Deliverable 3.2 EPICUR Analysis report and recommendations

Requirements and preconditions for sharing infrastructures and conducting joint infrastructure-based research on EPIChallenges

European Partnership for an Innovative Campus Unifying Regions
EPICUR Research Agenda
Shaping European Society in Transition

Deliverable number	D10
Relative number in WP	D3.2
Deliverable title	EPICUR Analysis report and recommendations: Requirements and preconditions for sharing infrastructures and conducting joint infrastructure-based research on EPIChallenges
Work package	WP3
Lead beneficiary	ALU-FR
Dissemination Level	PU
Type	R
Due date (in months)	June 2022 (M18)

Author(s)		
Name	Organisation	E-mail
Eva Rüskamp	ALU-FR	Eva.Rueskamp@zv.uni-freiburg.de

Status of deliverable		
//	By	Date
Submitted (Author(s))	Eva Rüskamp	17.06.2022
Verified	PMT	23.06.2022
Approved	PMT SC	23.06.2022 08.07.2022

Change of history		
Version	Date	Description of change
01	17.06.2022	Submitted version to the PMT
02	05.10.2022	Addition of appropriate section numbering to support the reader

Table of content

1. Introduction & Definitions

The task of 3.1.b) outlined in the Work Package 3 (page 21 of 48) states that ALU is in charge of providing an analysis of the "requirements and preconditions for joint infrastructure-based research on EPIChallenges including respective recommendations", leading to the deliverable 3.2. The EPIChallenges in question are "Sustainability Research", "Mobility, Migration, Identity" and "Public Health". The task required a common definition for Research Infrastructures which was passed via a PMT written procedures in April 2022 and is stated below. It furthermore requires a better understanding of different types of research collaboration pursued within the context of EPICUR.

The following report is separated into three subchapters, including the methodology, a first analysis (of challenges and potentials) and a table of recommendations. Last but not least it includes a section on potential next steps.

1.1 Definition of Research Infrastructures

The *European Charter for Access to RIs* defines 'Research Infrastructures' 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 and scientific data,
- e-infrastructures, such as data and computing systems and communication networks and
- any other tools that are essential to achieve excellence in research and innovation.

They may be 'single-sited', 'virtual' and 'distributed'.

This broad definition is based on the work of ESFRI[1] and encapsulates the diverse infrastructures which enable excellent research across Europe and across all disciplines.

1.2 Adopting & Extending the European Charter for Access to RIs in EPICUR

The European Charter for Access to RI's is a requirement for receiving funding in the Horizon Europe funding line. It sets the standards and offers definitions of research infrastructures as well as another key element. Furthermore, it sets up principles and guidelines for RI usage.

The European Charter is based on ESFRI Roadmaps & White Papers which reflect a diverse range of European needs and challenges in sharing RI while also remaining open to the specific needs and definitions of EPICUR. Adopting the European Charter and extending it to meet the special requirements of EPICUR's challenge-based approach to research collaboration is therefore recommendable.

EPICUR will also adopt the following additional aspects:

---

[1] ESFRI, the European Strategy Forum on Research Infrastructures, is a strategic instrument to develop the scientific integration of Europe and to strengthen its international outreach. https://www.esfri.eu/

- **Costs and Fees**: EPICUR is committed to enhancing inter- and transdisciplinary research and therefore, it will identify solutions to contribute to costs and fees incurred at RIs for opening them up to user groups from inside and outside academia and from across the alliance.
- **Impact as Access Mode**: promotion of doctoral researchers, young and new users, enhancing interdisciplinary collaboration, promoting transdisciplinary work, aiding in the Europeanization of research, collaboration with non-university partners (e.g. business, funders) à RIs who adopt this access are of particular importance to the EPIClusters and EPICradles, EPICUR WP3 will develop this Access Mode and Recommendations for its implementation as well as procedures for identifying RIs which already promote access in such a manner
- **Access restrictions based on User Groups**: taking into account that many RIs restrict their access to members of a university, EPICUR will seek to develop an EPICUR Fellowship / Associate Researcher Status that will minimize the bureaucratic work for researchers and non-university partners which may hinder / limit the access to RIs at partner universities and their collaborative RIs.
- **Open Science & Open Data Commitment**: EPICUR will develop a "Seal" for Open Science Excellence to identify RIs which contribute to the European Commission's special focus on advancing an open science and open data agenda.

1.3 Types of Joint Research Collaboration

EPICUR-Research aims to foster very specific types of research collaborations. Rather than emerging as bottom-up initiatives by mid-career and leading scientists with prior links to existing research infrastructures by previous research or institutional affiliation, **EPICUR' goal is to encourage and support early career researchers in forming European, interdisciplinary and transdisciplinary research groups that address the so-called EPIChallenges**:

An **EPIChallenge** represents the pressing global societal need to respond (through adaptation or mitigation) to changing environmental, social, and economic conditions, which EPICUR Research addresses

- by undertaking **interdisciplinary and/or transdisciplinary research**
- in new **collaborative formats.**

Taking into consideration the multitude of changes occurring simultaneously, **the Common Research Agenda will feature multiple EPIChallenges** at the same time. EPIChallenges will therefore be 5 to 10 themes which combine societal "hot" topics with research questions being pursued by EPICUR's partner institutions.

These research collaborations therefore can and should include a variety of actors:

- Early Career Researchers from a variety of fields and disciplines (PhDs & PostDocs)
- Stakeholders from outside academia
- Leading Researchers from within the alliance
- Leading Researchers from outside the alliance

One of the most challenging conditions and requirements therefore already emerges from the diversity of potential participants in the new innovative joint collaborations: to develop a status for all participants that grants them access to even the most basic types of research infrastructures (such as libraries and spaces) in all of the partner universities without undergoing complicated application procedures and other bureaucratic procedures.

Therefore, the first recommendation emerges before even a closer analysis of research infrastructures has taken place: to establish an EPICUR Fellow program. This program in essence inscribes researchers and their non-university partners into the EPICUR University (of the future), the EPICUR. Through the EPICUR Fellow status, researchers and their non-university partners receive access to all current and future partner universities. What this "access" means will need to be discussed among the partners but could be organized in different ways outlined in more detail in the section on recommendations.

In addition, the second recommendation also emerges closely linked to the fellow program: EPICUR will establish an EPICUR certificate for research infrastructures and core facilities, which labels them as easily accessible to EPICUR fellows. RIs and core facilities who receive this label will be listed on the EPICUR map to be easily retrievable by interested researchers. Additional privileges as well as criteria to be included in this EPICUR RI/CF certification program will be up for negotiations by partners. More details are listed in the recommendations below.

2. Description of Methodology

This report is based on the desk research on existing frameworks and policies for the sharing of research infrastructures. Among these, the European Charter and the output created by ESFRI are the most important collaborative efforts on establishing the basis for sharing research infrastructures across Europe. Their most recent output is listed below for reference:

- [European Charter for Access to Research Infrastructures](#)
- ESFRI White Paper 2020: ["Making Science Happen – A new ambition for Research Infrastructures in the European Research Area"](#)
- ESFRI: ["Roadmap 2021 Public Guide"](#)

From the analysis of these documents emerged the following methodology for compiling this report. Apart from establishing a common definition of Research Infrastructures (based on the European Charter) which includes descriptions of key terms and lays the groundwork for what will be our third recommendation – the development of a Research Infrastructures Policy – the analysis was focused on identifying the needs and interests of partners in actually sharing research infrastructures. Therefore, the question of research infrastructures (RIs) was addressed in many bilateral and partner meetings with our alliance members in the context of establishing a Common Research Agenda (WP1 R – ALU / BOKU), including workshops with the heads of research and research services of our partner institutions in October 2021 and spring 2022 respectively.

In addition, the questions of sharing research infrastructures and opening them up to researchers from within an alliance were brought to different workshops organized by ESFRI, the German Academic Exchange Service and staff members of projects who work on sharing and collaborating on research infrastructures in the Upper Rhine Valley (RMI-TO).

From these fruitful discussions then emerged the idea of holding a focus group workshop during the EPICUR networking conference which brought together project staff as well as stakeholders from within and beyond the universities. This two-hour workshop proved invaluable in creating a thorough understanding of partners wishes and needs with regard to sharing research infrastructures. The results of this works form the core of the specific recommendations listed below in detail.

3. Analysis: Challenges and Potentials

The following brief analysis represents a short, comprehensive yet certainly not complete analysis of challenges and potentials in sharing research infrastructures from an institutional stand point.

3.1 Background

A lot of our researchers are already engaged in projects that span across research infrastructures and rely on long-standing partnerships between single chairs or institutes with research infrastructures or partner institutes / chairs who can facilitate access to research infrastructures. These partnerships are invaluable for the advancement of research and in bringing together peers from across our partners. However, there is little to be done to enhance such sharing of RIs, that can be addressed on the level of EPICUR. Sharing of research infrastructures (especially physical ones) also occurs on an individual basis, when researchers (e.g. from the humanities or on early career levels) gain access to RIs via organized visiting scholarships or guest visits. This form of sharing RIs can and should be enhanced on an EPICUR level, since EPICUR offers several programs that include physical exchanges between partner universities.

Sharing RIs across alliances such as EPICUR which because of their novelty are not yet known and established entities bares many challenges if approached from an institutional perspective. However, there are several reasons why sharing RI's also holds considerable potential for enhancing collaborations across the partner institutions.

Institutional support for sharing RIs, that is dissolved from particular people and projects can only pertain
- to providing more information on existing infrastructures
- to aiding in access to RIs by installing framework contracts (for use)
- to offering educational resources / trainings for potential users
- to building new common research infrastructures that extend access of existing ones to users which for some reason do not have access to / cannot use them otherwise.

Such new common research infrastructures would for example include data environments that facilitate open data and citizen science, or common library catalogues and other forms of data bases on existing documents and materials. More on this suggestion can be found in the section on recommendations.

3.2 Challenges

The challenges listed below are based on an institutional perspective, they do not contain disciplinary or RI specific challenges which are manifold and can only be assessed on a case-by-case analysis:
- Differences in how research infrastructures are bound to and managed by each partner university, this may vary even across one institution or type of research infrastructure. As a consequence, the most common denominator for a policy of sharing even the same type of research infrastructure across partners may be extremely difficult and render the venture useless
- There seems to be limited knowledge of existing research infrastructures and their particular details even within partner institutions or they are stored in inaccessible databases (whether for legal reasons or others). While some partners, such as UNISTRA are currently developing more public and useful databases (which will be listed below), such databases are not yet widely available. Their

existence seems to be essential, however, to facilitate an EPICUR-wide database that is useful to researchers and institutions in the sense that it remains up-to-date with regard to accessibility, contacts and fees.

- The interest in sharing RIs widely and systematically seems to be rather low among several of our partner universities. Some of the reasons that interest is low were: unclear legal frameworks and anticipation of much administrative / bureaucratic work for doing so beyond the individual exchange. Many RIs require specific certifications and trainings before they can be used by researchers, resources to offer such training units are limited and therefore one's own researchers take priority. Linked to this is a general sense of there not being enough human resources to facilitate the sharing of RIs in a meaningful way; however, several partners indicated that given the availability of such funds, they would be considerably more open to participate in pilot activities.
- In general, depending on the elaborateness of the sharing scheme, human resources to organize, cultivate and maintain the type of infrastructures that would have to exist for any type of meaningful alliance-wide sharing of research infrastructures are perhaps the biggest challenge. As good practice from some of our partners show, there needs to be an institutional backing in terms of human and financial resources to create an office / website to manage such activities long-term.

3.3 Potentials

Despite the manifold challenges, there are also potential benefits that could emerge out of sharing RIs, equally for the alliance, the individual partner institutions and even the research infrastructures themselves:

- Some Research Infrastructures are underused (in terms of time but also their potential) and could benefit from more visibility within the network of our universities.
- An investment in the active, institutionally supported sharing of research infrastructure via a joint database for all available research infrastructure seems to carry a lot of a potential. A joint database would not just allow for more visibility but allow participating RIs to provide more targeted information about access, services and requirements for the use of the RI. In addition, such a database could become a platform to share innovative research that takes place at RIs and to highlight programs and events at the RIs that may be interesting to a broad, interlocal audience.
- Many RIs require similar trainings for their access and/or offer similar formats that are linked to them (e.g., publications; archival research). EPICUR could develop common programs (out of the existing offers but also new ones) to create synergies between partners and to enhance networking between researchers who use the same research infrastructures / work on similar challenges. Such a common program would help increase visibility of EPICUR as a network which supports researchers and that can be the basis for future research collaborations.
- Sharing RIs will inevitably increase their visibility, this can be used not just to promote the RIs but also the data and publications that emerge from them. In addition, there might be research infrastructures such as data environments that aim at citizen science which can benefit greatly from increased visibility beyond the local and even the national context.
- With increased sharing of RIs, the increased visibility and exchange between users, there is a high potential that such structurally and institutionally supported sharing of RIs can lead to the development of new research and research collaborations.
- EPICUR could furthermore use a focus / support of its research infrastructure by systematically connecting and promoting them to build outreach and science communication around them. RIs,

such as archives and libraries are often already offering themselves as creative and collaborative spaces for people to meet and exchange ideas. Together, RIs in EPICUR could probably extend these activities and find even more diverse, international and engaged audiences for their offers.

4. Recommendations

There are three main recommendations as well as a toolbox of smaller recommendations based on different RIs, different Target Groups and different goals to be achieved by sharing Research Infrastructures and Core Facilities across the EPICUR Alliance.

4.1 Main Recommendations

The Three Main Recommendation are:
- Establishment of the EPICUR Fellow Programme
- Development of a Research Infrastructures Policy (EPICUR RIPo)
- Establishment of the EPICUR Research Infrastructure Certificate

4.1.1 EPICUR Fellow Programme

As long as EPICUR remains an alliance of multiple partner institutions, researchers are forced to apply for membership / guest researcher status at each of the partners. This is bureaucratic and time-consuming. Putting in place an EPICUR Fellow Programme, which would automatically grant researcher access to ALL partner institutions as well as specific offers of EPICUR, would be a true added value of EPICUR to researchers' mobility. Once granted the status of the "EPICUR Fellow", participants of the programme would be given simple access to all basic RIs and service structures of all partners. The programme could offer priority treatment for selected events and offers by the institutions etc. Some of the basic ideas that could be considered in the shaping of this fellow programme are listed below. Details would have to be negotiated between all partners:

Organizational / administrative considerations:
- The programme would create a "legal" status for researchers of all partner universities who wish to pursue research or further education at with least one of the partner institutions
- To become self-sustaining, the programme could be fee-based (individuals or institutions buy into it along a fee scheme that is affordable to individual researchers)
- Programme participants of EPICUR formats (e.g. EPICradles / EPIClusters or MasterLabs and PhD Research Stays) would receive scholarships for the programme and automatically receive this status

Benefits:
- The programme grants access to basic RIs and Core Facilities such as libraries and communal spaces.
- Membership in the fellow programme could be "life-long", so that even as scholars move universities and lose certain privileges of their home institutions, they remain connected to EPICUR and through EPICUR to all partner universities (--> in lieu of an alumni programme)
- Fees collected through the programme could go towards RIs & programmes used to facilitate joint research, additionally money can go towards the building and maintenance of digital resources.

Essentially, the EPICUR Fellow Programme would give the framework in which the further conceptualization and implementation of offers and services incentivising and facilitating the shared use of selected RIs including, e. g. would take place. These could include:

- **Trainings** for researchers and research teams in order to allowing them the (joint) use of (selected) EPICUR-RIs
- **Seed money** for joint research projects based on selected RIs
- **Support and advice** for drafting (joint) proposals for research projects based on EPICUR RIs

4.1.2 Research Infrastructures Policy (EPICUR RIPo)

Similar to the Model Language Policy, EPICUR should agree on an appropriate **Research Infrastructures Policy (EPICUR RIPo)**. This policy should be based on and express a **shared vision and understanding of the added value** of our consortium in general and of sharing (a part of) our RIs in particular by **pointing out the benefits and (new) opportunities** of our intensified collaboration. It should represent the starting point of the **coordinated consolidation of our collaboration in terms of sharing RIs** and pave the way for this collaboration's further development based on experiences, best practices and shared principles. It should rule the following elements:

- Creation and fostering of a sustainable **friendly and inclusive mind-set** as part of our ethics and values oriented **EPICulture** of mutual respect, collaboration, solidarity and readiness to share.
- **Access to (selected) RIs** for members of partner universities and members of EPICUR research groups like EPICradles or EPIClusters (that might comprise researchers not belonging to any of our partner university) → EPICUR Fellow Programme
- **Conditions of use of RIs** for members of partner universities or members of EPICUR research groups (beyond the EPICUR Fellow)
- **Agreement on ethics, rules, and codes of conduct** related to good scientific practice as well as EDI in the context of research based on (shared) EPICUR RIs à Open Data Processes
- Commitment to **benefitting students with research based on (shared) EPICUR RIs by including teaching and learning** wherever possible and appropriate
- Commitment to and consideration of **rules, regulations and best practices of the European Union** as well as of **other EUNs (cf. ESFRI)**
- Creation of **incentives** for accessing and using EPICUR RIs by EPICUR research teams
- Use and processing of **research data** and **results** achieved through EPICUR-RIs (OPEN DATA)

4.1.3 EPICUR Research Infrastructure Certificate

The idea of the EPICUR Research Infrastructure Certificate emerges from the perspective of the RI. The research infrastructures at our partners number in the thousands, not all of them might be useful to include in the considerations and programmes envisioned in this report. Therefore, and to ensure that RIs become active stakeholders in the sharing of RIs, they could be invited to become "EPICUR RIs".

A role model for such a certificate / seal of approval emerges from UNISTRA's CORTECS platform. CORTECS is not just an impressive and easy to handle database for the core facilities located / used by UNISTRA but also evaluates RIs for their potential of being considered a core facility. The UNISTRA teams has developed a catalogue of quality criteria with regard to different elements (such as access, availability etc.) which each RI must pass in order to be added to the database. This catalogue does not as much serve as exclusion

mechanism as it is serves as an encouragement and support tool for RIs to become more connected and embedded in the research ecosystem of UNISTRA. When RIs do not match the criteria yet, the team of CORTECS works with the RIs to reach those standards.

The EPICUR certificate could easily be built on or even extend CORTECS, which already plans to grow to include UHA and – ideally – eventually the entire Upper Rhine region. Much like CORTECS, the EPICUR certificate could also bring together different RIs to merge into larger agglomerated core facilities. This is especially attractive to digital resources or RIs which are multi-sited anyways.

In addition, the certificate could be become part of the EPICUR branding of excellent joint European research and help advertise and increase visibility of research, researchers and RIs within the alliance and beyond.

4.1.4 Establishment of a Database: Deliverable 3.6 is an inventory of EPICUR-infrastructures. For this specific reason the establishment of a database which provides information about RIs (all types) and the accessibility is not discussed here in any detail. The following basic recommendations, however, emerged from the workshop in Vienna and are thus included below:

- Via the EPICUR Map (Education), the info can be gathered on one platform.

- There seems to be a need for an easy-going process to (go) do research somewhere else.

- Such information should first be collected at the level of university (a bottom-up approach), where each institution can collect the relevant information in one place (i.e., a website/platform), and then share the link with other members of the Alliance.

- Best practices: LTSER Long term social ecological research sites:https://www.lter-austria.at/en/austrian-long-term-ecosystem-research-network/

4.2 Specific Recommendations

In the follow there are lists of more specific recommendations for the sharing of RIs. These recommendations are sorted into whether they are based on types of RIs, the target groups which are to benefit from the sharing or on goals which ought to be accomplished by sharing the RIs.

These tables are meant as a starting point and all partners are invited to add their own recommendations to the tables. Based on these collections, the next deliverable will present a joint strategy including the most promising recommendations and how they can be achieved.

4.2.1 Based on Research Infrastructures (Sharing)

Type of Research Infrastructure	Ideas for Sharing	Target Group	Precondition	Level of Governance (needed to put in place)
Libraries	Common catalogue; common shibboleth	All	Accounts / Membership of the partner university	Heads of Libraries
Archives	Availability in common database; digitalization of archives to easen access	Researchers of specific disciplines	Accounts / Membership of specific institute (or university)	Responsible for the collection / archive
Databases	Connect & share	Interested researchers; citizen scientists	Ideally: none	Responsible for the database
Furthering Education Programmes	Connect & jointly offer	Researchers and citizens	Ideally: None, usually: membership of the university	Institutional Level (top-down)

4.2.2 Based on Target Groups

Program / Idea	Description	Challenges	Next Steps

EPICUR Card for researchers (EPICard)	The card could offer access to libraries, repositories, other facilities, campuses, discounts. This should provide access to RIs at all EPICUR partners. Plus, there may be a website etc. that provides all the information of what is available in terms of RIs (needs to be updated – like links to university homepages).	Precludes the existence of an "EPICUR Fellow" status (legally).
		
		Be aware of many legal issues and lots of bureaucracy
		
		Guest professors need a bank account etc.
			The EPICUR Card for researchers depends on the following:
			
			1) Access
			2) Information
			3) Update things
			   a. **Tick a box**: this new project etc. works with or enhances RI
			   b. Maybe libraries could help
			   c. Making it visible which RI/data etc. are already available
			   d. Property rights + if researchers are open to/want to share the data
			    i. Tick a sub-box for that if that could be shared
			    ii. But all of that needs to started first at the universities
			4) Bureaucracy
			5) Legal barriers

Fee Schemes for RIs	An EPICUR user fee scheme which applies to same/similar RIs across the alliance would ensure that RIs are effectively and fairly shared across partners. It would furthermore ensure that researchers can depend on not paying too much for the access of an RI anywhere.	Implementation across a huge number of RIs which might also work / be managed independently would be difficult RIs might already be part of other fee contracts	Evaluation whether such a fee scheme makes sense (perhaps on a focus group) Identifying a test group of RIs, who would be interested in streamlining their pricing.
Matching Platform	RIs seeking more Researchers to use them or research groups who seek specific expertise could be matched to RIs / Researchers	There needs to be the inventory first; Human resources to facilitate the matches	

4.2.3 Based on Goals

Goal	Idea / Program	Needs	Potentials
Communication	EPICUR Science Week	Money Human Resources	Opportunity to present and listen research projects Info sessions (and visit) of RI/core facilities Activities between researchers and the society Potential outcomes: connecting people, educating the public, share data… Best practices from KIT Science Week "Research meets society"
Data Exchange / Connecting ECRs	EPIC Data Flea market	Infrastructure Support team	data swapping free data for ECRs enhancing data availability implementing open data
Data Sharing	Framework Contract on Data Production & Use (Data Protection and IP Rights)	Legal Documents / Agreement between partners	Enable sharing data quickly and easily with researchers; giving out guidelines on the correct storage and open data.
Streamline training / make access easier	Common Use Certificates (aka for labs in chemistry or biology)	Human resources	
Enhanced visibility of EPICUR within and outside the alliance as a research collaboration	Establishment of a SIG Science Communication & Marketing	Commitment by partners to invest into such a group & interest to make EPICUR more visible	Develop common programs (summer schools) Establish common outlets (newsletters, social media, radio/television programmes)