E-RIHS
EUROPEAN RESEARCH INFRASTRUCTURE FOR HERITAGE SCIENCE

E-RIHS IP

European Research Infrastructure for Heritage Science

IMPLEMENTATION Phase

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D4.1 E-RIHS BUSINESS PLAN: APPROACH TO ITS REVISION

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ABSTRACT

The E-RIHS Business Plan, available as D11.1 E-RIHS Business Plan of the E-RIHS Preparatory Phase project (2020), requires a thorough revision and update to incorporate the ongoing changes in operational, strategic and policy documents, reflecting the new phase in the RI's lifecycle. As the majority of tasks and the associated deliverables in the E-RIHS IP project are actively being developed and therefore their outcomes awaited, the work leading to this deliverable focussed on three key elements: (i) Review and gap analysis of the E-RIHS Business Plan; (ii) Analysis of E-RIHS modus operandi and its outline sustainability model; (iii) Reflections on the ESFRI surveys. On the basis of these analyses, a series of recommendations emerged, aimed at producing a revised business plan (D4.3, M24), which will pave the way towards the establishment of E-RIHS as an ERIC and equip the new organisation with the necessary instrument to support its transition towards the operational phase. This deliverable further provides a timeline for the required inputs into the process of revision of the E-RIHS Business Plan. As such, this deliverable impacts all other tasks and explores the dependencies between E-RIHS IP deliverables and the content they need to provide for the revised E-RIHS Business Plan (D4.3). This deliverable was developed through regular, focussed meetings of the WP4 project partners contributing to task T4.1, as well as with guest attendees, as and when required, and in close collaboration with the Chair of E-RIHS interim Committee of National Nodes.

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TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

ABBREVIATIONS

AC: Associated Countries

BP: Business Plan

CCI: Cultural and Creative Industries

Dx.y: Deliverable number x in WP number y

E-RIHS PP: E-RIHS Preparatory Phase

E-RIHS: European Research Infrastructure for Heritage Science

EC: European Commission

ECCCH: European Collaborative Cloud for Cultural Heritage

EIB: European Investment Bank

EMBRC ERIC: European Marine Biological Resource Centre ERIC

EOSC: European Open Science Cloud

ERIC: European Research Infrastructure Consortium

ESFRI: European Strategy Forum for Research Infrastructures

ESFRI: European Strategy Forum on Research Infrastructures

ESG: Environmental, Social and Governance

ESIF: European structural and investment funds

GA: General Assembly

HS: Heritage Science

iCNN: interim Committee of National Nodes of E-RIHS

iGA: interim General Assembly of E-RIHS

IPERION HS: Integrating Platforms for the European Research Infrastructure ON Heritage Science

JPI CH: Joint Programming Initiative on Cultural Heritage and Global Changes

MoU: Memorandum of Understanding

MS: Member States

RDAB: Regional Development Advisory Board

RRF: Recovery and Resilience Facility

SME: Small and Medium Enterprises

SSHOC: Social Sciences and Humanities Open Science Cloud

TFEU: Treaty on the Functioning of the European Union

Tx.y: Task number x in WP number y

1. INTRODUCTION

Long-term sustainability of Research Infrastructures (RIs) was identified as a key policy priority by the Informal Competitiveness Council in July 2014. The European Investment Bank (EIB) defines sustainability of an RI as underpinned by the application of a few main practices, such as: (i) ensuring strong governance, transparency and accountability, for the use of public funds; (ii) integrating high environmental, technical and social standards into business activities, by linking research to innovation outcomes; and (iii) minimising risks and delivering results (EIB, 2016).

Stakeholders supporting the ESFRI RIs are increasingly aware of the need for management instruments to frame and evaluate the RI sustainability, and maybe asking for clear demonstrations on the RI potential to provide an adequate return on their investment ('bankability'), before committing to the establishment of the RI. In this framework, business modelling and business planning are considered a useful instrument supporting the governance and the strategic management of an RI.

The activities of Task 4.1 'Revising E-RIHS ERIC business plan' of WP4 'Sustainability of E-RIHS ERIC' span throughout the whole duration E-RIHS IP project, i.e., from M1 to M24, with the main purpose to revise the existing E-RIHS Business Plan, delivered by the E-RIHS PP project (D.11.1, 2020) and make it fit for the E-RIHS ERIC operational phase. The revised business plan will be a main deliverable of this project (D4.2 E-RIHS Business Plan, M24).

This document presents the foundational work conducted to identify the main gaps in the existing business plan, an in-depth analysis of the modus operandi and the sustainability model of E-RIHS, also compared to more mature RI experiences, and a roadmap for the modernisation of the E-RIHS business plan.

Task 4.1 is organised in three main strands of work:

(i) Review and gap analysis of the current E-RIHS Business Plan, resulting in an internal report with recommendations for its revision;

(ii) Outline of the E-RIHS *modus operandi* and sustainability model, developed through a standardised questionnaire; this required input from various internal sources as well as critical foresight on strategic planning, governance and operational management requirements, for the next phase of E-RIHS;

(iii) Reflections arising from E-RIHS contributions to a number of recent ESFRI surveys, which have led to suggestions for further and improve Business Plan content, specifically referring to the 'ESG principles', allowing for considering environmental, social and governance practices in ERICs (e.g., through sustainable practices to minimise environmental impact, maximising society engagement via research outcomes, ensuring inclusive workplace practices for staff and users, transparency of E-RIHS governance principles, and identifying ESG indicators for monitoring and evaluation of an effective governance impact).

This deliverable is to be utilised as an operational document, with Section 4. 'A roadmap to the E-RIHS ERIC business plan 2024-2027', providing a time-tabled matrix of inputs and co-dependencies to be delivered, including the contributions of iCNN, for the ultimate approval by the iGA.

2. BUSINESS PLAN GAP ANALYSIS AND REVISION DEPENDENCIES

A gap analysis was carried out on the basis of a critical evaluation of the current content of the E-RIHS Business Plan (BP) within the framework of business plans developed for relevant operational ERICs, such as the EMBRC ERIC Business Plan (Nardello et al., 2017). In addition, sections of the existing E-RIHS Business Plan (restricted document only available for the E-RIHS members) have been identified as requiring revision and update, given ongoing developments within the E-RIHS IP project. The iCNN has also be actively involved in the analysis of the information, towards ensuring contributions of the representatives of the national associations of the partner facilities to ensure the scientific coherence throughout the Business Plan. Close to the completion of the E-RIHS IP project, the iGA will be consulted towards the final approval of the revised E-RIHS Business Plan.

Table 1 lists the sections of the existing E-RIHS Business Plan that need substantial improvement, i.e., where gaps or needs for adaptation have been identified. The lead institutions in charge of revising the sections are also identified (Main task owners), together with the linkages to the relevant E-RIHS IP deliverables or other foreseen processes, which will inform the E-RIHS Business Plan, with the indicated timeline of delivery (Dependency and delivery).

Table 1: E-RIHS Business Plan gap analysis and steps towards the final version of the revised E-RIHS Business Plan (D4.3)

Section of the current E-RIHS BP	**Gap description (elements missing or to be adapted)**	**Main task owners***	**Dependency and delivery**
All sections: final version of the E-RIHS Business Plan	• Revised executive summary and review of complete document by iCNN	CNR (project coordinator), UL and ZVKDS (T4.1), iCNN	Sep 24: Presentation of the 'Revised E-RIHS Business Plan' (D4.3) to iGA, for discussion and approval
Executive summary	• List of stakeholders, policy makers, business & industry, NGOs, number and names of member countries, host country, sources of funding – to be finalised. • Implementation highlights – to be added.	CNR, UL, ZVKDS (T4.1)	Jul 24 (internal deadline)
1.7 Outline of the business model of E-RIHS	• Non-monetary values as a key return on investment (e.g., advancement of science, citizen engagement, and knowledge-based economy) – to be highlighted. • Adoption to ESG principles – to be included.	CNR, INOE, UL, ZVKDS (T4.1)	Mar 24: Draft of the 'Revised E-RIHS Business Plan', excluding executive summary (see Milestone 7 of the project)

	• Enhancing the production of financially evaluated output (such as technology transfer pathways, IP generation and licensing, spin offs, contract research, paid access) – to be further developed.		
1.7.1 Resources	• Description of core resources (e.g., stakeholders' investments at the national level and in-kind contribution from National Nodes) – to be expanded.	ATOMKI (catalogue) and iCNN (T5.2), FSP (T2.1), NCU (T2.2)	Jun 24 (internal deadline): draft of the services to be provided in the E-RIHS ERIC Catalogue of Services Jul 24: In-kind contribution framework as part of E-RIHS Accounting Guidelines for Service Provision Costing (D2.3)
1.9 Principles of implementation strategy	• Strategic leadership components (governance, executive management, human resources policy, funding uptake, project collaborations), including national dimensions – to be furthered.	CNR (T2.3, T3.1, T4.1), FSP (T2.1), RCE (T2.4), iCNN, iGA	Sep 23: E-RIHS ERIC Human Resources strategy and Procedures (D3.1) Apr 24: Guidelines for the E-RIHS Central Hub Management Practices (D2.5) Jul 24: E-RIHS Accounting Guidelines for Service Provision Costing (D2.3)
1.10 Strategy on relations with stakeholders	• Comprehensive list of internal/external and primary/secondary stakeholders that could impact and/or be impacted by E-RIHS ERIC, e.g.: MS/AC, public and private users, international organisations, CCI, SMEs, scholars and practitioners, digital service providers and users, general public, etc. • Section on institutions in Countries without a National Node to be featured, as well as a section on enlargement and international organisation participation – to be added. • Section on collaboration with other projects, programmes, organisations, e.g., JPI CH and ARCHE – to be added. • Section on collaboration with digital platforms and initiatives, e.g., ECCCH, EOSC,	CNR (T2.3, T4.1, T6.1, T6.2), CSIC (T6.3), ICCROM (T5.5), MCC (T5.4), UL (T4.1), ZVKDS (T4.2)	Dec 23 (expected): Signed JPI CH and E-RIHS MoU Feb 24 (internal deadline): Stakeholder mapping and analysis May 24: E-RIHS ERIC Access Policy (D5.6), E-RIHS ERIC User Strategy (D5.8), Report on cooperation activities (D6.4) Jul 24: E-RIHS Enlargement Strategy (D4.4)

	SSHOC, Open Science Unit – to be addressed separately. • Section on developing an ongoing process for monitoring transformation in the scientific and political landscapes (e.g., new ERICs) and possible ensuing changes in the stakeholder maps and analyses.		
1.11 Strategy on assets	• Table with planned investment during the start-up phase/full regime: confirmed and expected investment in infrastructure – to be added. • The Central Hub's running costs (i.e., utilities, maintenance, insurance costs) are currently covered by CNR, but it should not be assumed that all expenses are paid by host country/institution and the difference between running and operating costs should be defined – to be further discussed. • Table on investment projections for regional nodes – to be added.	CNR (T2.3, T4.1, T5.1.4), FSP (T2.1), NCU (T2.2), UL (T4.1), ZVKDS with the involvement of RDAB (T4.2), iCNN and iGA	Sep 23: E-RIHS Detailed Rules on Procurement Procedures and Criteria (D3.2) Apr 24: Guidelines for the E-RIHS Central Hub Management Practices (D2.5) May 24: Best Practices and Lessons Learned for Establishing E-RIHS National Node (D2.4); Follow-up of the National Node survey (iCNN), and in particular surveys/gap analysis, also related to funding available for investments (e.g., RRF and structural funds). It is expected that it may not be possible to deliver a reasonably final estimation for those countries where National Nodes/providers are still being negotiated. Jul 24: E-RIHS Accounting Guidelines for Service Provision Costing (D2.3)
2.7 E-RIHS innovation agenda	• Main markets to the section 'Technology drivers' – to be included. • A time-specific activity plan, including DIGILAB setting up – to be added. • Additional emphasis on cultural creativity – to be further discussed.	CNR and FORTH (T1.3) CNRS and FORTH (5.1)	Nov 23: D6.5 Agenda for Smart Future Innovation in E-RIHS from IPERION HS Jun 24: DIGILAB Implementation Plan (D5.1) Also, cross-checking with E-RIHS PP, D9.4 E-RIHS Innovation Agenda
2.0 E-RIHS market positioning	• Portfolio of services and unique data – to be added. • Expert advice; target audiences; forums – to be further discussed.	CNR and UL (T4.1), MCC (T5.4), ICCROM (T5.5)	May 24: E-RIHS ERIC Access Policy (D5.6) May 24: E-RIHS ERIC User Strategy (D5.8) Jun 24: DIGILAB Implementation Plan (D5.1)

	• Setting a user-centred vision for the evolution of E-RIHS's services – to be included. • Simplification of administration procedures (e.g., contract/invoice, currency, reference) – to be revised. • Sample services with access modes – to be added.		
2.10 The E-RIHS brand and branding policy	• ERIC brand modernisation, if needed – to be explored. • Value propositions – to be further discussed. • Promotion and marketing strategy – to be referenced. • Guidelines for the use of the national brand of E-RIHS were introduced in the preparatory phase, including EU funding acknowledgment in National Node websites – to be furthered. • Acknowledge use of ERIC services to demonstrate impact – to be included.	CNR (T6.1 and T6.2), UL (T4.1)	Mar 24: Dissemination, Exploitation and Communication Strategy of E-RIHS ERIC (D6.2) Jul 24: Marketing Strategy for Boosting E-RIHS Services (D4.2)
2.4 User access to E-RIHS services	• Billing and pricing policy section (include payable training/scientific/conference events) – to be added.	CNR and UL (T4.1), FSP (T2.1), MCC (T5.4), ICCROM (T5.5), UCL (T4.3)	May 24: E-RIHS ERIC Access Policy (D5.6) May 24: E-RIHS ERIC User Strategy (D5.8) Jul 24: E-RIHS Accounting Guidelines for Service Provision Costing (D2.3)
3.1 The E-RIHS legal entity	• Additional information on legal entity – to be added in the text the following: (i) Recognition by the host country (Italy) as an international body; (ii) E-RIHS legal personality and extensive legal capacity recognised by all MS without requiring transposition into national law or any national legal instrument; (iii) the info that 'complementing national and intergovernmental schemes, the ERIC Regulation provides a common legal	CNR (T2.3), FSP (T2.1)	Feb 24 (internal deadline): Provision of E-RIHS legal entity details

	framework based on Article 1872 of the Treaty on the Functioning of the European Union (TFEU)'.		
3.3 The general structure of E-RIHS	• Full members list – to be updated.	CNR (T1.1, T2.3 and T4.1), iCNN, iGA	Sep 24: List of the confirmation letters for the ERIC step 2 application received by iGA and iCNN report about National Nodes structures and facilities
4.0 Management and human resources	• Section on talent attraction – to be added.	CNR (T3.1), UCL (T4.3)	Sep 23: E-RIHS ERIC Human Resources strategy and Procedures (D3.1) Jun 24: Revised E-RIHS Training Strategy (D4.5)
4.4 Promoting diversity, including gender equality	• Gender equality and inclusion – to be furthered	CNR (T4.1)	Sep 24: Gender Equality Plan as part of the 'Revised Business Plan' (D4.3)
5.2 Annual fee and in-kind contribution	• Formula for monetary contributions – to be written explicitly. • Glossary on monetary and financial contributions and revenues – to be added. • A typology needed for the management and administration of in-kind contributions – to be included.	CNR (T2.3, T4.1), FSP (T2.1), NCU (T2.2), UL (T4.1), ZVKDS (T4.2), iCNN and iGA	May 24: Best Practices and Lessons Learned for Establishing E-RIHS National Node (D2.4) Jul 24: E-RIHS Accounting Guidelines for Service Provision Costing (D2.3); Marketing Strategy for Boosting E-RIHS Services (D4.2); E-RIHS Enlargement Strategy (D4.4)
5.8 Five-year financial plan	• Financial sustainability plan – to added. • In the 'Growth Plan', the members that are planned to join should be estimated – to be further expanded.	CNR and UL (T4.1), ZVKDS (T4.2)	Jul 24: Marketing Strategy for Boosting E-RIHS Services (D4.2); E-RIHS Enlargement Strategy (D4.4)
6.0 Implementation	• Section on short-term implementation – to be elaborated; • 2024-2029 operational phase – to be added.	CNR (T2.3 and T4.1), CNRS (T5.1), CSIC (T6.3), UL (T4.1), ZVKDS (T4.2), iCNN	Jun 24 (internal deadline): Short-term implementation proposal by T4.1 for discussion with iCNN.
6.1.2 The transition phase to E-RIHS ERIC	• Joint development activities (infrastructure planning, internal research programme and activities for novel enabling technologies) – to be furthered.	iCNN	Jul 24 (internal deadline): Gap analysis on research questions/needs of users completed and priority list of joint research activities from iCNN.

6.2 Timeline/Milestones table	• Milestone table – to be added. • Section on short-term implementation – to be added.	CNR (T4.1 and T2.3), CNRS (T5.1), CSIC (T6.3), ZVKDS (T4.2)	May 24: Report on Cooperation Activities (D6.4) Jun 24 (internal deadline): Short-term implementation proposal by T4.1 for discussion with iCNN Jul 24: E-RIHS Enlargement Strategy (D4.4)
6.3 Key performance Indicators	• Key performance indicators, including target values and timelines, publications – to be completed. • Impact indicators – to be added.	CNR and UCL (T3.4)	Sep 24: E-RIHS Quality System Implementation Plan (D3.5)
6.4 Risk management plan	• Risk management areas – to be further expanded and/or added with a focus on: (i) User engagement related risks; (ii) Human Resource risks; (iii) Risks related to competition for users and resources; (iv) Technical and technological risks; (v) Table on risk management plan – to be updated.	CSIC (T3.3)	Dec 23: E-RIHS Risk Management Strategy (D3.3)
Non-financial Disclosure Annexes	• With respect to enhancing transparency and accountability: non-financial aspects, such as environmental, social, ethical, and governance (ESG) benchmarks as well as details on *inter alia* environmental policies, social responsibility practices, ethics, and inclusion and diversity – to be added.	CNR (T4.1)	Sep 24: as part of the 'Revised E-RIHS Business Plan' (D4.3)

**For ease of reference, the list of participant acronyms and the E-RIHS IP's WPs and tasks are provided in Annex 1.*

3. THE MONITORING AND EVALUATION OF THE E-RIHS IP BUSINESS MODEL

3.1 Background

The ERIC Forum Implementation project developed a self-assessment tool for the qualitative analysis of the *modus operandi* and sustainability outlook of ESFRI RIs[1], which we applied to E-RIHS. The standardised analysis of the responses to the questionnaire has revealed perspectives of the *modus operandi* of E-RIHS, while providing a friendly approach to the logic of the process that transforms this RI's resources into products of value for its stakeholders.

The questionnaire utilised in this assessment is available in Annex 2, while the reference document of the ERIC Forum Implementation project can be retrieved at https://www.eric-forum.eu/wp-content/uploads/ERICForum_Deliverable-4.4_Final_v2.pdf (accessed on 20/10/23).

3.2 The Monitoring of the E-RIHS *Modus Operandi* and Sustainability Model

The monitoring of the E-RIHS business model was carried out, from May to August 2023, through a series of interviews with the Project Coordinator, WP4 leader and other project representatives, aimed at capturing the information requested by the survey template. The data provided in this exercise are the result of a collective effort by the E-RIHS Nodes, through the iCNN. Financial data for the analysis were obtained from the ESFRI survey's funding questionnaire and the internal E-RIHS community survey conducted within 'Task 2.2 Supporting the Establishment of E-RIHS National Nodes'.

GENERAL OBSERVATIONS

E-RIHS was officially included in the ESFRI Roadmap in 2016 as a distributed infrastructure in the scientific domain of 'Social & Cultural Innovation'. Its origin dates back to the early 2000s, when a series of European projects allowed the E-RIHS community to grow and consolidate. The total investment of these EU projects, combined with the investments of some countries participating in E-RIHS, amounts to around 54 million Euros.

[1] The tool was adapted from various previous exercises with research infrastructures (H2020 AssemblePlus project) and Technological Core Facilities (ShareBiotech project). In the ERIC Forum Implementation project, the questionnaire was tested with a survey of 17 RIs on the ESFRI roadmap 2021, of which five in implementation phase, and mainly distributed RIs, from all the ESFRI domains but DIGIT.

As of September 2023, it is not possible to provide a definitive timeline for the establishment of E-RIHS as an ERIC. Despite the fact that the Step 2 application was submitted in March 2023, it is not possible to make definite predictions.

E-RIHS is currently in its implementation phase.

E-RIHS is meant to be a public entity, as it is typical in the ESFRI ecosystem.

E-RIHS mainly focuses on research, education and training, and service provision to both basic and applied research users. Recently, discussions have been initiated to explore the possibility of providing market-driven research services for commercial research users.

The main structures and processes implemented by E-RIHS are:

- multidisciplinary research supported;
- cutting-edge science and technology fully defined;
- user community consolidated;
- formal commitment for funding and role and funding of Central Hub decided.

The main structures and processes that E-RIHS is consolidating are:

- enlargement of membership;
- joint strategies for future developments (the Agenda for Smart Future Innovation, which aligns medium- and long-term priorities, including upgrades/technological developments, is under preparation);
- shared services with other RIs (cooperation with SSHOC in place);
- user strategy (D5.7 in Jul 2023, and D5.8 in May 2024);
- access policy (D5.5 in Sep 2023 and D5.6 in May 2024).

Furthermore, there are activities/structures that E-RIHS is planning to establish, also in the course of, and by means of, this project:

- human resources policy (D3.1 in Sep 2023);
- detailed risk inventory (D3.3 in Dec 2023);
- establishment of the legal entity (Step 2 application submitted in Mar 2023);
- KPIs for operation (D3.4 in May 2023 and D3.5 in Sep 2024);
- communication programme (D6.2 in Mar 2024);
- business plan agreed (Sep 2024);
- cost book (D4.3 in Sep 2024).

Among the benchmark features for RIs in implementation phase, as suggested by ESFRI [ESFRI, Strategy Report on Research Infrastructures – Roadmap 2021. Public Guide, pp. 24 and following], E-RIHS has yet to implement:

- a complete transition to open science principles;
- key executive management and support personnel;
- in-kind contributions fully detailed;
- financial reporting set up.

E-RIHS is in line with the other RIs in the implementation phase (in the ERIC Forum analysis). As it is typical in this phase, E-RIHS still needs to organise its HR structure, both in terms of managers and administration/technical staff. In this phase, as demonstrated by various ERIC experiences, the early appointment of a (interim) director, along with a few support staff units, can significantly enhance the stability during the transition to the ERIC operation phase.

An indicator of the E-RIHS maturity is the existence of a well-established user community, which is unusual in this phase but certainly demonstrates a healthy business case. To align with the EC and ESFRI invitation to open up services to the private sector, as is being done by other ESFRI RIs, E-RIHS is currently exploring the possibility of incorporating market-driven access for commercial users. This exploration is currently under discussion as part of the review and update of the Access Policy and Catalogue of Services, towards incorporating both excellence-science and market-driven access services.

INPUT

The resources that the RIs are inputting into the value-creation process are evaluated in terms of (i) quality of the research teams, (ii) economic resources, and (iii) stakeholders:

The quality of the research teams

E-RIHS is an RI with a multidisciplinary research community like the majority of RIs surveyed by the ERIC Forum (81%). Such a multidisciplinary dimension appears to be a success factor, linked to the ability to react quickly to new challenges and address complex scientific issues, as well as the capacity to satisfy diverse users.

The economic resources

The budget structure of E-RIHS includes both monetary membership contributions and non-monetary (in-kind) membership contributions, EC research funding and private donations. At the moment, access fees from either public or private organisations are not envisaged. While the monetary membership contributions are known as they are part of the Cost book and the Financial Annex presented in March 2023 as part of the Step 2 application to ERIC status, the mechanisms and procedures for accountability of non-monetary (in-kind) membership contributions by the E-RIHS Nodes are still in progress. The survey conducted within T2.2 of E-RIHS IP and participation in the ESFRI survey have offered a preliminary insight into the extent of in-kind contributions, albeit with caution. Considering the above, the budget structure distribution is presented in percentages rather than providing specific values. It is structured as follows: monetary membership contributions (9%), non-monetary (in-kind) membership contributions (47%), EC research funding (37%), private donations (7%).

E-RIHS has some characteristics diverging from the average of the sample RIs analysed in the ERIC Forum Implementation project, which are typical for RIs in the implementation phase. In fact, while E-RIHS has a low share of monetary membership contributions (9%) but unlike most other RIs enjoys a high income from private donations (7%); the average RI in the ERIC Forum sample has a higher budget proportion of monetary membership contributions (37%), equal non-monetary membership contributions (31%), some revenues from access fees, ca. 5%, and a much lower share of private donations (3%). It is to be noted that the in-kind contributions may be currently overestimated by the E-RIHS Nodes due to the lack of specific procedures and rules for the accountability of such type of contributions. Moreover, the EC research funding could significantly fluctuate over time and have an impact on the contributions, nevertheless, these fluctuations do not alter the comparison information with the other ERICs mentioned above.

From the point of view of service provision, and partially due to the absence of legal entity status, access fees are not charged. At the same time, another sign of the organisation's evolving status is the ongoing development of a user access policy. This policy is under development, drawing from the access policy used in previous EC projects, and will be refined to ensure its suitability for long-term ERIC needs.

In its development, increasing monetary membership contributions can contribute to the stability of operations, with dedicated personnel and agility to overcome potential shortages of EC funding, users or donations.

The main stakeholders

The E-RIHS stakeholders are both public (representing national, regional and EU level interest) as well as private (representing non-profit entities such as foundations and associations, and commercial organizations). Currently, commercial organisations, which include some Small-Medium Enterprises (SMEs) – show a lower level of engagement compared to other types of stakeholders. It is important to highlight that, at present, the majority of stakeholders are European. Nevertheless, as E-RIHS evolves into a global RI, we anticipate a growth in the number of non-EU stakeholders.

PROCESS

Governance

While E-RIHS is a research infrastructure in the implementation phase, and still needs to develop its user interfaces, it has put in place some interim boards that represent future ERIC governance levels. These boards include the decision-making body, which is the (interim) General Assembly (iGA) comprising representatives of Country members and observers, and the scientific body, which is the (interim) Committee of National Nodes (iCNN) consisting of heads of operations at the national level. As for the interim executive management, which comprises the General Director and central support staff, formal appointments have not yet been made. At present, E-RIHS IP, along with the Project Coordinator and management staff, is handling some of these executive functions, awaiting further guidance to be provided by the iGA. On the other hand, the operation of access activities is carried out through the IPERION HS integrating activities project. A Scientific and Ethics Advisory Board is envisaged in the E-RIHS ERIC governance, but it has not been established yet. While there are no provisions for establishing an innovation committee, E-RIHS is developing a multi-level strategy called the Agenda for Smart Future Innovation, which aligns medium- and long-term priorities, including upgrades/technological developments. An in-house research programme is not yet developed and will require internal discussion.

Capacity - Human Resources (HR)

In terms of human resources, an analysis of full-time equivalent staff working in the RI identified 549 staff members at National Nodes (including Sweden, which has expressed interest in becoming an observer, as well as Norway and Denmark, which have provided data as they are interested in joining the ERIC, even though they have not yet formalised their interest in becoming a member or an observer). However, all of these are in-kind contributions – therefore the proportions or percentage of staff directly employed, seconded and/or with service agreement cannot be identified, as is also the case for the roles that they cover (technicians, early-career researchers, established researchers, administrative staff, managers, e.g.: heads of units, top level managers). At this moment, the personnel working towards the setting up of the E-RIHS ERIC is not formally recruited by the ERIC, given the lack of legal entity, and does not have any formal mandate by the interim boards of the currently operating E-RIHS governance. People are instead in place thanks to of EU-funded grants, and Italian national project funding for the Central Hub hosted by Italy/CNR.

HR policy, strategy and procedures have been prepared in September 2023, but E-RIHS ERIC Staff Rules, which will also include working conditions and career development prospects, and the regulation of secondments, including in-kind contributions recognition, will be part of subsequent deliverables, respectively D2.5 'Guidelines for E-RIHS Central Hub Management Practices' (Apr 2024) and D2.3 'E-RIHS Accounting Guidelines for Service Provision Costing' (Jul 2024).

Capacity - Infrastructure and equipment

The infrastructure is maintained through public funding (90%), all the equipment is in service agreement; none is owned. In the future, the need of owning servers located at the Central Hub will be evaluated.

Main activities and research programmes

In terms of the main activities carried out by E-RIHS, service provision, research projects, education and training are the most important and implemented.

Service provision is exclusively through scientific-excellence-driven access and the use of three physical platforms (ARCHLAB, FIXLAB, MOLAB); there is a virtual platform in construction (DIGILAB) for wide-driven access; discussions are ongoing for the gradual introduction of limited commercial (market-driven) access.

In terms of training, E-RIHS provides doctoral summer schools, training camps, webinars and lecture-series through the HS Academy. The main activities linked to training are training for users, providers, managers and researchers from across the Nodes and more widely. This will be further elaborated in D4.5 'Revised E-RIHS Training Strategy' (Jun 2024).

Discussions are underway to explore expanding the service portfolio, which may provide a more flexible approach to the user demand.

Monitoring - Key Performance Indicators (KPIs)

Performance indicators for E-RIHS which are being transferred from project level experiences include the number of excellent competitive research projects which are submitted and selected for access services (5 – top priority, according to the categories and scale provided in the submitted questionnaire: see question n. 48 in the Annex 2), user satisfaction and quality/SOPs-Standard Operating Procedures (4 – high priority), publications (3 – medium priority), and IP generation (2 – medium priority). All of these KPIs have already been implemented and may be variable to change with respect to priority rating.

Units of access, as a quantitative indicator have always been at the forefront of quality monitoring for reckoning the demand to access services and actual access provision efforts in E-RIHS. Considering the inherent mission of an ERIC; as well as the economic benefits of calibrating the units of usage, this KPI remains essential. Being an RI based on scientific excellence, E-RIHS will also be more driven for the delivery of research publication outputs as a reflection of impact of internal research activities and access services (considered 3 – medium priority but very likely to change).

Other KPIs such as annual turnover, staff retention and number of service contracts are not less important but are still to be implemented. It is expected that the priority of the KPIs for E-RIHS will

become increasingly personalised as the research infrastructure operates and establishes itself in its new lifecycle phase in the upcoming years.

Service provision

In terms of service provision, E-RIHS has a booking system for the services on offer, but there is no pricing policy in place as the access is provided for free as excellence-driven access and the market-driven access has not yet been initiated. The most important services that E-RIHS offers are access to RI facilities, training and research services. However, there are services that E-RIHS does not yet offer as they are not of interest or not connected to the core business, which are housing and logistics. **The services that could be strengthened are data-related. This type of service could even have a strong internal market, and be supported by public funds, in relation to the relevance of Open Science and FAIR-data practices for the new EU ERA, and the role advocated by the EC for ESFRI RIs to be among the champions for the implementation of the European Open Science Cloud (EOSC) initiative.** From a commercial perspective, consultancies could also be offered, towards commercial users as well as public users, although the offering to public users needs to be explored in more detail.

OUTPUT

Non-financially evaluated products

In terms of peer-reviewed publications, the past three years are not a significant time period to be considered mostly due to the issues caused by Covid-19 for the EC-funded project IPERION HS, which provides transnational access to some of the facilities of the future E-RIHS ERIC platforms. This suggests that the average yearly figure of seven scientific publications[2] is not representative. E-RIHS considers that its long-term scientific impact builds on the previous EU projects (Labs-Tech, EU-ARTECH, CHARISMA, IPERION CH and currently IPERION HS) and highlights a total of 345 publications with over 4,873 citations (Clarivate WOS consulted on the 28th of August 2023)[3]. On the other hand, papers citing E-RIHS are relatively few, as expected from the early stage of development of the RI. **The establishment of a brand and the shaping of the access policy shall facilitate the recognition of the RI in the research product generation and ultimately provide an instrument to measure some dimensions of its impact.**

The number of graduate/postgraduate students using the RI's training offer, in the last three years, is 85 students, through summer school and training camps.

24 students, either as PI or part of user groups, have requested IPERION HS research services, on average, yearly. The number of those obtaining access is circa 40%, i.e.: 10 students yearly.

[2] Of the seven publications mentioned above, three are from external users (the other four refer to Joint Research Activities and/or internal research of partner structures).

[3] This data is not collected regularly as part of the quality implementation for the IPERION HS project but will instead be present in the partners' regular E-RIHS quality audit evaluation.

Financially evaluated products

At the moment, financially evaluated products are limited to training and contract research, followed by IP and licensing. Access to facilities as well as to data, and the creation of spin-offs are under-represented because, among other cultural reasons, a guiding policy is missing. **A marketing strategy shall be defined (D4.2, Jul 2024) in order to build a culture of also producing financially evaluated products, to the extent desirable.**

3.3 The Evaluation of the E-RIHS *Modus Operandi* and Sustainability Model

We have inserted all the elements measured above and related considerations, in the RI business model representation of Figure 1. The colours of the various elements indicate the level of expression of each element (green: the element is positively expressed; red: the element is marginally or not-at-all expressed; yellow: the element is partly expressed).

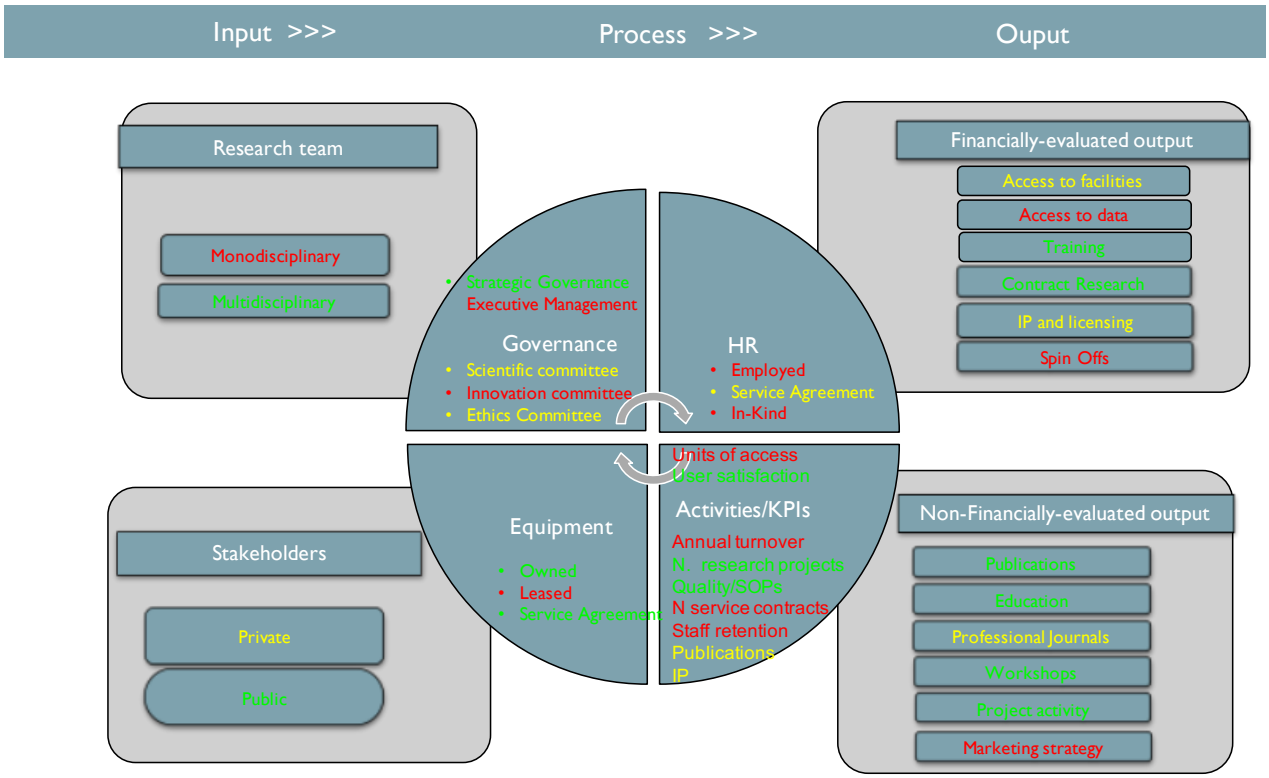

Figure 1: E-RIHS *Modus operandi* and sustainability model.

Analysing the 'Input-process-output' system of E-RIHS (Figure 1), it can be observed that the sustainability model has the following peculiarities:

- E-RIHS is characterised by **multidisciplinary teams, implying the availability of different resources and inter-links between different capacities, with the ability to approach research questions from different perspectives**. This can represent a great benefit for the entire organisation and for the overall output capacity of the RI ecosystem.
- In terms of sustainability and solid structure, E-RIHS is in the implementation phase, similarly to others involved in the ERIC Forum (in the ERIC Forum analysis about 29.4% of the interviewed RIs). The most important implemented features of RI in implementation phase are

multidisciplinary research and catalogue of services, which are also the same for E-RIHS although catalogue of service must be updated to the new partnership configuration of the ERIC. E-RIHS adds to the structure and processes implemented also cutting-edge science and technology fully defined, user community consolidated, formal commitment for funding and role and funding of Central Hub office decided. **E-RIHS represents a rather consolidated organisation even if it is still in the implementation phase.**

- In the governance sphere, E-RIHS is quite mature, with some of the governance boards, which mirror the planned future E-RIHS ERIC governance structure, currently operating in an *interim* capacity. These boards include the (interim) General Assembly and (interim) Committee of National Nodes. Even if E-RIHS IP, along with the Project Coordinator and management staff, is handling some of these executive functions, the appointment of an *interim* executive management, which comprises of a General Director and central support staff, is yet to be achieved. **A timely appointment of the executive management would facilitate a smooth transition and strengthen the resilience and overall sustainability of E-RIHS during this delicate shift to the operational phase**.
- There is a degree of uncertainty regarding the establishment of the HR capacity in E-RIHS. Currently, no member of staff has been formally assigned to a role in the ERIC, namely within the mandate of the *interim* governing bodies. While a policy, procedure, and strategy have been prepared, further discussion is required to construct frameworks for (i) staff rules (Apr 2024), (ii) for personnel seconded, or provided in-kind (Jul 2024) and (iii) the staffing plan. This situation differs with the findings of the ERIC Forum analysis, which, however, encompasses ERICs already in the operational phase, with established legal status and the capacity for hiring, regulating secondments, and accounting in-kind contributions. According to the analysis, **ERICs, on average, have 63% of HRs permanently employed, 26% seconded, and 27% provided in kind. This benchmark could provide valuable insights for structuring the human resources capacity of E-RIHS**.
- In terms of the main activities carried out by the RIs, E-RIHS is aligned with all the other RIs; **in addition to research, training and education, service provision is also strongly expressed**.
- With respect to outputs, the non-financially evaluated results are robustly present, with the most important outputs regarding publications and networking activities, this latter including the training of students, project activities and workshops. At the moment, financially-evaluated products are limited to training and research contracts, followed by IP and licensing, at the Node level. Paid access to facilities should be refined with an adequate policy aligned with the ERIC long-term requirements, while access to data is currently under-represented due to the ongoing development of a digital access platform. The creation of spin-off ventures is not presently a key consideration, given that E-RIHS operates within a predominantly public sector, and a relevant guiding policy is lacking. **A marketing strategy shall be defined in order to build a culture of producing financially evaluated products, to the extent desirable**.
- On the other hand, quality monitoring effort fail **to include KPIs from some ESFRI categories** regarding: Facilitating economic activities; Optimising data use and FAIR-data management practices. Immediate integration of KPIs for annual turnover, staff retention and number of service contracts **should be considered important performance dimensions directly relating to the RI's operations.**

4. LESSONS-LEARNED FROM THE ESFRI SURVEYS AND THE ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) PRINCIPLES

4.1 Lessons-learned from the ESFRI Surveys

Since March 2023, E-RIHS has actively participated in a series of surveys launched by ESFRI as part of their monitoring system. These surveys have proven to be invaluable in assessing the current state of E-RIHS, highlighting important lessons-learned and challenges, which have an impact on the future E-RIHS Business Plan. The identified issues include the need of establishing robust and commonly accepted procedures for accounting incomes and expenses of the E-RIHS National Nodes to the ERIC. They also encompass the financial impact of inflation and rising costs due to factors such as energy crises, COVID-19 pandemic, logistical and distribution challenges. Additionally, they address access procedures, collaboration with other initiatives, the aspiration of E-RIHS to become a global research infrastructure, and the significance of a comprehensive evaluation of its impact beyond its scientific dimension.

It follows a concise overview of key lessons-learned. Sometimes, these insights offer supplementary and complementary information to what has been highlighted in the survey, thereby reinforcing its evidence. In other instances, they reveal new insights. These observations have also contributed to inform the SWOT analysis and shape the roadmap for the E-RIHS ERIC Business Plan (see Chapters 5 and 6 below, respectively).

Procedures for accounting incomes and expenses. E-RIHS relies on multiple sources, including membership fees, in-kind contributions, regional, national and European-funded projects, private donations as well as various funding instruments through different National Nodes. These sources cover both fixed and variable operating costs. Standardised guidelines are crucial for efficient resources management, while inconsistencies may arise from the varying readiness levels of National Nodes. These challenges will be addressed in two forthcoming deliverables: E-RIHS Accounting Guidelines for the Service Provision Costing (D2.3, Jul 2024) and Best Practices and Lessons Learned for Establishing E-RIHS National Node (D2.4, May 2024).

Inflation and rising costs. Insights from IPERION HS suggest potential challenges for E-RIHS ERIC operations, including inflation, energy, and supply issues due to global challenges like COVID-19, and geopolitical crises. FIXLAB costs have risen by 25%, prompting energy-saving measures. MOLAB faces increased travel costs due to fuel prices and inflation. Inflation also impacts personnel costs, and shipping delays might hinder equipment-related access opportunities. To mitigate future ERIC operation issues, a strong access management policy, including the exploration of remote access, is crucial to maintain the effectiveness for user access (D5.6 E-RIHS ERIC Access Policy, May 2024). To address inflation, particularly during the initial phase of E-RIHS as an ERIC and in the context of establishing the Central Hub and hiring personnel, we are actively exploring solutions that facilitate the smooth operation of ERIC without an immediate need for an increase in monetary membership contributions from ERIC members as this negotiating process takes time and requires approval from ERIC members. These considerations will be thoughtfully incorporated into the E-RIHS ERIC Cost-book revision as part of the comprehensive update of the E-RIHS Business Plan.

Collaboration with other key initiatives. E-RIHS acknowledges the EC call for long-term collaboration. Accordingly, E-RIHS collaborates with the JPI CH and the ARCHE project, in anticipation of the EU Partnership on Resilient Cultural Heritage, pending approval in the Horizon Europe's second Strategic Plan. This includes bolstering E-RIHS's user strategy and promoting facility use in JPI CH/EU partnership research projects. Additionally, E-RIHS is exploring the integration of activities linked to EU partnerships, aiming to establish more structured cooperation between E-RIHS and the forthcoming EU partnership. Meanwhile, E-RIHS is actively reinforcing its collaboration with EOSC, actively participating in the SSHOC cluster, and has the potential to play a pivotal role in the development of the ECCCH, its activity being aligned with the development of E-RIHS DIGILAB.

E-RIHS as a global research infrastructure. E-RIHS ambition to expand as a global research infrastructure is based on its potential to promote cross-cultural dialogue and contribute to science and cultural diplomacy, potentially fostering positive diplomatic relations. Achieving this goal involves exploring how to include non-European countries within the ERIC framework, with legal considerations currently underway based on ERIC Regulations. The global enlargement of E-RIHS is also currently impacted by the global socio-political tensions affecting bilateral and multilateral relationships. Additionally, E-RIHS has initiated internal discussions on support measures to assist conflict-impacted and post-conflict areas.

E-RIHS impact assessment. The inclusion of the impact assessment is vital for evaluating the broader implications and effects of the research infrastructure, providing insights essential for informed decisions to enhance and optimize E-RIHS' long-term sustainability. In 2020, E-RIHS already commissioned a cost-benefit analysis and a socioeconomic impact assessment. With the revision of the E-RIHS Business Plan, an emphasis is placed on extending E-RIHS' impact beyond the scientific dimension towards developing a sustainability impact assessment. Thus, such holistic perspective is reinforced by integrating Environmental, Social, and Governance (ESG) principles into the revision of the Business Plan, enhancing E-RIHS overall effectiveness and its contribution to the scientific community and society.

4.2 The Environmental, Social, and Governance Principles

The application of the ESG approach empowers E-RIHS ERIC to align its strategies and operations with global priorities, thereby contributing to the Sustainable Development Goals (SDGs) of the 2030 Agenda and its post-2030 phase, for which ongoing discussions are exploring the incorporation of culture and cultural heritage in a more visible position (e.g., goal), thereby further strengthening E-RIHS commitment to sustainable development. ESG criteria serve as crucial benchmarks to assess E-RIHS sustainability within the context of the so-called **'triple transition' concept, encompassing environmental, digital, and social aspects**. They encompass societal impacts, inclusivity, responsibility towards citizens and territories, as well as ethical corporate management practices. They are pivotal for monitoring and fostering the commitment to the sustainability of E-RIHS and for creating enduring value for all stakeholders, including users, employees, suppliers, and communities. Hence, ESG reporting will be incorporated into the Business Plan as an integral component of E-RIHS systematic endeavours to address, and contribute to the solution of, global challenges.

5. STRATEGIC PERSPECTIVES FOR THE E-RIHS BUSINESS PLAN UPDATE

Reflecting on the considerations that have emerged from:

- Gap analysis of the current E-RIHS PP business plan, against (i) the current phase of development of E-RIHS, and (ii) some benchmark examples of ERIC business plans,
- Evaluation of the E-RIHS IP business model, in comparison with more mature instances of ERICs,
- Contemporary policy environment as well as global and regional challenges, in relation to most recent EC policy challenges and related research programme implementation,
- Growing or emerging relevance of principles and practices related to Open Science, FAIR digital objects production, and ESG,

a SWOT analysis has been elaborated, along with some recommendations, which should underpin the modernisation of the E-RIHS sustainability model and its short-medium term Business Plan.

Table 2: SWOT Analysis of the E-RIHS Strategic Business Planning Capacity

Strength	Financial resources, Multidisciplinary team, Governance, User community, Value proposition.
Weakness	Lacking HR for executive management and personnel; lacking HR Staff Rules, including procedures for secondments and in-kind; very limited (FAIR) data-related services; low monetary contributions by members; absent marketing strategy; low output of financially evaluated products; KPI needing alignment with operational E-RIHS ERIC.
Opportunity	ECCCH-readiness, EOSC-readiness, EU Partnerships, Green Deal-readiness, ESG-principles adoption; branding.
Threat	Changing policy environments at the national and EU level, overall inflation, increasing energy costs, changing insurance schemes, and exacerbation of global challenges (e.g. wars, climate change and extreme events, and the emergence of new epidemics).

In summary, the following elements should be considered for strategic attention:

- Executive management and personnel, HR staff rules;
- Reviewing the E-RIHS performance monitoring and evaluation framework to include and integrate relevant operation-related KPI: the annual turnover, the number of service contracts and staff retention index;
- Additional, non-traditional KPIs should further be added to put this establishing ERIC at the forefront of the policy challenges of our time, i.e.: monitoring the adoption of the Open Science and FAIR-data principles and practices (EOSC-readiness); enabling the involvement in the European Collaborative Cloud for Cultural Heritage (ECCCH-readiness);

- Environmental, Social, and Governance (ESG) principles should be included in the management of E-RIHS, also towards the ERIC's Green-deal readiness;
- Networking could be expanded beyond the traditional ESFRI RI ecosystem towards the EU partnership initiatives, of which the co-funded Resilient Cultural Heritage and the co-programmed EOSC partnerships would be of primary relevance;
- In terms of output, dedicate efforts towards some financially evaluated outputs, in particular regarding the determination of a good policy in the area of access, also identifying appropriate access-fee policies;
- Devoting efforts towards a marketing strategy.

6. ROADMAP TO THE E-RIHS ERIC BUSINESS PLAN 2024-2027

The process of the E-RIHS Business Plan revision will require diverse inputs, as outlined in Table 3 in the order of their planned delivery. The Table 3 also includes already submitted deliverables that are currently accessible to inform the development of the 'Revised E-RIHS Business Plan' (D4.3).

The drawing of the E-RIHS ERIC Business Plan 2024-2027 will take place within the narrower T4.1 participants. This process will involve active discussions with E-RIHS IP partners, incorporating contributions from iCNN, and maintaining close communication with iGA through the E-RIHS IP project coordinator, as outlined in the T1.1 Project governance and harmonisation.

The deliverable 'Revised E-RIHS Business Plan' (D4.3), due in month 24 (Sep 24) will be eventually submitted for approval to the iGA.

Table 3: Timetable of The Delivery of inputs to the E-RIHS Business Plan, including already accessible deliverables

Date	Deliverable/activity
Sep 23	• E-RIHS ERIC Human Resources strategy and Procedures (D3.1) • E-RIHS Detailed Rules on Procurement Procedures and Criteria (D3.2)
Dec 23	• Signed JPI CH and E-RIHS MoU
	• E-RIHS Risk Management Strategy (D3.3)
Feb 24	• Provision of E-RIHS legal entity details • Stakeholder mapping and analysis
Mar 24	• Draft of the 'Revised E-RIHS Business Plan', excluding executive summary (see Milestone 7 of the project) • Dissemination, Exploitation and Communication Strategy of E-RIHS ERIC (D6.2)
May 24	• Best Practices and Lessons Learned for Establishing E-RIHS National Node (D2.4) • E-RIHS ERIC Access Policy (D5.6) • E-RIHS ERIC User Strategy (D5.8) • Report on cooperation activities (D6.4) • Follow-up of the National Node survey (iCNN), and in particular surveys/gap analysis, also related to funding available for investments (e.g., RRF and structural funds)
Jun 24	• Revised E-RIHS Training Strategy (D4.5) • DIGILAB Implementation Plan (D5.1)

	• Draft of the services to be provided in the E-RIHS ERIC Catalogue of Services • Short-term implementation proposal by T4.1 for discussion with iCNN
Jul 24	• E-RIHS Accounting Guidelines for Service Provision Costing (D2.3) • In-kind contribution framework as part of E-RIHS Accounting Guidelines for Service Provision Costing (D2.3) • Marketing Strategy for Boosting E-RIHS Services (D4.2) • E-RIHS Enlargement Strategy (D4.4) • Gap analysis on research questions/needs of users completed and priority list of joint research activities from iCNN • Executive summary of the Revised E-RIHS Business Plan
Sep 24	• E-RIHS Quality System Implementation Plan (D3.5) • List of the confirmation letters for the ERIC step 2 application received by iGA and iCNN report about National Nodes structures and facilities • Gender Equality Plan • Non-financial Disclosure Annexes • Presentation of the 'Revised E-RIHS Business Plan' (D4.3) to iGA, for discussion and approval

7. REFERENCES

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ANNEX 1

List of E-RIHS IP Paticipants

ATOMKI:	Atommagkutató Intézet
CNR:	Consiglio Nazionale delle Ricerche
CNRS:	Centre National de la Recherche Scientifique
CSIC:	Agencia Estatal Consejo Superior de Investigaciones Científicas
CYI:	The Cyprus Institute
FORTH:	Foundation for Research and Technology Hellas
FSP:	Fondation des Sciences du Patrimoine
HERCULES:	Universidade de Evora
ICCROM:	International Centre for the Study of the Preservation and Restoration of Cultural Property
INOE:	Institutul Național de Cercetare-Dezvoltare pentru Optoelectronică - INOE 2000
KIK-IRPA:	Koninklijk Instituut voor het Kunstpatrimonium
MCC:	Ministère de la Culture et de la Communication
NCU:	Uniwersytet Mikolaja Kopernika W Toruniu
NG:	The National Gallery
RCE:	Ministerie van Onderwijs, Cultuur en Wetenschap-Rijksdienst voor het Cultureel Erfgoed
UCL:	University College London
UL:	Univerza v Ljubljani
UM:	L-Università ta' Malta
ZVKDS:	Javni Zavod Republike Slovenije Za Varstvo Kulturne Dediščine

List of WPs and related tasks of E-RIHS IP

WP1 PROJECT MANAGEMENT AND COORDINATION
Task 1.1 Project governance and harmonisation
Task 1.2 Project monitoring and reporting
Task 1.3 Commitment to responsible science
Task 1.4 Synergies with IPERION HS
WP2 GOVERNANCE AND STRUCTURE OF E-RIHS
Task 2.1 E-RIHS regulatory framework for the relationship between the National Nodes and the ERIC
Task 2.2 Supporting the establishment of E-RIHS National Nodes
Task 2.3 Setting up the Central Hub

Task 2.4 Updating the E-RIHS Rules of Procedures
WP3 PREPARING OPERATIONAL DOCUMENTS OF E-RIHS
Task 3.1 Human resources policy, strategy and procedures
Task 3.2 Procurement policy, strategy and procedures
Task 3.3 E-RIHS risk management
Task 3.4 Implementing the E-RIHS quality system
WP4 SUSTAINABILITY OF E-RIHS
Task 4.1 Revising E-RIHS business plan and developing a marketing strategy
Task 4.2 E-RIHS enlargment strategy
Task 4.3 Training of RI access providers and managers
WP5 ACCESS AND DIGITAL SERVICES OF E-RIHS
Task 5.1 Steps towards building DIGILAB
Subtask 5.1.1 Modelling of data creation processes
Subtask 5.1.2 Steps towards the definition of a digital twin for heritage assets
Subtask 5.1.3 Typology of services and types of access
Subtask 5.1.4 Simulating the use and costing of a selection of key DIGILAB services
Subtask 5.1.5 Preparing the Data Management Plan for E-RIHS ERIC
Task 5.2 Preparing the first Catalogue of Services of E-RIHS ERIC
Task 5.3 Upgrading the E-RIHS Catalogue of Services online platform
Task 5.4 Updating and upgrading the Access Policy
Task 5.5 Updating and upgrading the User Strategy
WP6 COMMUNICATION, DISSEMINATION AND COOPERATION
Task 6.1 Communication strategy and implementation
Task 6.2 Dissemination and exploitation strategy and implementation
Task 6.3 Strengthening E-RIHS cooperation on the EU scene and beyond

ANNEX 2

E-RIHS IP Modus Operandi and Sustainability Model – Survey Questionnaire

ERAMARIS
di Ilaria Nardello
FROM RESEARCH TO BUSINESS

E-RIHS IP - Modus Operandi and Sustainability model

Survey Questionnaire

The following questionnaire was presented to E-RIHS IP, in June 2023, to monitor and evaluate their current Modus Operandi and Sustainability model. It was adapted from "Nardello, (2023), Report and proposal for a model sustainability plan for ERICs, ERIC Forum Implementation Project (Deliverable 4.4)". [1]
For disambiguation of terminology in this questionnaire, please refer to:

- http://roadmap2018.esfri.eu/strategy-report/the-esfri-methodology/
- http://roadmap2018.esfri.eu/projects-and-landmarks/
- https://www.esfri.eu/sites/default/files/ESFRI_Roadmap2021_Public_Guide_Public.pdf

The questionnaire is articulated in four main blocks, including:

- General data (the questions in this section can be omitted in case of self-assessment)
- Input
- Process
- Output
  - Economically evaluated output
  - Non-Economically evaluated output

General Data (This section can be omitted in case of self-assessment)

1. What is the name of the infrastructure?

2. What type of RI is this?
   - Single sited
   - Distributed
   - E-infrastructure
   - Don't know/cannot answer
   - Other, please explain (free text)

3. What is the scientific domain of your RI?
   - Energy Environment

[1] https://www.eric-forum.eu/wp-content/uploads/ERICForum_Deliverable-4.4_Final_v2.pdf

- Health & Food
- Physical Sciences & Engineering
- Social & Cultural Innovation
- Data, Computing and Digital Research Infrastructures
- Don’t know/cannot answer

4. At what point in the lifecycle is your research infrastructure? (Please refer to: https://www.esfri.eu/sites/default/files/ESFRI_Roadmap2021_Public_Guide_Public.pdf)

- Design
- Preparation
- Implementation
- Operation
- Termination
- Don't know/cannot answer

5. If your RI is in the design phase, which of the following characteristics apply? (Tick all that apply)

- Long term programme defined
- Scientific community established
- Developed European user community
- Initiative in synergy with existing national or international facilities
- Communication network
- Letter of intent signed/agreements with partners
- Scientific leadership, project manager
- Staff profiles identified
- Budget available for design study
- Knowledge on financial, technological risks
- Don't know/cannot answer

5b. If your RI is in the preparatory phase, which of the following characteristics apply? (Tick all that apply)

- Vision and mission
- Feasibility tested
- Cutting edge science and technology
- Geographical distribution defined
- Positioning in the RI landscape defined
- Ability to attract businesses, industries, public services
- Scientific-user community identified
- Commercial-user community identified
- Services linked with scientific-user needs
- Services linked with commercial-user needs
- Access policy defined
- Inter-institutional and multilateral agreement with partners
- Feasibility study successfully completed

- Plan for preparation and implementation
- Measurable and satisfactory KPIs
- Human resources policy
- Governance structure designed
- Financial commitment by lead/host country
- Clear and estimated costs In-kind contribution policy Don't know/cannot answer

5c. If your RI is in the implementation phase, which of the following characteristics apply? (Tick all that apply)

- Multidisciplinary research supported
- Cutting edge science and technology fully defined
- Geographical distribution consolidated
- Joint strategies, common services with other RIs
- Ability to develop an open innovation culture established (a document exist to define the approach)
- Ability to develop an open science culture established (DMP of ERIC to be completed, D5.2, May2024)
- User community consolidated
- Catalogue of services (needs to be updated according to new configuration of the partnership)
- User strategy consolidated (D 5.7; Jul 2023-May 2024)
- Access policy approved (D5.5; Jul 2023-May 2024)
- Role and funding of Central office decided
- Business plan agreed (Sep. 2024)
- Communication programme (D6.2; Mar 2024)
- Legal entity established (ERIC Dec 2023; National registration: by April 2024)
- KPIs for operation defined (D3.4: May 2023 - Sept 2024)
- Key managers and staff
- Human resources policy (D3.1, June 2023)
- Formal commitment for funding
- Cost book (D4.3, Sep2024)
- In-kind contributions fully detailed
- Financial reporting set up (only through projects))
- Detailed risk inventory established (d3.3. Dec 2023)

5d. If your RI is in the operation phase - has it one, some or all of these characteristics? (Tick all that apply)

- Identity consolidated Multidisciplinary frontier achieved
- Geographical distribution of members consolidated/expanding
- Cutting-edge of science and technology consolidated
- New user communities involved
- Private users involved
- Common access management plan (?)
- Agreements with service providers signed

- Budget for financial support by all countries defined
- Staff for operation and management recruited
- Funding for operation secured
- Budget accounting in place
- Appropriate risk management
- Don't know/cannot answer

6. Year of inclusion of the RI as a Project on the ESFRI roadmap? (definition of "Project" according to: http://roadmap2018.esfri.eu/projects-and-landmarks/): 2016

7. Year of the establishment of the RI as a legal entity in the form of an ERIC or other legal entity form (if applicable)?
NO

8. Year of RI termination/dissolution?
[definition of RI termination: http://roadmap2018.esfri.eu/strategy-report/the-ESFRI-methodology/]
N/A

9. What were the main objectives/nature of this RI at the onset? (Tick all that apply)
- Research
- Service provision for basic scientific research users
- Service provision for applied/commercial research users
- Education
- Don't know/cannot answer
- Other (please comment)

10. What are the main objectives of this RI now? (Tick all that apply)
- Research
- Service provision for basic scientific research users
- Service provision for applied/commercial research users
- Education
- Don't know/cannot answer
- Other (please comment)

2.0 INPUT

11. What is the nature of this RI? (Tick all that apply)
- Private Public
- Public-Private Partnership
- Don't know/cannot answer

12. What is the legal structure of this RI (Tick all that apply)
ERIC

National not for profit organization (e.g. Association, Foundation, other)
International not for profit organisation (e.g. Association, Foundation, other)
Don't know/cannot answer
Other, please specify

13. What is the RI Annual Budget, in millions of EUR? (including both monetary and non-monetary contributions)

14. What is the budget structure of this ERIC, in percentages? (Please, enter the numeric value without % sign. The choices need to add up to 100%)

- Monetary membership contributions
- Non-Monetary (in kind) membership contributions
- EC research funding
- Access Fees from Public organisations
- Access Fees from Private organisations
- Private Donations (e.g. by Charities)

15. What is the cost structure of this RI? (Please, enter a numeric value without % sign. The choices need to add up to 100%)

- Employed HR (cost of staff, including only employed personnel)
- In-Kind HR (cost of staff, including only personnel employed at any RI-Member's institutions and providing services to the RI in lieu of monetary contributions)
- Indirect Costs (all expenses incurred for materials, services and maintenance necessary for the operation of the business. Example of these can be the rents of the offices in which the company operates; utility costs (electricity, water, telephone, internet, heating); administrative costs; the costs of shared equipment.)
- Other Direct Costs (These are costs strictly related to the constructions of the ERIC. Examples are: purchase of equipment - depreciation or leasing fee; purchase of consumable materials; supply of services - catering, translations and interpreting, rent meeting rooms, cost of external auditor, support services; missions of structured and non-structured personnel, specific costs such as TNA.

16. Is this RI integrated into a wider (eco)system? (Tick all that apply)

- A strategic forum of RIs
- Science cluster
- Industry Cluster
- Thematic Network
- University
- EU partnership
- Don't know/cannot answer
- Other (please comment)

17. Are the RI internal research teams monodisciplinary or multidisciplinary?

- Monodisciplinary

- Multidisciplinary
- Don't know/cannot answer

18. Which of the following are the main stakeholders for your RI? (Tick all that apply)
    - Public – National Level (e.g.: Universities, Public Agencies)
    - Public - Regional Level
    - Public - EU Level (EC)
    - Private not for profit entities (e.g.: foundations, associations, etc)
    - Industry – Small Medium Enterprises (SMEs)
    - Industry - Large Enterprises (LEs)
    - Industry - Large Enterprises (Multinational Enterprises - MNEs) Don't know/cannot answer

2.1 Governance

20. Does this RI have a dedicated Management Board?
    - Yes
    - No
    - Planned to be implemented
    - Don't know/cannot answer

21. Does this RI have a General Director?
    - Yes
    - No
    - Planned to be implemented
    - Don't know/cannot answer

22. Does the RI have a dedicated internal Scientific Committee?
    - Yes
    - No
    - Planned to be implemented
    - Don't know/cannot answer

23.Does the RI have an Advisory Committee on Innovation/Applied Research/Industrial engagement?
    - Yes, regular meetings, at least once a year
    - Yes, meetings are scheduled ad hoc
    - Not yet, but planned
    - Other (please specify)

3. Process

3.1Governance

24. Does the RI have a strategic planning document?
- Yes
- No
- Don't know/cannot answer

25. Is access to the research infrastructure and its services regulated?
- Yes
- No
- Don't know/cannot answer

26. Does the RI have an in-house research programme?
- Yes
- No
- Don't know/cannot answer

27. How is the infrastructure maintained or upgraded? (Please rank the options provided)
- Public Funding not applicable
- Private funding/donors not applicable
- Sharing infrastructures with other entities not applicable

28. What is the percentage of the RI major scientific equipment which is owned or leased with the respect to the total that is in use? Please insert a number (without the '%' sign), to represent a percentage; the total should sum up to 100
- Owned
- Leased
- Service Agreement

29. General comments on the Governance of this RI (Optional)

3.2 Management

30. How many Full Time Equivalent staff are working in the RI? (Enter a number)

31.What is the proportion of HR directly employed/seconded/in- kind/service agreement? (Please enter a numeric value without % sign. The choices need to add up to 100 [%], value between 0 and 100 must be entered in every row)
- Directly employed
- Seconded
- In kind
- Service agreement

32. What are the roles covered by the RI staff?

(Please enter a numeric value without % sign. The choices need to add up to 100 [%], value between 0 and 100 must be entered in every row)

- Technicians
- Early-career researchers
- Established Researchers
- Administration Staff
- Managers (e.g. Heads of Unit
- Top-level managers (e.g.: Directors of Section, General Director)

33. What is the percentage of staff employed on a permanent or temporary contract?
(please insert a number, the various answer should sum up to 100)

- Permanent contracts:
- Temporary contracts

34. What is the percentage of the permanent staff's time exclusively dedicated to service provision for either internal or external users?

35. Did you create incentives for researchers involved in service-provision activities?

- Yes
- No
- Don't know/cannot answer Other (please specify)

36. How simple or difficult is it to hire/dismiss permanent personnel from this RI?
(Please, scale from 1 - very easy, to 5 - very difficult)
1 - Very easy; 2 – Easy; 3 Neither easy nor difficult; 4 - Difficult; 5 - Very difficult.

37. Does the RI generate IP?

- Yes
- No
- Don't know/cannot answer Other (please specify)

38. When the RI generates IP, is this IP typically protected?

- Yes
- No
- Don't know/cannot answer Other (please specify)

39. General comments on the Management of this RI (Optional)

3.3 Activities

42. What are the main activities of this RI?
(Please, tick all that apply)
Service provision Research projects Education Training

Don't know/cannot answer

43. Does the RI have an internal research programme?
Yes No
Don't know/cannot answer

44. Please indicate the Technology Readiness Levels which the RI provides support for?
(TLR - https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-annex-g-trl_en.pdf),
TRL 1-3 (basic research)
TRL 4-6 (R&D for feasibility studies and prototyping)
TRL 7-9 (R&D for commercialisation)
Don't know/cannot answer

45. Does the RI have a specific personnel unit for business development?

- Yes, less than 1 Full Time Equivalent
- Yes, equal of more than 1 Full Time Equivalent Not yet
- No and not even planned

46. Is the disciplinary area of this RI very specific?

- Yes
- No
- Don't know/cannot answer

47. General comments on this Section “Activities”
(Optional)

3.4 Monitoring

48. What are the top five Key Performance Indicators (KPIs) for this RI?
(please, rank in term of relevance, from 1- lowest priority to 5- top priority)

- Units of access
- User satisfaction
- Publications
- IP
- Annual turnover
- Number of research projects
- Quality/SOPs
- Number of service contracts
- Staff retention

49. General comments on the Monitoring of this RI
(Optional)

ERAMARIS

3.5 Service Provision

50. Does the RI have a booking system for the services on offer?
- Yes
- No
- Don't know/cannot answer

51. How beneficial in terms of career perspective is it considered working in this RI?
(Rank from 1 - very little to 5 - very much)
1 - Very little 2 - Little 3 - Medium 4 - Much 5 - Very much

52. What services does this RI offer? (Tick all that apply)
- Access to RI facilities (e.g.: research platforms, specialised labs, etc.),
- Training
- Housing
- Logistics (seminar rooms, lecture halls, others..)
- Biological resource
- Research services
- Data
- Ecosystem access
- Consultancy
- Don't know/cannot answer

53. Does the RI have a transparent pricing policy for the service offer?
Yes;
No;
Don't know/cannot answer.

54. General comments on the Service Provision of this RI
(Optional)

4 OUTPUT

4.1 Financially-evaluated output

55. Do you know the market price of the services offered by this RI?
- Yes; No; Don't know/cannot answer; Other (please specify)

56. Do you have a pricing strategy?
- Yes; No; Don't know/cannot answer; Other (please specify)

57. Do your prices vary depending on the user?
- Yes; No; Don't know/cannot answer; Other (please specify)

58. What is the cost model for the RI's service offer?

- Full Economic Cost
- Cost recovery
- Operation at a loss
- Don’t know/cannot answer
- Other (please specify)

59. Which of the following Technology Transfer pathways are more frequently utilised in this RI? (Please, rank in terms of most frequent pathways by dragging them towards the top)
- Patents
- Licensing
- Spin outs
- Contract research and consultancy
- Collaborative research
- Secondment
- Joint supervision of students with industry
- Networks
- Don't know/can't answer

60. Does the RI have dedicated staff for marketing and communication?
- Yes; No; Don't know/cannot answer

61. Is the RI open for external access?
- Yes; No: Don't know/cannot answer

62. If applicable, what is the nature of the RI external users. Please provide approximate percentage distribution.
- (Please enter values between 0 and 100 in every row; the choices need to add up to 100 [%], value between 0 and 100 must be entered in every row)
- EU users from public sectors
- EU users from industry sectors
- International (non-EU) users from either the public or industry sector
- Other
- Other type of external users, please specify:

64. If applicable, who are the RI private/non science users? (Please enter values between 0 and 100 in every row; the choices need to add up to 100 [%], value between 0 and 100 must be entered in every row)
- Micro/startups
- Small/Medium Enterprises (SMEs)
- Large Enterprises (LEs
- Multinational Enterprises (MNEs)

65. If applicable, where are the RI private users from? (Please enter % value. The choices need to add up to 100 [%], value between 0 and 100 must be entered in every row)

- Regional
- National
- EU
- International

66. Does the RI require a fee for the services offered?
Yes; No; Don't know/cannot answer; Other, please comment

68. General comments on the Economic Output of this RI
(Optional)

4.2 Non- financially evaluated output

69. Average yearly number of peer-reviewed publications, in the past three years

70. Average yearly number of peer-reviewed publications by external users acknowledging this RIS, in the past three years

71. Average yearly number of data/metadata sets which become available, in the last three years
(Enter a number)

72. Average early number of conferences where results obtained through the use of the RI facilities are presented, in the past 3 years

73. Average number of graduate/postgraduate students using RI training offer, in the last 3 years

74. Average number of graduate/post-graduate students accessing RI services, in the last 3 years

75. Do you require that the RI is acknowledged in scientific publications/reports, when results are obtained through the use of the RI?
Yes; No; Don't know/cannot answer

76. What is the percentage of your services which are offered for free?