

Optimising the Operation and Use of National Research Infrastructures

The majority of research infrastructures (RIs) are funded, managed, and operated within national systems. They mostly provide services to national research communities.

As research budgets are limited, and governments and funding agencies need to support increasingly large and complex RIs and RI portfolios, Science Europe and the OECD Global Science Forum joined forces to analyse how to optimise their operation and use within a national context.

Research infrastructures are highly diverse, as are the approaches that national authorities take in funding and governing them within their respective research systems. Because of this, no single model or set of recommendations to optimise their operation and use would suit every country or infrastructure.

Science Europe and the OECD Global Science Forum identified a number of key factors and guiding principles that will help policy makers, decision makers, and infrastructure managers to optimise the use and operation of the infrastructures that they manage. These principles have been brought together in two Guiding Models: one for funders and decision makers, and one for managers.

“Research Infrastructures are essential to foster excellence, innovation, co-operation and networking, both nationally and internationally. The recommendations set out in this report will help better support them and enhance their efficient use.”

— Rosa Menéndez
President of the Spanish National Research Council (CSIC)
Science Europe Vice-President
September 2020

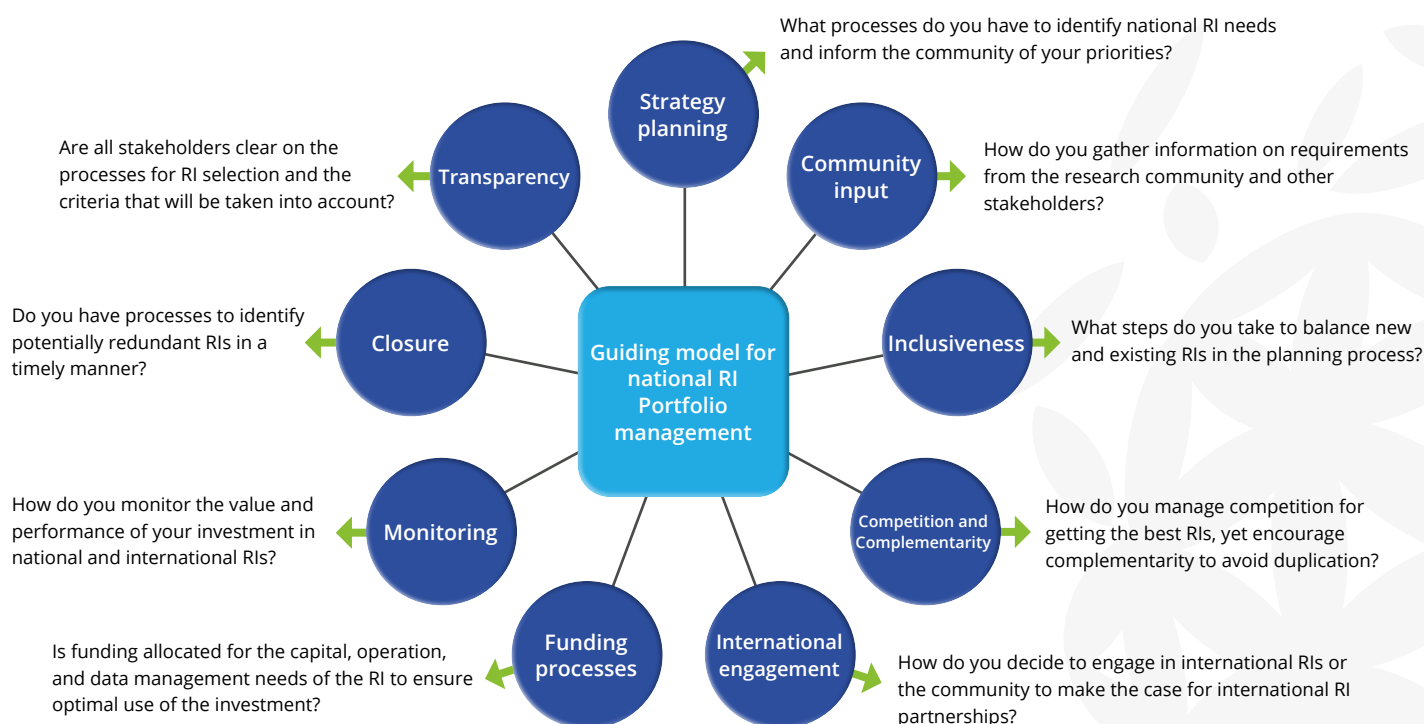
“Nationally funded and managed research infrastructures are an important component in the development of the European Research Area. To fulfil this role, they must be governed, managed, and operated in an efficient and co-ordinated manner. The Guiding Models developed by Science Europe and the OECD are very useful in this regard.”

— Angelika Kalt
Director of the Swiss National Science Foundation (SNSF)
Science Europe Governing Board Member
September 2020

Guiding Models for Optimising the Operation and Use of Research Infrastructures

Two guiding models for the optimisation of the operation and use of national research infrastructures are introduced here. One is aimed at RI funders and decision makers, the other at RI managers. The full policy paper provides detailed version of both models.

Guiding Model for RI Funders and Decision Makers: RI Portfolio Management



Countries seeking to operate an active RI portfolio management programme should incorporate some or all of the following elements in their approach:

STRATEGIC PLANNING

In strategic national RIs plans, both bottom-up (scientific needs) and top-down (national strategic needs) perspectives should be considered. The output of such planning should be publicised.

COMMUNITY INPUT

Processes should be set up to gather all relevant stakeholder input in the development of strategic plans.

INCLUSIVENESS

New and existing RIs should be examined together rather than separately to provide a whole portfolio perspective.

COMPETITION AND COMPLEMENTARITY

Portfolio management should ensure that new RI proposals identify existing capacity and justify new requirements. Cooperation between related smaller RIs (i.e. clustering) should be promoted. Competition should be balanced, selecting priority facilities and avoiding unnecessary duplication.

INTERNATIONAL ENGAGEMENT

The international networking of national RIs should be promoted, and national RI requirements should be considered alongside international options to deliver the best opportunities for the research community.

FUNDING PROCESS

The funding process should take into account strategic planning as well as resource allocation. Full life-cycle costs of each RI should be considered, including all capital and operational investment required.

MONITORING

Efficient mechanisms for RI performance monitoring are required and should consider research, impact, management, and governance perspectives.

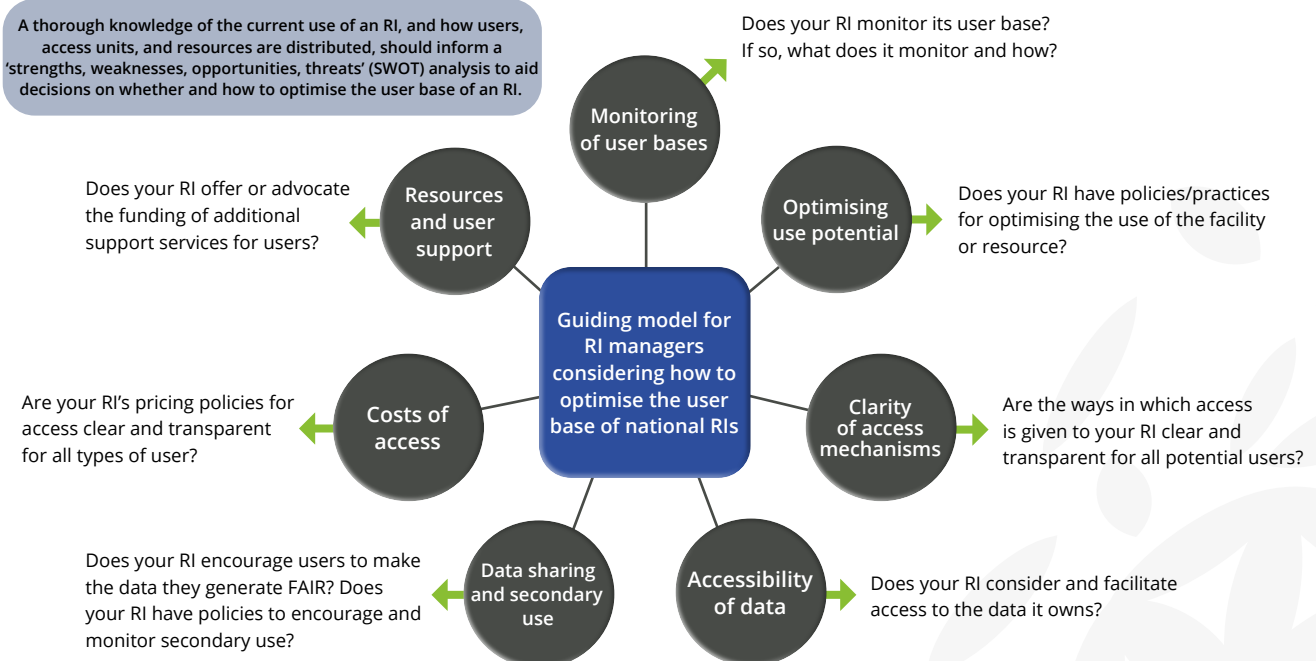
CLOSURE

Long-term planning should include decisions on the closure and/or divestment of RIs. The costs of such processes should be incorporated from early planning stages on.

TRANSPARENCY

Funding and selection processes should be clear and transparent for all stakeholders, particularly where economic, political, or social factors are taken into account.

Guiding Model for RI Managers: Optimising and Managing RI user bases



Managers of national RIs seeking to optimise the use of their facilities, and the data generated from them, should consider incorporating some or all of the following elements into their management strategies:

UNDERSTANDING AND MONITORING OF USER BASES

RIs should have a clear understanding of the overall use of their facilities, resources, and services. This should be continually monitored.

OPTIMISING USE POTENTIAL

Where capacity is limited, adaptation of existing processes, improved management and the promotion of secondary use should be considered. Where RI use can be expanded, optimisation should consider broadening the RIs user base by opening access to new groups of researchers.

CLARITY OF ACCESS MECHANISMS

An RI should be clear and transparent about the access mechanisms that are in place and the conditions that apply to different access types.

ACCESSIBILITY OF DATA

RIs should have open and transparent data policies, in line with the FAIR principles. Collaboration between RIs to federate repositories and harmonise meta-data should be promoted.

PROMOTION OF DATA SHARING AND MONITORING OF SECONDARY ACCESS

RIs should strongly encourage RI users to develop data management plans and follow the FAIR principles. Referencing guidance should be given so that secondary use can be monitored.

COSTS OF ACCESS

RIs should ensure that their pricing policies for all access modes are clear and cost-transparent. Merit-based academic usage should be provided 'free-from-costs', wherever possible.

RESOURCES AVAILABLE TO USERS, AND USER SUPPORT

RI managers should have an understanding of all resources that are devoted to their users (both financial and human resources). Support services (travel and training grants, and so on) should be considered to improve the attractiveness of access.



“Research infrastructures are essential for the progress of science and technologies. While their users are increasingly the international research community, most of them are still funded and managed at national level. National RIs offer unique opportunities for local and regional research and education excellence. As governments and research institutions worldwide seek to optimise their limited resources, this report, which contains very practical guiding models for research infrastructure managers and decision-makers, comes in a timely manner.”

— Gabriele Fioni
Chairman of the OECD Global Science Forum
September 2020

The joint Science Europe–OECD Global Science Forum activity

A joint Expert Group oversaw the activity run by the Science Europe Office and the OECD Global Science Forum Secretariat. Evidence was gathered through two surveys of RI managers and RI funders/decision makers in a selected number of countries and regions to ensure balanced coverage across OECD countries. Two international workshops were also organised. The first workshop was held in London (hosted by STFC, UK) in June 2019, and the second workshop was held in Seoul (hosted by KBSI, Korea) in November 2019.

The full findings and analysis of this joint activity are presented in the report ‘Optimising the Operation and Use of National Research Infrastructures’, published as an OECD Science, Technology, and Innovation Policy Paper.



Download the policy paper ‘Optimising the Operation and Use of National Research Infrastructures’:

- Policy paper on the Science Europe website
[<https://www.scienceeurope.org/our-resources/se-oecd-optimising-operation-and-use-of-ris/>]
- Policy paper in the OECD iLibrary
[https://www.oecd-ilibrary.org/science-and-technology/optimising-the-operation-and-use-of-national-research-infrastructures_7cc876f7-en]