly.

ACTIONS:

ESFRI has e-I Landmarks (Prace) and is evaluating new projects. Albeit HPC is a multifaceted to domain there is scope for ESFRI to engage with the other stakeholders as a good share of computing resources are actually exploited for basic and applied science, and most of the advanced code development is done at basic research level.

DATA, COMPUTING AND DIGITAL RIS SWG

DIGIT SWG

As novel proposals with a dominant, or substantial, digital research infrastructure character have been proposed to the ESFRI Roadmap 2018, ESFRI decides to proceed in establishing a **Strategy Working Group on Data, Computing and Digital Research Infrastructures – DIGIT SWG –**

	PROPOSAL	LEAD SWG	OTHER SWG
1	DiSSCo	ENV	DIGIT
2	EHRI	SCI	
3	EIRENE	H&F	ENV
4	eLTER	ENV	
5	EU-IBISBA	H&F	ENE
6	EuroNanoLab	PSE	
7	EuroStrain	PSE	
8	IFMIF-DONES	ENE	PSE
9	METROFOOD	H&F	ENV
10	OPERAS	SCI	DIGIT
11	RESILIENCE	SCI	
12	SILECS	DIGIT	

DATA, COMPUTING AND DIGITAL RIS SWG

DIGIT SWG

- The Chair is Professor **Ana Proykova**
- Members includes: the **current e-Infrastructures experts of the other five SWGs** – Sergio Girona (ES), Norbert Meyer (PL), Arjen Van Rijn (NL), Francoise Genova (FR) and Panos Argyrakis (GR) – **and experts proposed by the ESFRI Forum**, as well as **European Commission representatives**
- The **Rationale, Mandate, Timeline, rules on Conflict of Interest, and Resources comprised in the "Terms of Reference of Strategy Working Groups for the 2018 ESFRI Roadmap edition"** apply to this new SWG, with the exception that the Landscape Analysis for e-Infrastructures will be developed by the e-IRG

LONG-TERM SUSTAINABILITY OF RIs

Ad hoc Working Group

The Working Group on Long-Term Sustainability of RIs – **LTS WG** – was created by ESFRI in 2016 to comprehensively respond to the Conclusions of the Competitiveness Council of the European Union of 27th May 2016 that

“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”.

ESFRI adopted the LTS WG report during its 61st Plenary Forum of 21st June 2017 in Krakow and agreed to prepare it for publication as ESFRI Scripta Vol.2.

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LONG-TERM SUSTAINABILITY OF RIs

ESFRI SCRIPTA Vol.2

Downloadable at www.esfri.eu



LONG-TERM SUSTAINABILITY OF RIs

Contents

Executive Summary	5
Main recommendations	9
Introduction	13
1. Establish and maintain excellence	18
Specific recommendations	19
Explanatory notes for the specific recommendations	20
2. Ensuring the right people are at the right place at the right time	28
Specific recommendations	29
Explanatory notes for the specific recommendations	29
3. Harmonise and integrate the operation of RIs and e-Is	34
Specific Recommendations	36
Explanatory notes for specific recommendations	36
4. Fully exploit the potential of RIs as innovation hubs	42
Specific Recommendations	44
Explanatory notes for the specific recommendations	45
5. Demonstrating the economic and wider benefit to society of RIs	53
Specific recommendations	55
Explanatory notes for the specific recommendations	55

6. Effective RI governance, long-term funding and effective management	59
Specific Recommendations	61
Explanatory notes for the specific recommendations	61
7. Coordination at National and European levels	69
Specific recommendations	70
Explanatory notes for the specific recommendations	70
Appendices	79
Terms of Reference	80
Membership	83
Glossary	85

SPECIFIC RECOMMENDATIONS

3. HARMONISE AND INTEGRATE THE OPERATIONS OF RIs and e-Is

Harmonise and integrate the operation of RIs and e-Is

- 3.1** **European and National Authorities** should develop and implement a new culture, which acknowledges the need of new skills to optimise future use, reuse and multiple use of data, increasingly across disciplines.
- 3.2** **European and National Authorities** should harmonise different existing funding models between RIs and e-Infrastructures at all levels.
- 3.3** **European and National Authorities** shall develop stable and robust certified repositories and registries for data preservation following the FAIR – Findable, Accessible, Interoperable, and Re-usable – approach.
- 3.4** **European and National Authorities – including RIs** – should foster international cooperation to support the global dimension of data management and interoperability among RIs generating data, products, software and services for science and society.
- 3.5** **National Authorities** must assure that **RIs** have prepared data management plans as a basic eligibility criterion for funding right from the beginning; requirements for such plans have been developed by e-IRG/ ESFRI and others.



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on Research Infrastructures

Thank you
