# The European Network of Research Infrastructures and Industry for Collaboration

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**Deliverable Report:** 

D.2.2 Report on Information Portals and Opportunities with RIs





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#### **List of Abbreviations**

ATTRACT breakThrough innovaTion pRogrAmme for a pan-European Detection and Imaging

eCosysTem

ASTERICS Astronomy ESFRI & Research Infrastructure Cluster

ASTP Association of European Science and Technology Transfer Professionals

CatRIS Catalogue of Research Infrastructure Services

CALIPSOplus Convenient Access to Light Sources Open to Innovation, Science and to the World

CERN the European Organization for Nuclear Research

CORBEL Coordinated Research Infrastructures Building Enduring Life-science services

DTA Data Transfer Agreement

EARIV the European Analytical Research Infrastructure Village
EATRIS European Infrastructure for Translational Medicine

EC European Commission
EEN Enterprise Europe Network

EIROForum European Intergovernmental Research Organisation forum

EMBRIC The European Marine Biological Research Infrastructure Cluster

ENVRIPlus Environmental Research Infrastructures Providing Shared Solutions for Science and

Society

ENRITC European Network of Research Infrastructure and Industry for Collaboration

ESF European Science Foundation ESO European Science Observatory

ESRF European Synchrotron Radiation Facility

ESS European Spallation Source ERIC

EU European Union

EU-XFEL The European X-Ray Free-Electron Laser Facility

ICO Industry Contact Officer
ILL The Institut Laue-Langevin
ILO Industry Liaison Officer
IP/R Intellectual Property (Rights)

ITER International Thermonuclear Experimental Reactor

KT Knowledge Transfer

KTI Knowledge Transfer Ireland

LSRI Life Science RIs

MTA Material Transfer Agreement
NDA Non-disclosure Agreement

NFFA Nanoscience Foundries And Fine Analysis
PaNOSC The Photon and Neutron Open Science Cloud

PERIIA Pan-European Research Infrastructure/ILOs Association

PRACE Partnership for Advanced Computing in Europe

RI Research Infrastructure

RI-VIS Expanding research infrastructure visibility to strengthen strategic partnerships

RTO Research Technology Organisation

SERISS Synergies for Europe's Research Infrastructures in the Social Sciences

SINE2020 Science and Innovation with Neutrons in Europe in 2020

SME Small and Medium size Enterprise

TED Tenders Electronic Daily
TTO Technology Transfer Office

WP Work Package





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# 1. Executive Summary

Research Infrastructures may entertain online representations of the opportunities for interaction with companies, either through procurement opportunities, the use of the RI services, or regarding codevelopment opportunities. Even though these representations may be of excellent quality, in many cases they may be insufficient for attracting new users or providers. This is especially true for new RIs, when their visibility and identity towards industry is challenged by the number of initiatives and gateways currently present on the world wide web.

This study collects and characterises different types of online portals that are currently in place to represent the opportunities for interaction between RIs and industry, for the benefit of both actor-types. It provides an overview of the state of the art of the existing initiatives, either developed through EU projects, or the RI themselves or state agencies. The assessment covers the following aspects:

- RI procurement of goods and services from companies (e.g., public tendering, information of upcoming procurement needs);
- RI Services and RI access by the RI-user community (e.g., access to experimental facilities, scientific resources/data, expert advice, engineering & logistics, training services, etc.);
- Technology/Knowledge transfer opportunities and services (e.g., industry-RI partnerships, licensing opportunities, commercialisation strategies, IPR consulting, etc.).

This work also identifies the unmet needs in the current initiatives of on-line representation of the opportunities for interaction between the RI and industry, and offers a proposition for a way forward, either through the development of existing initiatives or with the conceptualisation of novel initiatives. The feasibility of these initiatives is approached in this report, however a real quantification of the effort required to bring about those novelties is beyond the scope of this project.

The evaluation of the state of the art of the current initiatives is done by:

- The analysis of the result of the ENRIITC survey, organised through tasks 2.1 and 2.2, providing primary information from the key stakeholders from RIs/ICOs and ILOs to gain an insight on the scope of the current online portals for RI-industry interactions.
- A desktop analysis of current initiatives in the ESFRI RI community;
- A desktop analysis of other initiatives, which could inform and be adapted to novel initiatives for the ESFRI RIs;
- Interviews to qualitatively prioritise the stakeholders' potential requirements for common RI information portals, based on a MOSCOW analysis.

The main results from the study include:

- A description of the existing opportunities for Industry-RI interest-matchmaking in the following three areas of interest:
  - Industry supply procurement opportunities;
  - RI Service offer;
  - Knowledge exchange;
- Priorities for an improved RI-Industry portal based on the stakeholder requirements;
- The conceptualisation of an RI-Industry portal.

It is evident from our investigation that the current initiatives hardly have a fully developed capability to provide a one entry point to address together all the RI tendering processes, all the RI service offer and all the knowledge exchange opportunities. Furthermore, the engagement with stakeholders clarified that in some instances, i.e. in the procurement offer, the benefit of a common portal appear at best unclear.





While Initiatives could be started that would make it easier for companies to navigate and collect information from the places where RIs currently are obliged to announce their tenders, conventions exist between member states often dictating how to engage with companies in a procurement process. Procurement code alignment could be avoided only if substituted with keywords, however initiatives could be started that would make it easier for companies to navigate, e.g. by keywords, however the translation effort would be enormous and the risk of duplication of current initiatives with which the industry parties are already familiar would be too large to gather sufficient support either by the EU Commission, or the RIs and their members. A common RI-supply contract platform may instead be beneficial when regarding smaller contracts and co-development activities, which could be the interest of smaller enterprises with limited capacity to explore a complex portal like EU TED.

Regarding the RI service offer, while it is uncommon to see a section dedicated to industry relations, most RIs are under pressure to keep a list of services active and updated, as this is their core mission, at least towards the scientific research environment. Some examples of aggregation of the RI service offers exist, and a particular mention can be made of the "Catalogue of Research Infrastructure Services" (CatRIS) portal.

With respect to technology and knowledge transfer/exchange (e.g.: data, experimental protocols, and research results), a new initiative would be required to fully resolve the assessed limitations of the existing initiatives and pin-point to where the real potential for an impactful initiative lies. However, the effort required to harness the information from the existing platforms would require a whole new project to be detailed and implemented.

Our analyses seem to converge on that the scope of an ENRIITC-Platform could be focussed to the knowledge exchange aspect of industry-RI relations, supporting the work of ILO and ICO. Although limited in scope, this support platform would address a real gap in the current initiatives and could underpin a series of other offers connected to the creation of societal value from industry-use of RIs, towards codevelopment and co-creation of innovative products, processes and services; new enabling technologies, and to the greater dissemination and uptake of research outputs. The portal would serve as a meeting place for users, suppliers and interested co-creators, where ICOs and ILOs could discuss and orient their efforts to create a better understanding of the landscape of opportunities they deal with. A version of the platform may be generated in an EC project to demonstrate its value creation and make the case for the inclusion of the operational costs into the RI budgets.

The results and conclusions of this work will feed into WP3 as the basis for a set of recommendations for the development and operation of an online portal, supporting ILOs and ICOs in their efforts to enhance knowledge and technology exchange with industry of all sizes and sectors, ultimately engaging industry with the construction and fuller utilisation of the EU Research Infrastructures.





#### 2. Introduction

Research Infrastructures most often entertain an online representation in order to present the opportunities for interaction between the RI and companies. Even though the portals may be of excellent quality, in many cases they do not manage to engage companies in an optimal way. Especially for new RIs, the visibility and identity towards industry is challenged by the number of portals and gateways on the world wide web.

This study collects and characterises examples from the different types of online portals that are currently used by RIs to engage with industry. The list of findings is meant to enlighten and inspire RIs in the ways to setup their online representation towards industry. Based on the findings and interactions with relevant stakeholders, a structure for a potential future common portal is presented.

# 3. Methodology

The data presented in this report is the combined result of both desktop analysis of current online portals and direct engagement with the stakeholders via meetings and events to discuss the efficiency of the tools. The main analytical sections may be divided into two sections:

# **Desktop analysis**

A list of the currently available online instruments for RI-Procurement and RI-Industry-Service offers were investigated through secondary information analysis:

- The "ENRIITC Report on the Mapping of Industry as RI-supplier and RI-user Survey" (2020)
  The analysis of the two surveys organised through ENRIITC Tasks 2.1 and 2.2 provide direct inputs
  from the key stakeholders (RIs, ICOs, and ILOs) to gain an insight on the unmet needs and
  feasibility of proposed modifications or new initiatives.
- The mapping of existing portals for the publication of procurement opportunities for companies supplying to RIs. These may be found integrated into the RI homepages themselves or at third parties.
- Analysis of the portals and channels used by national ILOs to disseminate supplier opportunities to the companies in their country.
  - Mapping of existing portals for industrial users of RIs. All RIs are encouraged to have a public online display of their service offer, once they are operational. We have identified and examined prominent examples of different types of aggregated-information portals:
    - o EU-Project-based initiatives
    - Initiatives from individual RIs
    - EC or nationally driven initiatives
- Mapping of RI innovation and technology transfer platforms.
- Innovation opportunities from RIs are presented in a less structured format since this is neither part of the RI procurement structure or the RI service opportunity. Several joint platforms exist that are built up from collaborative EU-funded projects. In some cases, the RI tech-knowledge offers are integrated into other structures such as, e.g.: the TTO circle<sup>1</sup>. The structure of these examples has been examined. In some cases, further information is collected from the people associated to these portals.

<sup>&</sup>lt;sup>1</sup> TTO circle web reference: https://ec.europa.eu/jrc/communities/en/community/tto-circle-community



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# Interviews with stakeholders and prioritisation (MOSCOW) of portal requirements

The ENRIITC survey reported in D2.1 gave insight into the current online representation of RIs and ILOs towards industry and their initial impression of desired portal requirement. A series of consultative events were used to gauge the stakeholders' opinion about the effectiveness of existing portals for industry, the type of opportunities they offer and to provide an insight into the desired characteristics of a tool of this kind.

In detail, we defined two groups of stakeholders or community levels that were engaged in order to obtain more qualitative input to the landscape of portals:

- 1. The community levels for the supply-contracts portals were identified in:
  - a. RI-staff from the procurement departments;
  - b. ILOs from the PERIIA network;
  - c. representatives from the supplying industry.
- 2. The community levels for the service and knowledge portals were identified in:
  - a. the RI management, including the RI national liaison officers and local ICO-like RI operators, working where the services reside,
  - b. the industrial users,
  - c. the research-community users,
  - d. other stakeholders and intermediary agents (e.g. ASTP, ESF, KTI<sup>2</sup>, etc.);

The two groups were approached and interviewed either via a direct engagement or in consultations with several participants. The consultations were either arranged specifically to obtain the input or the discussion was raised by ENRIITC participants as items on the agenda. The events used for the consultations are listed below:

- ENRIITC 1st networking meeting, Oct. 15-16, 2020
- #ENRIITCyourCOFFEE, episodes number 2.1 and 2.2:
  - "E-Platforms for Knowledge Transfer", Feb. 4, 2021 (hosted by Ilaria Nardello, with Nigel Wagstaff, Ed Mitchell)
  - "Joint E-platforms for Procurement", Feb. 11, 2021 (hosted by Nikolaj Zangenberg, with Toon Verhoeven and Paolo Acunzo)
- Meetings in ENRIITC Focus Group 2, 4 and 5
- PERIIA board meetings, Jan. 15 and Feb. 15 2021 (PERIIA<sup>3</sup> is the network of ILOs in Europe that are key stakeholders reg. supplier portals)
- ENRIITC Steering Board meetings, Mar. 22, Mar. 31, Apr. 22 and May 27 2021(status on D2.2 was presented by the WP2 leader and discussed by the steering board that represents both ILOs and ICOs)

Furthermore, ENRIITC representatives have held informal discussions with procurement representatives and Head of Department from CERN, ESS, Fusion for Energy (ITER) and ESO at facility ILO-meetings in 2020.

<sup>&</sup>lt;sup>3</sup> Homepage: www.periia.eu



<sup>&</sup>lt;sup>2</sup> Links to homepages ASTP, ESF, KTI





To help in the discussion of a common portal, a MOSCOW analysis was performed by the ENRIITC steering board members representing both ILOs and ICOs. Four priority categories were used, with related scores: Must (priority score = 3), Should (priority score = 2), Could (priority score = 1) and Won't (priority score = 0).

The prospective requirements were presented to the stakeholders, in groups, in the form of tables, to explore:

- General Characteristics of the e-portal (Tab. 1 a-b, below):
  - Objectives (Tab. 1.a)
  - o Functionalities (Tab. 1.b)
- Purpose-specific characteristics of the e-portal (Tab. 2 a-c, below):
  - o Industry supply contracts (Tab. 2.a)
  - RI service offer for industry (Tab. 2.b)
  - o Industry-RI tech/knowledge exchange and co-development (Tab. 2.c)

A final priority score was calculated for each of the criteria evaluated, by adding-up the individual scores. Components with a final priority score >2 were identified as high priority.

The results will inform the strategic priorities for the realisation of an e-Portal serving and facilitating the Industry-RI relations in terms of: industry supply of goods and service; industry access to and use of the RI services and: industry-RI co-development.

#### 4. Mapping of portals

# Portals for RI supply procurement

Procurement represents interactions where the RI purchases goods or services from commercial providers. These interactions are characterised by transparency and may sometime be subject to EU legislation on public procurement. Several multinational Big Science organisations, are, however, setup on conventions established between the nations with stakes in the facility. These often promote a distribution of purchases in proportion to the contribution from that nation to the Big Science organisation, which is labelled "fair return" or "juste retour".

The ENRIITC survey from Task 2.2 revealed that, in fact, only 27 of the 51 RI-respondents (53 %) have a procurement office. Since 16 % and 14 %, respectively, are in the operation spin-up phase and preparatory phase, they simply do not yet have the need for a procurement office. Furthermore, it is commented that, often, the required purchases are handled by the partners hosting nodes from a distributed facility.

The RIs employ e-portals for announcing their upcoming procurement tenders; 21 (41 %) use their own website while 6 (12 %) use another website, such as e.g. TED (tenders electronic daily). The analysis of portals shows three main categories for RIs to announce procurement opportunities:

- On the websites of the individual RI. As an example, see Appendix 1, case A from CERN where
  procurements are announced using the homepage of CERN. The announcement is open to the
  public but only companies registered in CERN member states are permitted to answer the
  tenders,
- On a neutral third-party site (e.g. TED-tenders electronics daily), As an example, see Appendix 1, case B (ESS using KommersAnnons.se) and C (European-XFEL using TED). The procurement is





public and open for all but sometimes a registration is required before the full tender documents may be seen.

- Disseminated via the ILO networks associated to the RI that are the formal representatives of industry in the member countries. One such example is ESRF where only the appointed ILOs have access to the procurement announcements and can nominate companies that should be allowed to participate in the tendering. Tools used by national ILOs include:
  - Sending out newsletters with lists of current tenders
  - Direct contact to relevant companies

In the survey, 22 RIs (43 %) answer that they manage a database of supplier companies. This base of registered suppliers to the RI is an important channel for the RI to distribute tenders to known companies. For reaching "new" companies, the ILOs are a central channel for distributing information on tenders since the ILOs at the same time understand the needs of the RI and knows many of the relevant companies in their own country. In the countries where the ILO-function for different RIs is organised centrally, the ILO-hub most often offer a national web-portal where the companies may find relevant information on tenders and opportunities. Examples include: Denmark (<a href="https://www.bigscience.dk/english/">https://www.bigscience.dk/english/</a>), Sweden (<a href="https://www.bigscience.nl/en/">https://www.bigscience.nl/en/</a>).

The largest purchasing budgets are found in the Physics and Engineering domain and it turns out that a single company often supplies to several facilities (see BOX 1). For this reason, many companies are requesting that RIs present their procurement opportunities at a joint site. This request is supported by ILOs who service the supplier companies.

# BOX 1: Coating specialist company Polyteknik A/S grew in the Big Science marketplace

In 2012, the Danish company Polyteknik A/S won a contract to inspect and repair a coating facility for the mirrors for the European Southern Observatory — an RI in Garching, Germany, that operates observatories on the Canary Islands and in Chile. This was the first direct contract for Polyteknik to a Big Science facility and it gave the company a strong reference to use towards other Big Science organisations. For the following years, Polyteknik actively sought opportunities with other RIs on the Big Science market. A joint platform for announcing procurement or upcoming tasks would have been a huge advantage in this outreach work. Still, joint events such as Big Science Business Forum 2018 proved to be a strong meeting place, and Polyteknik have manged to grow the Big Science business by winning contracts with both ITER (fusion) and CERN.



A coating machine in production at Polyteknik A/S, Denmark

© Nordjyske (newspaper)





In the context of ENRIITC, this topic has been brought up with the RIs, who were asked in the ENRIITC survey: Do you see an advantage if all the RIs would announce their upcoming tenders for suppliers on a single common "RI procurement" website? To this, 33 (65 %) answered yes and all respondent added a comment to "why? / "why not?".

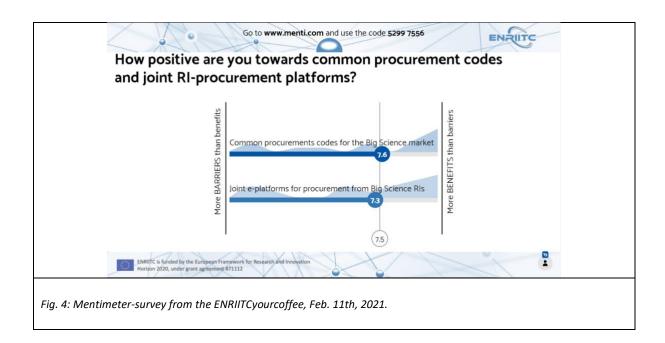
The comments in favor of a common portal can be collected in the following three groups:

- Single entry point improves awareness, accessibility, visibility and transparency especially good for SMEs
- Added potential for industry-RI and joint RI collaboration
- Synergies from common market, cross-exchange of suppliers and critical mass in purchases leading to improves quality and savings

The reservations regarding a joint portal may be summarized in the following three points:

- In conflict with internal rules and, e.g., demand for confidentiality
- Administrative burden
- Dissimilar purchase needs for RIs
- Financial and logistic sustainability

A similar exercise was done at the ENRIITCyourcoffee event Feb. 11<sup>th</sup>, 2021. Where joint e-portals for procurement was discussed. The participants representing both RIs and ILOs answered a real-time poll about how positive they were towards common procurement codes and joint portals for procurement. The results are shown in Figure 4.



Among the participants, there was a clear positive sentiment (7.3 out of 10) towards joint RI-procurement platforms. However, as may be seen by the light blue curves in the Figure, the answers include significant diversity in the opinion about whether barriers or benefits are most significant.

The coordination of purchases between different Big Science facilities has been debated over many years. Unequivocally, the national ILOs favour such a solution since this would make it easier for the companies





to orient themselves on the Big Science market. The answers from the ICO-survey are more divided, with many indicating that this would be very positive, while equally many have used the comment field to express doubt that such an effort will be possible.

Further investigation into the matter by direct interaction with heads of purchasing and interview with ILOs reveal, that:

- Different systems of procurement codes have been assigned by individual facilities;
- Some purchasing categories may have different meanings at different Big Science organisations;
- Changing a system of procurement codes is a huge administrative operation and there is doubt at the Big Science organisations that the effort will be worth it;
- The EIROFORUM<sup>4</sup> have recently discussed harmonizing common procurement codes but so far

   without finding common ground;
- A keyword based system, avoiding the effort to unify procurement codes across the range of facilities and Institutions, may be an acceptable way forward to a common portal.

#### Portals for RI service offer

All RIs are encouraged to have a public online display of their service offer, once they are operational. We have identified and examined prominent examples of different types of aggregated-information portals:

- EU-project-based portals, characterized by an active lifespan during the lifetime of the project and then either closed down or maintained at a low activity level.
- Individual RI-based initiatives. Several RIs offer different services to companies and these are advertised on the RIs' webpages. These services include, e.g., access to experimental facilities, scientific resources/data, expert advice, engineering & logistics, training, etc.

#### a) EU-project-based portals

The ENRIITC survey revealed that there is a huge difference in the visibility of the services that RIs offer to industry between RIs with mature service offering to early-stage RIs. Thus, there is a huge potential for less experienced RIs to learn from the best in class. Different EU-funded projects offer strong support for this exchange of knowledge and fostering collaboration between RIs (both mature and early-stage) and industry. Below is an overview of cluster projects funded under Horizon2020, which address these topics. The table also informs on how these projects complement the potential creation of a common information and match-making portal.

Name of EU projects about portals of information	Main characteristics of project and relevance to a potential ENRIITC Industry-RI match-making portal
ASTERICS aims to address cross-cutting synergies and common challenges shared by various astronomy ESFRI facilities https://www.asterics2020.eu/ One of the focal points of ASTERICS is the management, processing and scientific exploitation of huge data sets generated by ESFRI facilities. ASTERICS seeks solutions to these problems by collaborating with industry and specialised SMEs. ENRIITC will further encourage RI-industry collaborations to boost innovation, as demonstrate by the ASTERICS project.	One of the focal points of ASTERICS is the management, processing and scientific exploitation of huge data sets generated by ESFRI facilities. ASTERICS seeks solutions to these problems by collaborating with industry and specialised SMEs. ENRIITC will further encourage RI-industry collaborations to boost innovation, as demonstrated by the ASTERICS project.
ATTRACT brings together big research organisations that build and operate telescopes, particle	ATTRACT's WP2 titled "Industrial liaison" focuses on a specific target audience for the identification of technology ideas with
accelerators and other capital-intensive scientific	breakthrough societal and industrial potential. These target

<sup>&</sup>lt;sup>4</sup> EIROForum (<a href="https://www.eiroforum.org/">https://www.eiroforum.org/</a>) brings together eight of the largest RIs/Big Science organisations in Europe, who are represented at Director General level.







instrument. It aims to create an entirely new, groups are large industries, SMEs and private investment European model of Open Innovation that can become communities, including venture-capital firms, business angels etc. an engine for jobs and prosperity for all. ENRIITC beneficiary ESRF is involved in ATTRACT and will ensure https://attract-eu.com/ that ideas for open innovation developed under ATTRACT are utilised in ENRIITC when appropriate. CALIPSOplus aims to remove barriers for industry to CALIPSOplus intends to get involved in the following ENRIITC access world-class accelerator based light sources in activities: 1) Co-organisation and participation in networking Europe and in the Middle East. Dissemination activities activities and trainings towards industry, 2) exchange of best targeting industry are complemented by tailor-made practice to improve ILO/ICO services and IP skills. ENRIITC support and access programmes for this user group. beneficiary ESRF is involved in CALIPSOplus and will ensure http://www.calipsoplus.eu/ smooth collaboration between the two projects. CatRIs is an EU project which produced an open The European Research Infrastructures landscape is diverse and portal to a harmonised and aggregated catalogue of includes Research Infrastructure (RI) operators, managers, services and resources provided by Research academic and industrial users, decision and policy makers, funders Infrastructures (RI) and Core Facilities (CF) across and other resource providers. Significant efforts have been Europe. It is a bottom-up initiative that is meant to be directed towards gaining insight into available RI, national RI road populated and run by RI and CF service providers at mapping practices, and planning of pan-European RI. A recent European, national, regional and institutional levels. report by OECD Global Science Forum highlights that "open digital CatRIS will be complementary to and interoperable platforms can have substantial value for a wide range of with the EOSC catalogue. stakeholders". Information on the services and/or resources provided by RIs is https://project.catris.eu currently provided in many different formats through websites and portals which are not necessarily always connected. In line with the ongoing development of a catalogue of e-infrastructures services and the needs of the broad RI community, CatRIS is developing a catalogue of RI services focusing on physical infrastructures and core facilities. CatRIS will be the central gateway for gathering, harmonizing and making findable and accessible RI services from all Europe, thus contributing to the core objectives of the European Open Science Cloud for open access to and reuse of scientific resources and services. CatRIS will analyse existing initiatives to identify best practices and to propose a service catalogue structure to respond to users' needs CORBEL aims to develop tools, services and data Within the framework of CORBEL's WP8 titled "Accelerating management required by cutting-edge European innovation", an Innovation Office was established to provide research projects. By establishing a foundation for innovation services to RIs in biomedical sciences (BMS). ENRIITC collaborative scientific services for biomedical beneficiary EATRIS leads this activity within CORBEL. It will ensure research, it will embed infrastructure capabilities into that the BMS Innovation Office interacts closely with ENRIITC, and the scientific workflow of advanced users. that relevant ENRIITC results are shared with the BMS group in a https://www.corbel-project.eu/home.html structured way. EARIV - the European Analytical Research The site has developed a platform of service offers, list of facilities, Infrastructures Village – is a collection of service offers relevant projects and mediator companies that can help from European synchrotron and neutron facilities that companies use synchrotrons and neutron facilities in Europe. The are relevant for companies. It was developed in the initiative has also been presented at trade fairs and events CalypsoPlus and ACCELERATE projects: targeting industry. https://www.eariv.eu EMBRIC aims to link biological and social science RIs EMBRIC's WP8 titled "Development of biological resources for the and build inter-connectivity along three dimensions: selective breeding of shellfish and finfish" develops industry science, industry and regions. standards and new pipelines for genetic marker discovery to http://www.embric.eu/ ensure that industry benefits from the latest research. By advocating stronger ILO-ICO collaboration across scientific domains, ENRIITC will further promote the benefits of industrial research at RIs active in the biological and social sciences. **ENVRIplus** brings together RIs for environmental and ENVRIplus WP15 titled "Training, e-learning and courses" focuses earth system sciences built around the ESFRI roadmap. on the development of training modules, e-learning environments It aims to create a more coherent, interdisciplinary and and specific courses for the main stakeholders in the interoperable cluster of environmental RIs across environmental community and possible industry users. ENRIITC Europe.





http://www.envriplus.eu/	will seek to utilise the best practices of the ENVRIplus cluster
	when developing its training activities.
SERISS focuses on cross-national data collection,	SERISS aims to establish a joint domain for education and training
breaking down barriers between RIs, and embracing	for RIs from social sciences. ENRIITC will seek to utilise best
the future of social sciences. SERISS aims to address	practices observed in SERISS from developing joint training
issues relating to survey design and data collection,	programmes and utilise them when setting up webinars for ICOs
data management and curation from a collaborative,	and ILOs
cross-national perspective.	
https://seriss.eu/	
SINE2020 is a project preparing Europe for the unique	SINE2020's WP4 titled "Industry consultancy" aims to enhance
opportunities at ESS and developing the innovation	knowledge among industry about neutron scattering techniques
potential of largescale neutron facilities in Europe.	by creating a Europewide network for outreach, training and
https://www.sine2020.eu/	education of industrial researchers. ENRIITC beneficiary ESS is
	involved in SINE2020 and will ensure that tools and best practices
	from SINE2020 can be replicated in ENRIITC.
NFFA-EUROPE sets out a platform to carry out	NFFA aims to enhance and facilitate industry access to
comprehensive projects for multidisciplinary research	nanoscience and nanotechnologies, through a "one stop shop" for
at the nanoscale extending from synthesis to	needs. ENRIITC will build up on the efforts of NFFA-Europe by
nanocharacterisation.	promoting the benefits of research carried out at RIs among
https://www.nffa.eu/	industries active in nanotechnologies.
PaNOSC is a project aiming to make FAIR data a reality	One of the objectives of PaNOSC is to increase the impact of RIs by
in 6 ESFRI RIs, developing and providing services for	ensuring data from user experiments can be used beyond the
scientific data and connecting these to the European	initial scope. ENRIITC will complement the activities of PaNOSC by
Open Science Cloud (EOSC).	encouraging industries to use RIs for their research and
https://panosc-eu.github.io/	development activities and benefit from data that is already
	available in EOSC.
RI-VIS is a project aiming to expand the visibility of	One of the objectives of RI-VIS is to develop guidelines and toolkits
European RIs to new communities, and new target	for partnering, and host international outreach events. ENRIITC
regions forming strategic partnerships with	will explore possibilities to co-organise events together with RI-VIS
infrastructures in third countries.	and when appropriate reference the guidelines developed within
	RI-VIS to the target groups of ENRIITC.
	RI-VIS to the target groups of ENRIITC.

# b) Individual RI-based initiatives

Several mature RIs are operating their own portals for industry collaboration, e.g. ESRF, ILL, EATRIS and PRACE<sup>5</sup>. In some cases, a project is used to initialize a permanent structure to enable RI-industry engagement. BOX 2 gives the example from EATRIS where the Corbel project was used as an engine to define and setup the collaboration with industry.

<sup>&</sup>lt;sup>5</sup> Industry landing pages: ESRF (<a href="https://www.esrf.fr/Industry/">https://www.ill.eu/neutrons-for-society/industry</a>), EATRIS (<a href="https://eatris.eu/services/collaborationswithacademia/">https://eatris.eu/services/collaborationswithacademia/</a>), PRACE (<a href="https://prace-ri.eu/prace-for-industry">https://prace-ri.eu/prace-for-industry</a>)





# BOX 2: From Project to definitive RI structural element - An Example from the Corbel Project

The legacy of the **CORBEL Innovation Helpdesk** can be found on the CORBEL and the "LIFE Sciences RIs" (LSRI) websites:

- https://www.corbel-project.eu/innovation-helpdesk.html;
- https://lifescience-ri.eu/collaborative-activities/innovation-helpdesk.html.

The content consists of:

# Template Agreements

- Non-Disclosure Agreements (NDAs)
- Material Transfer Agreements (MTAs)
- Data Transfer Agreements (DTAs)
- Research Collaboration Agreements toolkit.

#### Guidelines

- Basic Aspects for Budgeting
- Compendium of Elements of Collaboration and Licensing Agreements
- Guidelines for Technology Transfer and Partnering
- Good Negotiating Practice
- Features of Intellectual Property
- Approaches to Life Science Evaluation
- o IP Issues in Open Science, Pre-competitive Research and Open Innovation

# • Expert Centre Inventory

The various items are downloadable as PDFs or in some cases MS Word files.

# Requests for HelpDesk support post-CORBEL

The EATRIS web site has a small section on the innovation help desk activity which was transferred from CORBEL (<a href="https://eatris.eu/innovation-helpdesk/">https://eatris.eu/innovation-helpdesk/</a>). In principle this service is available to all the (BMS) RIs, subject to funding arrangements where appropriate. If we can help other RIs for example in connection with currently running programmes that should be possible.

# **Knowledge Transfer Portals**

Since international Research Infrastructures often work on the edge of technical feasible, there is a recognized innovation potential for companies based on the technology or knowledge from RIs, e.g. within:

- Industry-RI partnerships;
- Licensing opportunities;
- Commercialisation strategies;
- IPR consulting, etc.

It is less obvious how to promote these innovation opportunities and services or how to engage the relevant companies at the right time.

Examples of portals for knowledge transfer include **EU-driven Initiatives**, such as, e.g.:







- The Enterprise Europe Network (EEN) can help matching a business with an international partners to grow and expand, e.g. for product manufacturing or distribution, for accessing new markets, finding innovative technology and collaborating in research and development projects. The local EEN Contact Point expert advisor will counsel a business on how to better prepare for internationalisation and identify a matching partner. The EEN manages Europe's largest online database of business opportunities with thousands of business, technology and research cooperation requests and offers from companies and research and development institutions. The EEN can also arrange a business participation in international matchmaking events and trade missions.
- CatRIs (to some extent KT oriented)
- MERIL [http://www.kg.eurocean.org/KO].
- The European Open Science Cloud (EOSC), <a href="https://eosc-portal.eu">https://eosc-portal.eu</a>. With the ambition to provide European researchers, innovators, companies and citizens with a federated and open multi-disciplinary environment where they can publish, find and re-use data, tools and services for research, innovation and educational purposes, EOSC supports knowledge exchange as part of many other services.

#### Other initiatives include:

- National initiatives, e.g. Knowledge Transfer Ireland: www.kti.ie
- Initiatives from single RIs, e.g., CERN-KT: <a href="https://kt.cern/activities-services/collaborations-and-networks">https://kt.cern/activities-services/collaborations-and-networks</a>.
- Initiatives from groups of RIs, e.g. HEPtech: <a href="http://www.heptech.eu/">http://www.heptech.eu/</a>

#### 5. Discussion

# The need for joint portals for industry

The mapping exercise form the previous chapter makes it clear, that currently no portal exist to promote industry engagement with RIs although some attempts (e.g. CatRIS) exist in the landscape. The findings from the mapping, the MOSCOW analysis from the previous section and the discussions with key stakeholders from RIs who are engaged with hundreds of companies also question if there is really a need for a joint portal leads to the following key points:

- 1. The needs and requirements from companies interested in a) offering supplies to an RI, b) using the RI or c) technology/knowledge-transfer are very different and the synergies of pursuing a joint portal for the three areas are dubious. There are, however, linked areas between knowledge transfer and to both supplies and RI usage.
- There are already many portals for companies from both the RI-sector and related areas (see Table). Among the RI stakeholders and current portals consulted, there is scepticism that a company will actually use a portal only focussing on RI offers. Intelligent search engines enabling the portal to function more as repository of collaboration offers from the RI appears more promising.
- 3. The procurement process is governed by many rules and international conventions and a portal cannot take over any of these formal obligations in the procurement process. A portal may pick up information from other procurement sites, such as, e.g., TED, and display them in a common place. It is, however, not obvious that this would be worth the resources involved with setting up such a function. ILOs are to some extent already performing this work for the companies in the individual countries. As documented in Fig. 4, many stakeholders see an advantage of common portals, but this enthusiasm is not shared by the RIs who need to allocate resources to operate the portal.





These key points indicate that there is not an apparent need for an all-embracing joint portal.

# MOSCOW analysis for an RI-Industry interest match-making portal

In order to clarify the scope and potential for joint portals, a MOSCOW analysis was conducted among the ENRIITC WP-leaders since they represent the most comprehensive knowledge base from the ENRIITC project activities and discussions regarding both suppliers, users and knowledge transfer partners. The answers are collected in Table 1 and 2. We report the general and specific requirements emerged:

# MOSCOW analysis results regarding RI supply contracts

The MOSCOW analysis underlines the challenges facing the task of setting up a joint tendering portal which will require many resources and which will not be able to take over the role for current platforms extending beyond the scope of RIs, such as TED, which is quite vastly used by companies. The adaptation of those calls to another portal system would include the re-design of procedures, category codes, and keywords for searching through the information. Discussions of the results do reveal a potential benefit for joint listings on some very specialised areas for RIs such as, for example, RI-specific consultancy tasks.

# MOSCOW analysis results regarding RI Service Offer

Considering that the ESFRI evaluation process highly values that each RI displays their service offer on a web interface, the position for most RIs is to already have something like a service offer catalogue in place. The added value of new portal could be in the one entry point to all RI services, as demonstrated by the Moscow analysis. This would entail the harmonisation of the service offer categories and agreeing on a certain level of detail, as well as the use of a powerful search engine. The duplication of efforts being an unwanted scenario, it seems interesting to avoid the creation of a new portal with these characteristics but rather to adapt existing solutions. In particular, our analysis reveals that the CatRIs portal (<a href="https://portal.catris.eu/home">https://portal.catris.eu/home</a>) appears quite advanced with respect to the kind of effort required. The ENRIITC project could orient more RIs form the ESFRI landscape to join this effort and complete the partial picture offered at this stage.

# MOSCOW analysis results regarding RI Tech/knowledge exchange platform for innovation

A platform in this area may include also research, education and training opportunities. It should rely on search engines since most often a company will scout broadly for technologies and knowledge not only at RIs but also among universities and RTOs. The potential for existing platforms, such as MERIL (project driven), TED (EC driven), ARIA (private sector) to be suitable for an adaptation to suit these requirements is questionable, for different reasons, either technological (ARIA, MERIL) or bureaucratic (TED), or structural (CatRIs).

Table 1 a, b – Proposed general characteristics of an e-portal for an industry-RI relations and related prioritisation scores where: Must (priority score = 3), Should (priority score = 2), Could (priority score = 1) and Won't (priority score = 0).

Table 1.a - Portal Objectives	Must	Should	Could	Won't	Score Avg.
To provide a single-entry point to information and services supporting industry	xxx		хх		3,25





Provide visibility to supply contract opportunities		Х	Х	хх	1,5
Provide visibility to Service Offer opportunities			х		3,25
Provide visibility to Tech-knowledge exchange and co-	хх	xxx			
development opportunities					3

Table 1.b - Portal functionality	Must	Should	Could	Won't	Score Avg.
Query-based search engines addressing type of query, domain, technology needs, keywords, free text, etc.	xxxx		x		3,25
A.Ipowered search-engine mining the public space outside the portal for information on technology and knowledge offer, based on publications and other forms of communications, such as ICO	х	хх	x	х	
pilot cases and offer description					2,75
Organised according to ESFRI domains		хх	xxx		1,75
A.Ipowered search-engine mining the information inside the portal, such as ICO pilot cases and service offer descriptions	xxx	x	×		3
RI offers organised according to EC business sector's categorisation		х	xxxx		1,5
RI offers repeated over more than one category, i.e. in all relevant domains	х	xxxx			2,75
On-line help function and chat system for users to contact the RIs	Х	xxxx			2,75
LinkedIn based user profile or possibility to create own new profile			xxxx		1
Internal messaging system for a dialogue between users/members of the portal		х	xxxx		1,5
Serve as an instrument for ICO networking	хх	XXX			3
Serve as an instrument for broader networking, such as between ICOs and ILOs.			xxxx		1,25

Table 2 a, b, c – Proposed purpose-specific characteristics of an e-portal for an industry-RI relations and related prioritisation scores where: Must (priority score = 3), Should (priority score = 2), Could (priority score = 1) and Won't (priority score = 0).

Table 2.a - Supply contracts		Should	Could	Won't	Score
					Avg.
Unique/unified codes for products/services			Х	XXX	0,25
Keyword-based search engine	х	хх	х		2
Include smaller contracts, i.e. below EC-limit, for public		хх	хх		
procurement					1,5

Table 2.b - Service Offer	Must	Should	Could	Won't	Score
					Avg.
Indication of the Geographic base of the service offer	xxxx		х		3,25
Direct Booking system or project submission system (ARIA-like)	Х	хх	х	х	
for service access by industry user					2,25
Use components developed from previous initiatives such as RI		хх	xxx		
cluster projects/integrating activities, etc					2

Table 2.c - Tech-Knowledge Exchange	Must	Should	Could	Won't	Score
					Avg.
Research data release	хх	хх	х		2,75
Experimental protocols release			xxxxx		1,25
Research results		х	xxx	Х	1,5
Software		хх	хх	Х	1,5
Higher education opportunities	хх	хх		Х	2,5
Instrumentation use and license deal offers		xxxxx			2,5
Training	хх	х	хх		2,5





#### 6. Conclusion

We have mapped the various current portals where companies may engage with RIs on the following areas:

- Supplies to RIs
- Services from RIs
- Technology and knowledge transfer

We see from the mapping that no current portal covers the three areas. However, based on discussions with stakeholders, we conclude that there is also not a request or need from the companies for a joint portal covering all areas.

For suppliers (BOX 3, a below), for example, the situation is complicated by the fact that conventions between member status of the RIs often dictate how to engage with companies in a procurement process. It is therefore not feasible to make a joint portal designed to accommodate the traffic regarding procurement. Instead, initiatives could be started that would make it easier for companies to navigate, e.g. by aligning keywords at RIs, or collect information from the sites where RIs currently are obliged to announce their tenders, e.g. TED. Common platform or meeting places, where RIs and suppliers can engage on very specific RI-tasks may instead be beneficial in the supply contract area, when regarding smaller contracts and co-development activities, when less restrictions are to be considered.

	RI Supply contracts offer
Mutual advantages for RIs and RI-service suppliers	<ul> <li>Gathering offers for all supply sectors</li> <li>Easier for industry to navigate into a single portal.</li> <li>Possibility for RIs to advertise small contracts - i.e.: below the EU public procurement threshold required to publish on TED, in a highly visible place;</li> <li>Possibility for small companies to give visibility of their capability to provide services to RIs;</li> <li>Possibility for RI managers to have a bird's eye view of existing service providers (e.g.: consultancies/desk studies, planning, manufacturing), in various areas</li> </ul>
Weaknesses and Threats of the initiative feasibility	<ul> <li>Procurement codes would need to be aligned among the various existing procurement portals</li> <li>Conventions between member states of the RIs dictate particular supply procurement processes, which hardly could all be taken into by a novel portal, because of costs, risk of repetition of efforts and difficulty of buy in from both RIs and suppliers</li> <li>Danger of effort duplication, for example with Commission's initiatives such as TED;</li> <li>Lack of support from either the Commission or the RIs to finance and operate the portal.</li> </ul>

BOX 3, a: Advantages and disadvantages of a novel RI supply procurement offer portal

Regarding the RI service offer (Box 3, b below), while it is uncommon to see a section dedicated to industry relations, most RIs are under pressure to keep a list of services active and updated, as this is their core mission, at least towards the scientific research environment. Some examples of aggregation of the RI service offers exist, and a particular mention can be made of the CatRIs portal.





RI Service Offer	
Mutual advantages for RIs and industry user of RI-services	<ul> <li>Gathering service offers from all RIs in one place</li> <li>Easier for industry to navigate into a single portal</li> <li>Possibility for RI managers to have a bird's eye view of existing service offers also in "sister" RIs and better serve the industry clients</li> </ul>
Weaknesses and Threats of the initiative feasibility	<ul> <li>All RIs already have their service offer on display and it may be difficult to obtain interest in also placing their offer on another portal</li> <li>Lack of support from either the Commission or the RIs to finance and operate the portal.</li> </ul>

BOX 3, b: Advantages and disadvantages of a novel RI-service offer portal

With respect to technology and knowledge transfer/exchange (box 1, c below), e.g.: data, experimental protocols, and research results; a new initiative would be required to fully resolve the assessed limitations of the existing initiatives and pin-point to where the real potential for an impactful initiative lies. However, the effort required to harness the information from the existing platforms needs a whole new project to be fully detailed and implemented.

RI-Industry tech/knowledge exchange		
Mutual advantages for RIs and industry	<ul> <li>Opportunity to fill the gap in current initiatives to gather in one place the tech/knowledge exchange possibilities between RIs and Industry</li> <li>Easier for industry to navigate into a single portal.</li> <li>Possibility for ICOs and ILOs to capture the full potential of tech/knowledge opportunities and provide a gateway for this IP to be utilised</li> </ul>	
Weaknesses and Threats of the initiative feasibility	<ul> <li>Policy issues liked to institute's owning the technology/knowledge</li> <li>Need for a dedicated RI policy facilitating TK exchange with commercial entities, when IPR is not owned by the RI but by the entities constituting the RI</li> <li>Costs of maintaining the portal up to date or to obtain sufficient buy in from RIs to keep the information up to date</li> </ul>	

BOX 3, c: Advantages and disadvantages of a novel knowledge transfer portal for all RIs

In the end, it would seem that the scope of an ENRIITC-Platform could be limited to the knowledge exchange aspect of industry-RI relations, supporting the work of ILO and ICO. Although limited in scope, this support platform would address a real gap in the current initiatives and could underpin a series of other offers connected to the creation of societal value from industry-use of RIs, towards co-development and co-creation of innovative products, processes and services; new enabling technologies, and to the greater dissemination and uptake of research outputs. The portal would serve as a meeting place for users, suppliers and interested co-creators, where ICOs and ILOs could discuss and orient their efforts to create a better understanding of the landscape of opportunities they deal with. A version of the platform may be generated under a new joint European initiative to demonstrate its value creation and make the case for the inclusion of the operational costs into the RI budgets.

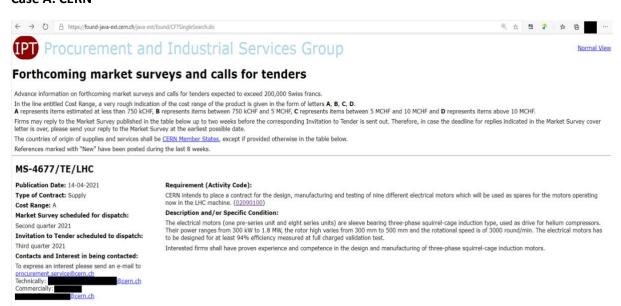
The results and conclusions of this work will feed into WP3 as the basis for a set of recommendations for the development and operation of an online portal, supporting ILOs and ICOs in their efforts to enhance knowledge and technology exchange with industry of all sizes and sectors, ultimately engaging industry with the construction and fuller utilisation of the EU Research Infrastructures.



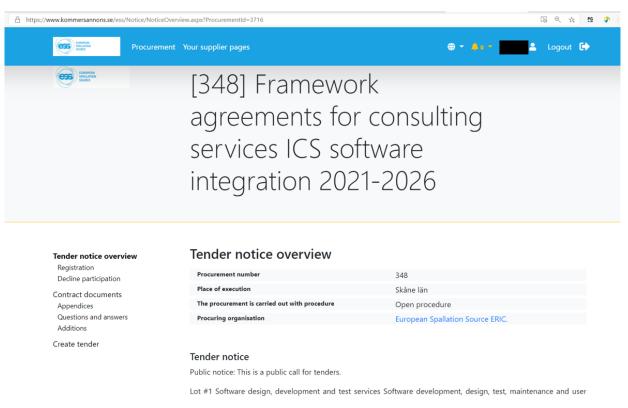


# Appendix 1: Examples of platforms for RI procurement

# Case A: CERN



# Case B: ESS (third-party announcement - KommersAnnons.se)







# Case C: European XFEL (Joint European third-party announcement - TED)

