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Abstract: This document suggests a functional taxonomy of RIs to be reflected in the impact assessment model. After reviewing existing relevant classifications of RIs, a categorisation based on the type of research/service a RI delivers is proposed. The classification distinguishes between RIs that carry our research (basic, use-inspired and applied research) and RIs that deliver research-oriented services. The main rationale to adopt this classification is that such taxonomy can be useful to capture causal mechanisms that explain why and how an investment in RIs generates and contributes to socio-economic changes. While it may be theoretically of great value for this purpose, the taxonomy needs to be tested on real cases for final validation.

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18.04.2018	0.7	Francesco Giffoni	Drafting the new version. Interpretation of Table 1 was modified according to the ESF suggestion. Examples of 'use-inspired research' type RIs were provided in Table 2. Upon ESF suggestion, in the conclusions was stressed that, especially in case of muti-purpose RIs, care should be taken with leading RIs to forcely choose their 'main mission' in view of the four choices defined under 'key taxonomy'. This may lead to misleading results in the IA (see footnote 26 for details).
20.04.2018	0.8	Alasdair Reid, Elina Griniece	Final review and approval.

List of Tables

List of abbreviations used in this document

Abbreviation	Meaning
EC	European Commission
ERIC	European Research Infrastructure Consortium
ESFRI	European Strategy Forum on Research Infrastructures
FP7 – EVARIO	Framework Program 7 - Evaluation of Research Infrastructures in Open innovation and research systems
GSF - OECD	Global Science Forum – Organisation Co-operation and Development
H2020	Horizon 2020
IA	Impact Assessment
ICT	Information, technology and communication
MERIL	Mapping of the European Research Infrastructure Landscape
OECD	Organisation for Economic Co-operation and Development
RIs	Research Infrastructures

Executive Summary

This report (deliverable 3.1 of the RI-PATHS project) defines a taxonomy of research infrastructures (RIs) that will provide a guiding framework for the development of the impact assessment (IA) model.

The report recommends distinguishes between RIs that carry out research (further split into fundamental, use-inspired basic and applied research) and RIs that deliver research-oriented services. The main rationale was that different socioeconomic impacts and benefits as well as different impact pathways are expected depending on whether RIs are predominantly research oriented or service oriented. Between these two extremes, a continuum of RIs delivering both research and services exist, with the classification of each RI then based on its' core mission.

The recommended taxonomy is the result a background analysis of RIs characteristics, current existing classifications and discussions among all partners of the project. While it was agreed that this draft typology could be of great value for the socioeconomic impact assessment of RIs, on the ground validation is still needed and, hence, the proposed RI categorisation is open to further- modifications and refinement.

1. Background

A variety of definitions and taxonomies of research infrastructures (RIs) based on their different characteristics have been proposed over time in the international policy arena according to various purposes (e.g. mapping, impact assessment, monitoring activity, etc.).[1] The development of an additional classification of RIs was not the aim of this report. The aim was rather to develop an operational taxonomy of RIs to be built on the existing, most widely accepted classifications used in various European Union (EU) institutional contexts (e.g. European Strategy Forum on Research Infrastructures (ESFRI), Horizon 2020 and MERIL[2]) and by other international organisations (e.g. OECD Global Science Forum). To be functional, the taxonomy should facilitate the identification of the standard types of impact that RIs are expected to generate. Therefore, the taxonomy should satisfy two criteria:

1. Provide guidance on how to trace the potential of a RI to generate specific socio-economic change and impacts and the mechanisms through which this happens;
2. Help identify the mechanisms through which impacts from the activity of a given RI are experienced by potential beneficiaries (e.g. companies, researchers, students, citizens). The generation of socioeconomic returns from RIs will depend on the way potential beneficiaries are involved in the activities (see below for details).[3]

In addition, the taxonomy is a guide for the design of the IA model modules along with additional evaluation criteria such as the spatial scale of the impact (e.g. local, national, European or global level), the type of assessment (e.g. ex-ante, mid-term, ex-post), the recipient(s) of the assessment (e.g. policy-makers, including both governments and local authorities, funders, RI managers), the lifecycle stage (e.g. new RI versus upgrade of pre-existing resources).

2. Relevant existing classifications of RIs.

The European Commission (EC)[4] defines RIs as *facilities, resources and services that are used by the research communities to conduct research and foster innovation in their fields. They include:*

- *major scientific equipment or sets of instruments;*
- *knowledge-based resources such as collections, archives or scientific data;*
- *e-infrastructures, such as data and computing systems and communication networks;*
- *any other infrastructure of a unique nature essential to achieving excellence in research and innovation.*

This definition is now internationally accepted (see e.g. by GSF OECD[5], ESFRI[6] and ERIC Council Regulation[7]) and, therefore, it is also adopted in this document. Moreover, RIs can be:[8]

1 OECD GSF (2014; 2016; 2018); ESFRI (2016); MERIL (-2) Project. For the latter see https://portal.meril.eu/meril/
2 The MERIL portal provides access to a database that stores information about openly accessible research infrastructures (RIs) in Europe, across all scientific domains, including the social sciences and humanities. See https://portal.meril.eu/meril/
3 On this point see also OECD (2018), ESFRI (2016, p. 49) and the FP7 EVARIO study.
4 Article 2 (6) of Regulation (EU) No 1291/2013 of 11 December 2013: 'Establishing Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020)'.
5 Science Global Forum OECD (2014; 2016) and OECD (2014).
6 ESFRI, the European Strategy Forum on Research Infrastructures (2010).
7 Community Legal Framework for a European Research Infrastructure Consortium (ERIC) (2009).

1. single-sited facilities (unified single body of equipment at one single physical location);
2. distributed facilities (a network of distributed resources: instrumentation, collections, archives, and scientific libraries);
3. virtual facilities (e.g. ICT based system for scientific research, including high-capacity communication networks, and computing facilities providing services electronically).

The MERIL platform also includes a fourth type of RIs:

4. mobile facilities (vehicles designed for scientific research).

In addition to the classification by the EC, the MERIL database tags all the eligible RIs against eight scientific domains and, subsequently, into 71 categories.[9] The database is being continuously populated. Currently, MERIL has about 1,000 identified RIs, and 523 of them have quality-checked, completed profile pages visible on the public portal.

Table 1 presents the distribution of 523 quality-checked RIs listed in MERIL database by typology and scientific domain.

Table 1. Distribution of RIs in MERIL database

SCIENTIFIC DOMAIN	SINGLE-SITED (N=326)	DISTRIBUTED (N=128)	VIRTUAL (N=50)	MOBILE (N=1)	VIRTUAL/ DISTRIBUTED (N=4)	SINGLE-SITED /VIRTUAL (N=9)	MOBILE / SINGLE-SITE/ DISTRIBUTED (N=1)	MOBILE/ VIRTUAL/ DISTRIBUTED (N=1)	NO TYPE (N=3)
Biological and Medical Sciences	123	59	12		3	6			1
Chemistry and Material Sciences	97	29	5		2	3			2
Earth and Environmental Sciences	90	51	11	1	1	4	1	1	1
Engineering and Energy	59	28	4	1	1	2			
Humanities and Arts	36	15	22		1	2			
Information Science and Technology	48	26	15		3	5			1
Physics, Astronomy, Astrophysics and Mathematics	118	29	8		2	4			2
Social Sciences	25	17	26			2			

Source: Data were provided by European Science Foundation (ESF). The Table only reports quality-checked data, i.e. records with completed profile pages. As far as the scientific domain is concerned, a RI can mark itself in more than one scientific domain (at most five). In case a RI ticked more than one scientific domain, it was counted in all the marked scientific domains. For instance, 123 single-sited RIs out of 326 ticked 'Biological and Medical Science', 118 out of 326 single-sited RIs ticked Physics, Astronomy, Astrophysics and Mathematics, and so on.

As far as socioeconomic impacts are concerned, the ESFRI Working Group on Innovation[10] has suggested a more refined classification of RIs based on some their relevant characteristics, which partly overlap with EC's and MERIL taxonomy. They are:

a. Geographical distribution, i.e. single sited versus distributed RIs. According to the geographical distribution, RIs may have impacts at different levels (e.g. local versus national/European/worldwide impact);

8 Article 2 (6) of Regulation (EU) No 1291/2013 of 11 December 2013: 'Establishing Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020)'.
9 They are two independent classifications. Examples of categories are: 'Atmospheric Measurement Facilities', 'Telemedicine Laboratories and E-Health Technologies', 'Solid Earth Observatories, including Seismological Monitoring Stations', and so on. See European Science Foundation (ESF) (2013) for details.
10 EFSRI (2016).

b. Age and dynamics of evolution to take into account different impacts associated with the lifecycle of a RI, i.e. new RIs versus upgrade or reallocation of pre-existing resources;
c. Access mode, i.e. on-site versus virtual/remote access or competitive versus non-competitive access;
d. Economic rationale, i.e. cost sharing among members versus complementarity/diversity of resources;
e. Scientific disciplines, i.e. basic versus applied, specialised versus multidisciplinary or the scientific domain. The ESFRI Strategy Working Groups cover five research macro-domains: Energy (ENE), Environment (ENV), Health and Food (HF), Physical Sciences and Engineering (PSE), and Social and Cultural Innovation (SCI).

The above classifications and criteria are useful for a better understanding of RIs socioeconomic impacts. For instance, according to the type of RI, different types of impacts can be observed. Knowledge transfer from a distributed RI, such as a group of separately funded national observatories that devote a co-ordinated fraction of total observing time to interferometry, is likely to be very different from knowledge transfers if the study of interferometry was carried out by a single-sited RI. Similarly, different scientific domains may imply different knowledge dynamics and dissemination.[11] Scientists from different scientific communities interact, discuss and debate within journal and conferences in different ways according to the scientific domain. The Arxive open-repository for electronic preprints consists of scientific papers which belong to only some scientific domains[12] and does not include others (e.g. medical science and humanities). Yet, there may be greater impact potential in drug-related research than in any kind of fundamental sciences, since the former activity is applied and aims at the development of products and services and the latter ones do not.

However, although useful, such criteria may be not enough for the scope of the project, which has the ambition to describe underlying mechanisms that explain why and how an investment in RIs generates and contributes to a specific impact. The existence of a RI in a particular scientific domain, i.e. the investment as such, is only one of the aspects that contributes to observable effects. However, it may not reveal the mechanisms which explain the socioeconomic changes the intervention is expected to generate. Establishing causality calls for something more specifically, for an attribution of social and economic impacts to this (publicly) funded investment, which in turn requires to develop a systemic view on the relationship between the RI, the context in which it operates and its potential beneficiaries. The social benefits of RIs are primarily generated by the use of RI as both a platform for scientific and technological collaboration and as a research/service provider to potential users. The ESFRI Working Group on Innovation and the FP7 EVARIO study agree that the degree of relations between beneficiaries and RIs and the nature of users and stakeholders determine the impact of innovation achieved in RIs and the overall return to the economy.[13]

In this framework, an IA based on the above suggested criteria (e.g. geographical distribution, physical facility or a service, the scientific domain, etc.) may fail in capturing all the impacts and explaining causality. In addition, over complex and fragmented classifications may lead to problems both in terms of data availability (e.g. additional information on the access mode and

11 Technopolis Group (2013); Autio (2014).
12 Mathematics, physics, astronomy, computer science, quantitative biology, statistics, and quantitative finance and economics.
13 ESFRI (2016, p. 49). For FP7 EVARIO study see https://cordis.europa.eu/result/rcn/157434_en.html

the economic rationale is not yet fully available, although it will be collected within the ongoing H2020 MERIL-2 project) and operationalisation.

Therefore, a more holistic, functional taxonomy capable of capturing the complexity of RIs and its interaction with potential is desirable for the purpose building an IA model.[14]

3. The key taxonomy of RIs for RI-PATHS project

To develop a more systemic understanding of IA of RIs, the classification should reflect the core mission of RIs. Specifically, the type of research or services that RIs deliver may be considered as a core component of the IA model, providing the minimum 'must-have' ingredient to perform a 'light' but solid IA of a RI. The main rationale is that the expected economic and social impacts associated with a given RI vary according to whether it is predominantly service oriented or research-oriented because the environment in which it operates and potential beneficiaries with whom they interact are likely to be profoundly different.

The proposed taxonomy is shown in Table 2. It distinguishes RIs according to the type of research they carry out, i.e. fundamental research, use-inspired research, and pure applied research (as in the Pasteur's quadrant)[15] or services.

Table 2. Taxonomy of RIs for the RI-PATHS IA

TYPE OF RESEARCH / SERVICE	DEFINITION	EXAMPLES OF RIS
Pure fundamental / basic research	Curiosity-driven research that advances human knowledge. Generating socio-economic impact potentials are not the priority.	Mission-led facilities for the sake of advancing knowledge, often in the fundamental understanding of nature/universe, without immediate or even medium-long term prospect of practical application. They are usually complex and capital-intensive facilities. Examples include CERN in Switzerland, the Square Kilometre Array (SKA); the Atacama Large Millimetre Array (ALMA); Facility for Antiproton and Ion Research (FAIR) in Germany.
Use-inspired basic research	Scientific research conducted with the clear ambition of solving known societal challenges or creating technologies for future economic applications	Use-inspired research lies between fundamental research and applied research. This category includes facilities and organisations whose main objective is to increase scientific knowledge for the direct benefit of humankind and the ecosystem. The problems they address are of a practical nature.[16] Examples include ICOS ERIC, the Integrated Carbon Observation System (head office in Finland), MaRINET(2), which operates in the field of renewable energy.
Applied and solution-oriented	Research and development directly	Solution-oriented research facilities pursue defined contributions with potential application. Their core mission is to deliver technologically advanced

14 See also OECD (2018) on this point.
15The Pasteur's quadrant is a classification of research projects that investigate on scientific problems through fundamental research, while also having use for society (see Stokes, 1997).
16 See for instance Technopolis Group (2017).

research	aimed at meeting public or business demands and at responding to well identified research or technological problems.	services to potential users (citizens or firms) involving practical application of science and motivated by the need to solve immediate problems. Such facilities also offer contract-based research. They include competence centres and labs specialised in a particular field (e.g. clinical research centres, laser light facilities, technology R&D centres, labs for industrial research, university research institutes). Concrete examples include the High Field Magnet Laboratory in Netherlands, the Multidisciplinary Seafloor and water-column Observatory (EMSO), The European Clinical Research Infrastructure Network (ECRIN), The National Centre of Oncological Hadrontherapy (CNAO) in Italy.[17]
Facilities providing Scientific Services	Facilities designed to offer services to be directly used for the science community to efficiently carry out their research	This category includes innovation centres, centres for experimental development, design centres, facilities and equipment for developing and testing prototypes and innovation not yet intended for commercialisation, data repositories. Examples include the Diamond Light Source in UK, the ELIXIR data infrastructure, The Common Language Resources and Technology Infrastructure (CLARIN), the Partnership for Advanced Computing in Europe (PRACE).

This taxonomy is holistic, in the sense that it covers a wide range of organisations with different objectives and missions. In addition, it has several advantages that can be exploited for assessing the socioeconomic impact of RIs. It is a scientifically accepted classification and in line with most theories of research and innovation. Indeed, several studies[18] rely on this taxonomy for the evaluation of investments in research. Secondly, it looks at RIs through the lens of their primary objective, which is to conduct research, for fundamental, use-inspired, pure applied/solution-oriented research or to deliver scientific support services. Thirdly, it supports conducting an impact assessment in a quite comprehensive manner and can be run independently from the specific characteristics of RIs (e.g. geographical distribution, access mode, economic rationale, scientific domain).[19] Fourthly and more importantly, this taxonomy satisfies the criteria suggested above in that it makes explicit the theories of changes, i.e. how RIs see themselves achieving their goals and generating impacts. Indeed, the taxonomy enables to associate the type of research/service implemented by the RI with its expected benefits and beneficiaries leading to a model that can be practically implemented.

Some illustrative and hypothetical cases on the practical application of this taxonomy can help understand its usefulness.

17 Battistoni et al. (2016)
18 Autio (2014); European Commission (2014); Technopolis Group (2013); Martin and Tang (2007).
19 Of course, some cross-cutting issues and overlaps may emerge between suggested classifications. For instance, basic research is likely to be more related to scientific disciplines such as physics and astronomy, earth and environmental sciences, biological and medical sciences rather than humanities and arts. Similarly, facilities that give access to specific R&D tasks/services to firms are likely to be single-sited facilities (e.g. synchrotrons, innovation centres) and not virtual facilities (e.g. data repositories).

Typology 1 – RIs that carry out fundamental research

Fundamental research is typically carried out by large-scale, capital- and operation-intensive facilities. The rigorous technical requirements and non-routine technologies demanded by such facilities are likely to cause radical changes in the business suppliers' activities, which are often challenged to operate at the frontier of science and technology. In this context, relevant learning and knowledge opportunities can emerge through the RIs' procurement activity for firms that supply the facility, which in turn, may evolve into new products, production processes, services, patents or other intellectual property rights. These benefits are likely to be transferred along the whole supply chain.[20]

RIs operating in basic research are also a powerful tool for the large-scale production of knowledge. The research activities may result in creation of new knowledge which can be disseminated amongst scientists, researchers and scientific communities in articles in peer-reviewed scientific journals, citations, contributions to conferences and long-term curated data sets. This is a distinctive feature of RIs which operate to produce advance knowledge, while it is less typical of RIs that carry out, for example, applied and solution-oriented research, where research addresses the need of specific end-users such as business clients.

Fundamental research is pursued for the sake of advancing knowledge without immediate or even medium- to long term prospects of practical application (e.g. the search for the basic constituents of matter or mapping variation in the background of microwave radiation). The curiosity-driven nature of such projects is worthwhile for society, which can perceive knowledge advances as a 'public good'. The benefit for the general public may arise from an enhanced understanding about how the universe functions even if this knowledge does not directly lead to an immediate application[21]. This knowledge increase, which is gradually transferred via the education system to the broader population, contributes to the evolution of humankind in a long-run time scale (e.g. the discovery of the electron eventually leads to a development of electrical engineering and ultimately to electronics and computing technologies, today's prevalent generator of economic value).

RIs in basic research produce 'upstream' benefits acting as a learning environment for industrial suppliers, pushing forward the frontier of knowledge and providing knowledge as public good to citizens. In contrast, the intensity of these effects is likely to be smaller (or even negligible) in the case of other types of RIs.

Typology 2 – RIs that carry out use-inspired basic research

RIs that conduct basic research with the clear ambition of solving known societal challenges belong to this category: they lie between RIs involved in fundamental research and those implementing applied research. Typically, these projects have the dual focus of aiming to produce high-quality scientific work and to help solve practical problems; to produce academic (articles in academic journals) and non-academic outputs (designs, methods, prototypes); to be of interest to scientists and practitioners (industry or public sector partners, non-academic professionals in the relevant field, potential end-users). Therefore, such RIs are likely to share both the socioeconomic impacts usually generated by pure fundamental research, e.g. human

20 Florio et al. (2017); Technopolis Group (2015).
21 Florio and Giffoni (2017); Catalano et al. (2017).

capital effects, knowledge outputs, and cultural effects, although they can be less present in some cases (e.g. the benefit from procurement), and the impacts of applied research, e.g. benefits accruing to external users such as research teams using the RI. An example of this category is ICOS ERIC, the Integrated Carbon Observation System. ICOS is a pan-European RI of 12 member countries and over 100 greenhouse gas measuring stations, which aim at quantifying and understanding the carbon cycle and greenhouse gas budget and perturbations.

Typology 3 – RIs that carry out applied and solution-oriented research

Differently from the above RIs, the core mission of solutions-oriented research facilities is to carry out advanced research involving practical application of science and motivated by the need to solve immediate problems to end-users (citizens, firms, etc.). Therefore, this type of research is expected to produce 'downstream' benefits based on end-users demands. The High Field Magnet Laboratory in the Netherlands is an example for a RI that falls in this category. Its research programme focuses on the creative use of high magnetic fields in many areas ranging from semiconductors and nanostructures to magnet technology and development, and from soft condensed matter and nanomaterials to strongly correlated electron systems. Like fundamental research, knowledge outputs in the form of scientific publications, citations, data and technical reports are produced, but its social value may differ from knowledge advances in basic research because recipients of such outcomes and the way they are disseminated are different. Dissimilarities in terms of human capital accumulation, i.e. capacities and skills accruing to researchers, scientists working for the RI are likely to exist as well (see below) because the environment and the challenging the two types of research face are profoundly different.

Typology 4 - RIs providing scientific services

This category consists of RIs that offer services to be directly used for scientific research users. The type of impacts such RIs can generate strongly depends on the type of users. Innovation outcomes are likely to emerge via testing prototyping, industrial and scientific demonstrators, etc. if the users are firms. Efficiency gains or improvements in productivity by scientists and students may be generated in case of data repositories. Examples of RIs providing scientific services are the Diamond Light Source in the UK and ELIXIR. The first one is a synchrotron particle accelerator that provides synchrotron light for scientists, researchers, and firms to study anything from fossils to jet engines to viruses and vaccines. ELIXIR is an intergovernmental organisation that coordinates databases, software tools, training materials, cloud storage and high-performance computing that makes it easier for scientists to find and share data, exchange expertise, and agree on best practices. Benefits to external users are typically more relevant for these RIs than for RIs carrying out fundamental or use-inspired research.

Typology 5 – Multi-purpose RIs

As mentioned above, the proposed taxonomy is not a clear-cut classification and a continuous spectrum of RIs that lie in intermediate situations between the identified categories exists. Some RIs are multi-purpose and carry out use-inspired or applied research and are at the same time service providers to external users. For instance, MYRRHA (Multi-purpose hYbrid Research Reactor for High-tech Applications) is a multifunction research installation that is currently under construction in Belgium. It is a hybrid system that consists of the combination of a high-energy proton linear accelerator and a lead-alloy cooled fast spectrum irradiation facility. Due to its characteristics, the facility will offer the opportunity to push the limit of knowledge in physics research by contributing to long-term experiments with radioactive ion beams and respond to energy challenges by developing sustainable, accelerator-driven nuclear fission systems as part of the transition to a low-carbon energy mix to mitigate climate change. MYRRHA may also play a role as neutron irradiation facility for silicon crystal doping and manufacturing of radioactive isotopes for medical and industrial sources.[22] In case of multi-purpose RI, an assessment based on the core mission of RIs or on the association of RIs with the wide range of their potential beneficiaries/users (e.g. firms, patients for medical research, external researcher teams, academic people) would be a correct way to implement an IA.

It is worth mentioning that, independently from the type of RI, there are some benefits that can accrue horizontally and be relevant for each type of RI. Human capital accumulation, i.e. increasing capacities and skills accruing to scientists, researchers, and PhD students involved in the RIs research activities may have a significant socioeconomic value. Closer formal and informal social networks that emerge in environments such as RIs along with the challenges people deal with in everyday activities increase knowledge sharing and their skills. This consequently augments the quantity and diversity of knowledge that is available to RI users. For instance, research performed at CERN and its training programmes for students have been shown to increase researchers' and employees' technical and communication skills,[23] which, in turn, may have a significant value in the labour market.[24] Of course, the diffusion of knowledge, the extent to which individuals interact with each other and the type of challenges they face differ among RIs, leading to diverse magnitudes of human capital accumulation.

Impacts from virtual facilities based on open, non-competitive access and data sharing between researchers across different European countries to support international research in many scientific disciplines[25] can be different from human capital formation from mobile facilities such as research vessels, which usually involve a smaller number of users and amount of data.

Therefore, to varying extents, such impacts can be generated by any type of RI, whether dealing with fundamental, applied research, or as a service provider.

22 Abderrahim et al (2012).
See also https://www.iaea.org/INPRO/2nd_Dialogue_Forum/MYRRHA_IAEA_INPRO_7.10.pdf
23 E.g. problem-solving capacity, critical analysis and creativity, team/project leadership.
24 Camporesi et al (2017); Camporesi (2001).
25 For instance, the European Grid Infrastructure (EGI). It is a series of efforts to provide access to high-throughput computing resources across Europe using grid computing techniques.

4. Conclusions and discussion

Due to the large number of research communities and diverse research needs, several classifications of RIs exist, designed for different purposes. We propose a taxonomy based on the type of research and services that RIs aim at in their core mission.

It can be considered as a functional synthesis for classifying the wide range of existing RIs according to the concrete impacts and benefits expected to be generated. The way in which taxonomy should be interpreted is illustrated with several examples.

The taxonomy can be also combined with additional evaluation criteria to design separate modules of the IA model. The key question to be answered is whether the RI delivers services or carries out research, and in the latter case further investigation would be done on the type of research (i.e. fundamental, use-inspired basic or applied research).[26] Additional modules or criteria can be added to the core module to reflect the specificities of RIs (access modes, age and dynamics of evolution, economic rationale, and so on) or the perspective of the analysis (timing of the evaluation, recipient of the analysis, and so on) as to provide more in-depth insights and more full-fledged analysis.

The extent to which extra modules can be added will depend on the availability of data and on the value added the additional module(s) will provide to the impact assessment. For instance, considering the core mission of a RI, the question is to what extent its socioeconomic impact may change or be different if the access mode or the geographical distribution is also brought into the equation.

26 Especially in the case of multi-purpose RIs, care should be taken with leading the RIs to choose their ‘main mission’ in view of the four choices defined under ‘key taxonomy’. They should instead be given the chance to not make a forced choice just for the sake of the model, which may then give misleading results in the impact assessment. As suggested above, the assessment shall both rely on the mission of RIs and/or on the association of RIs with their potential beneficiaries/users.

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