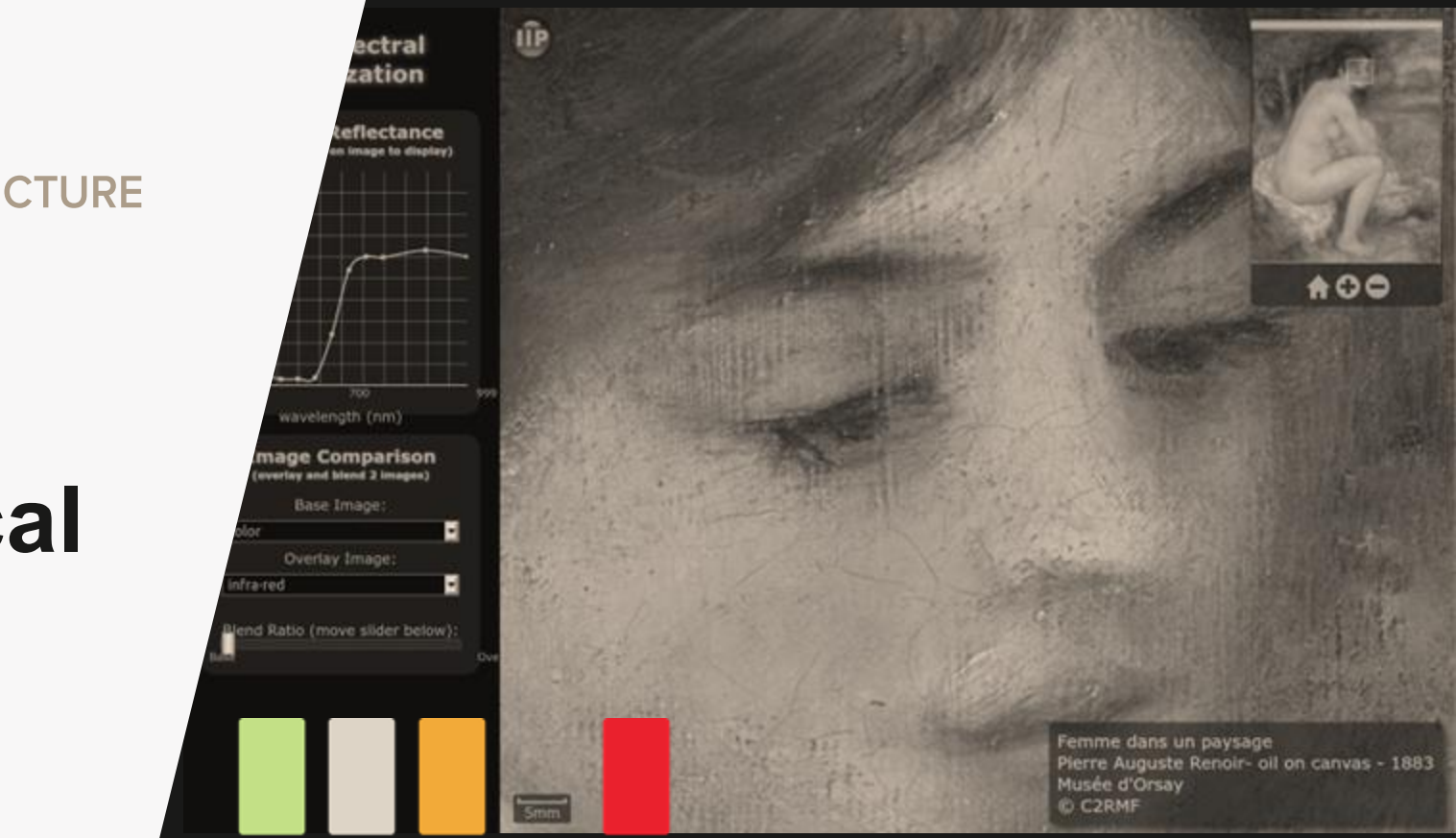
E-RIHS
EUROPEAN RESEARCH INFRASTRUCTURE
FOR HERITAGE SCIENCE

E-RIHS: From Physical to Digital Services. Evolving Access Pathways



Vania Virgili
CNR, ISPC
Director General of E-RIHS ERIC

UCL, 10 July 2025
NSHF

E-RIHS
EUROPEAN RESEARCH INFRASTRUCTURE FOR HERITAGE SCIENCE

ERIC ESTABLISHED ON 28 MARCH 2025

Commission Implementing Decision (EU) 2025/709 of 28 March 2025 setting up the European Research Infrastructure for Heritage Science (E-RIHS ERIC) (notified under document C(2025) 1838)

HSAcademy

ICCROM

ACCESS
Physical and virtual access to laboratories, data, and collections

TRAINING
Interdisciplinary and cross-sectoral #HSAcademy

R&D
Driven by a co-creation process

PROTOCOLS AND STANDARDS
Open science and FAIR principles.

INTERNATIONAL COOPERATION

IMPACT
Research, innovation, society

HERITAGE SCIENCE IN THE DIGITAL AGE

Drawing on diverse **humanities, sciences and engineering disciplines**, heritage science is an umbrella term encompassing all forms of scientific inquiry into human works and the combined works of nature and humans that are of value to people. Heritage science focuses on enhancing the understanding, care, sustainable use and management of tangible and intangible heritage to enrich people's lives today and in the future.

E-RIHS

Digital Innovation in heritage

OPPORTUNITIES

Long-term preservation of fragile materials

Global access for researchers and the public

Data reuse and interoperability across platforms

Cross-institutional and international collaboration

Broader audience engagement via digital storytelling

Cultural heritage kept alive and relevant

CHALLENGES

Fragmented and incompatible data formats

Restricted access due to licensing or poor discoverability

Lack of shared metadata and standards

Technical and organizational silos

Complexity of digital preservation and risk of obsolescence

Need for sustainable policies and infrastructure

E-RIHS

Interdisciplinary and Hybrid RI

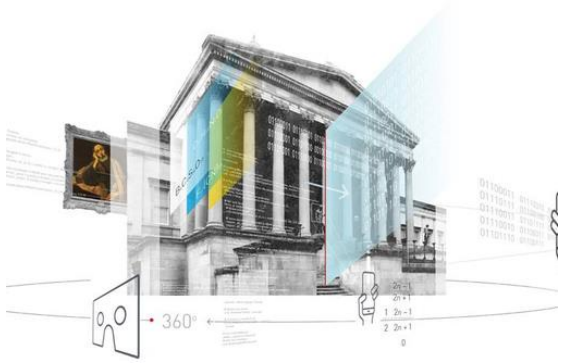
Catalogue of Services (CoS)

Unique access point
https://catalogue.e-rihs.eu/login

ARCHLAB

FIXLAB

MOLAB



DIGILAB

Access Policy

- Excellence-driven access
- Wide access mode
- Market-driven access mode
- Matchmaking services
- Thematic calls

Co-Creation

- Access
- R&D to enhance service offers

Cooperation

ECCCH (ECHOES)
SSHOC and EOSC
GRAPHIA project

E-RIHS

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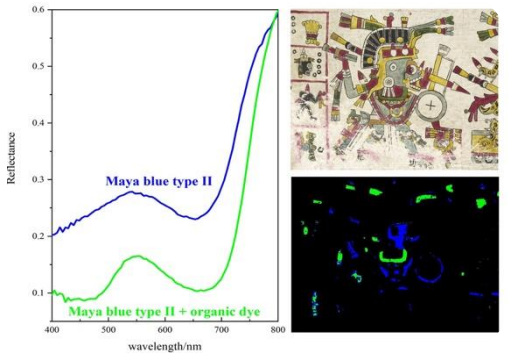
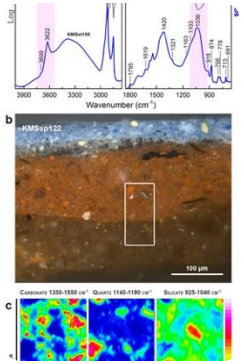
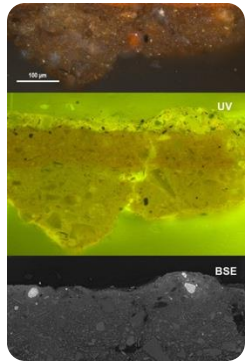
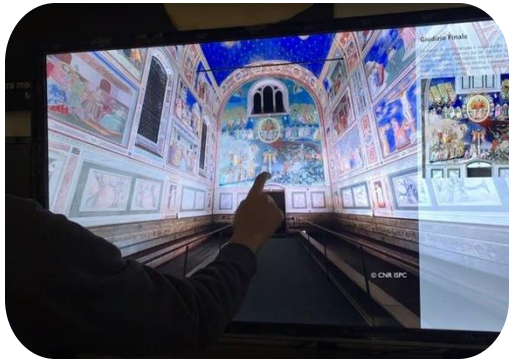
THE NEW PLATFORM

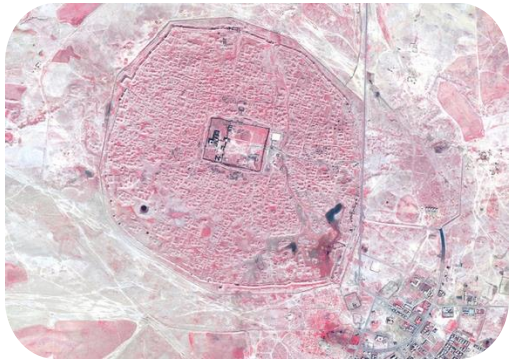
data and digital tools for creating new heritage science knowledge

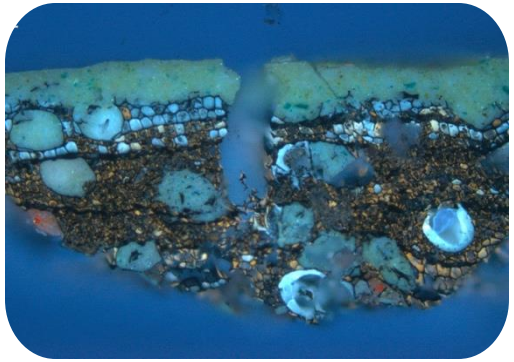












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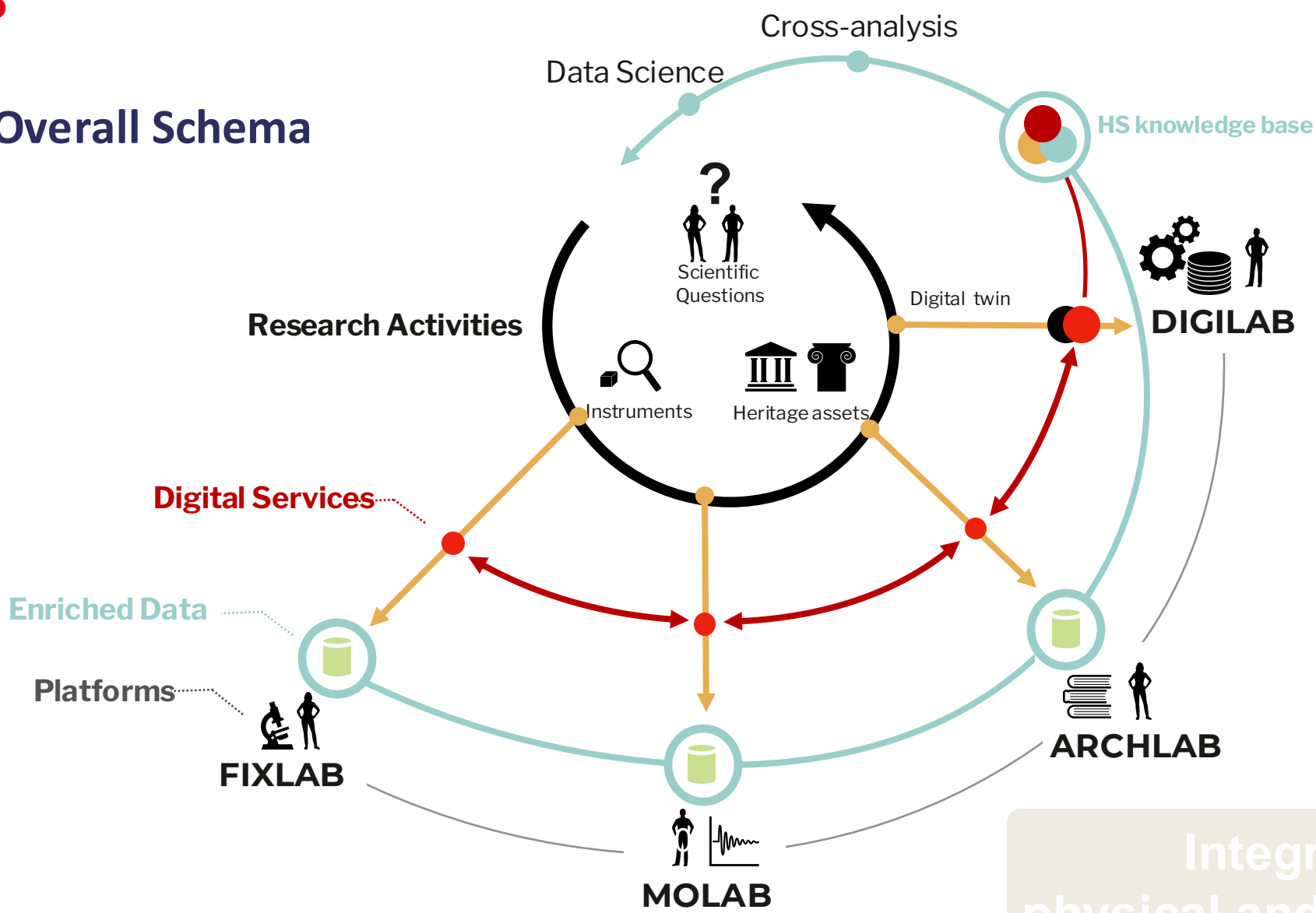
DIGILAB Overall Schema



Integration of physical and digital access

Ref: Livio De Luca, Anaïs Guillem. DiGILAB Implementation Plan. E-RIHS IP PROJECT MEETING, E-RIHS, European Research Insfrastructure for Heritage Science, Sep 2024, Florence (IT), Italy. ⟨hal-04708517⟩

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DIGILAB's aim: To actively promote and disseminate digital tools and services that not only support but also conduct Heritage Science research autonomously

Foundational Aims

To produce and integrate data representing the **complex physical and semantic features of heritage objects** from multiple disciplinary perspectives, as generated by E-RIHS-related scientific processes

To ensure the **maintenance and accessibility** of digital data and processes over time, supporting preservation and re-use of data.

To build **an open and adaptable socio-technical system** that evolves with user needs, enabling continuous improvement and service adaptation

Key Elements for Implementation

Digital twins. Bridge tangible (or intangible) heritage objects and their digital representations, structuring data and related knowledge.

Data production and continuous enrichment. Support the generation, enhancement, and analysis of data across ARCHLAB, FIXLAB, MOLAB and DIGILAB

Research protocols. Combine heritage objects, scientific questions, and instruments within a unified framework.

Ref: Livio De Luca, Anaïs Guillem. DiGILAB Implementation Plan. E-RIHS IP PROJECT MEETING, E-RIHS, European Research Insfrastructure for Heritage Science, Sep 2024, Florence (IT), Italy. ⟨hal-04708517⟩

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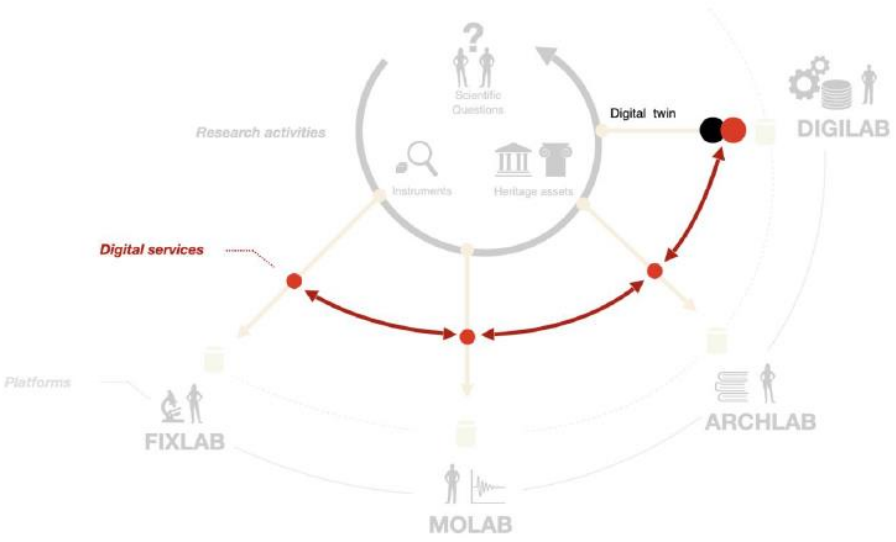
From Physical Artefacts to Digital Intelligence: E-RIHS and the Digital Twin Vision



Semantic-Enriched Digital Twins: E-RIHS DIGILAB supports the creation of digital replicas enriched with scientific data and historical context.

Data Continuum: Ensures digital twins evolve through reuse, enrichment, and contextual updates across time and projects.

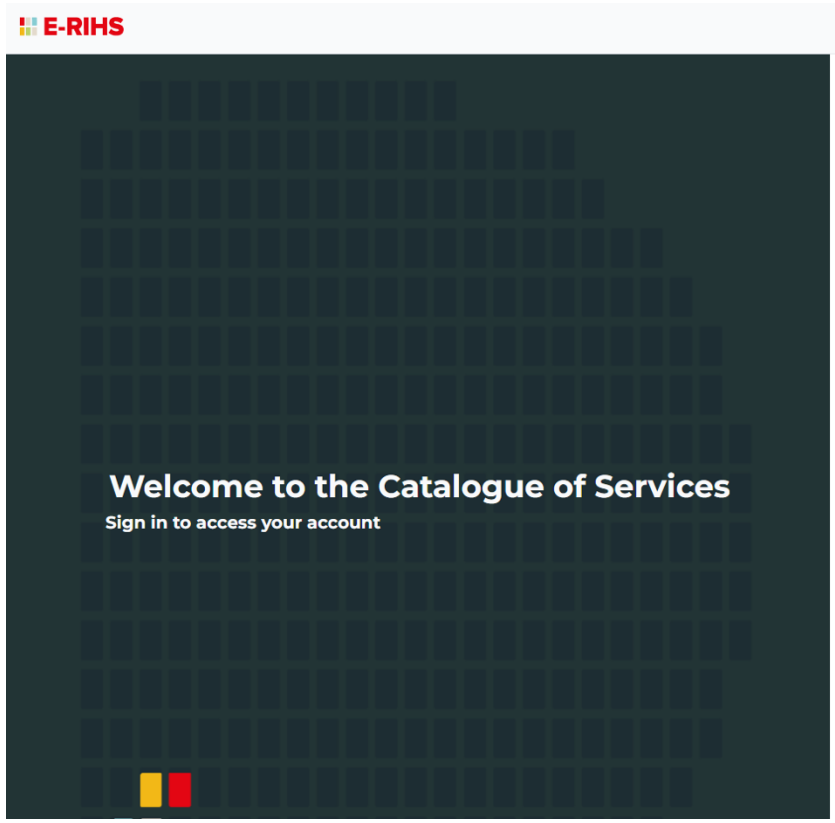
Collaborative Ecosystem: Bridges physical labs (MOLAB, FIXLAB, ARCHLAB) with virtual platforms for data-driven cultural heritage research.

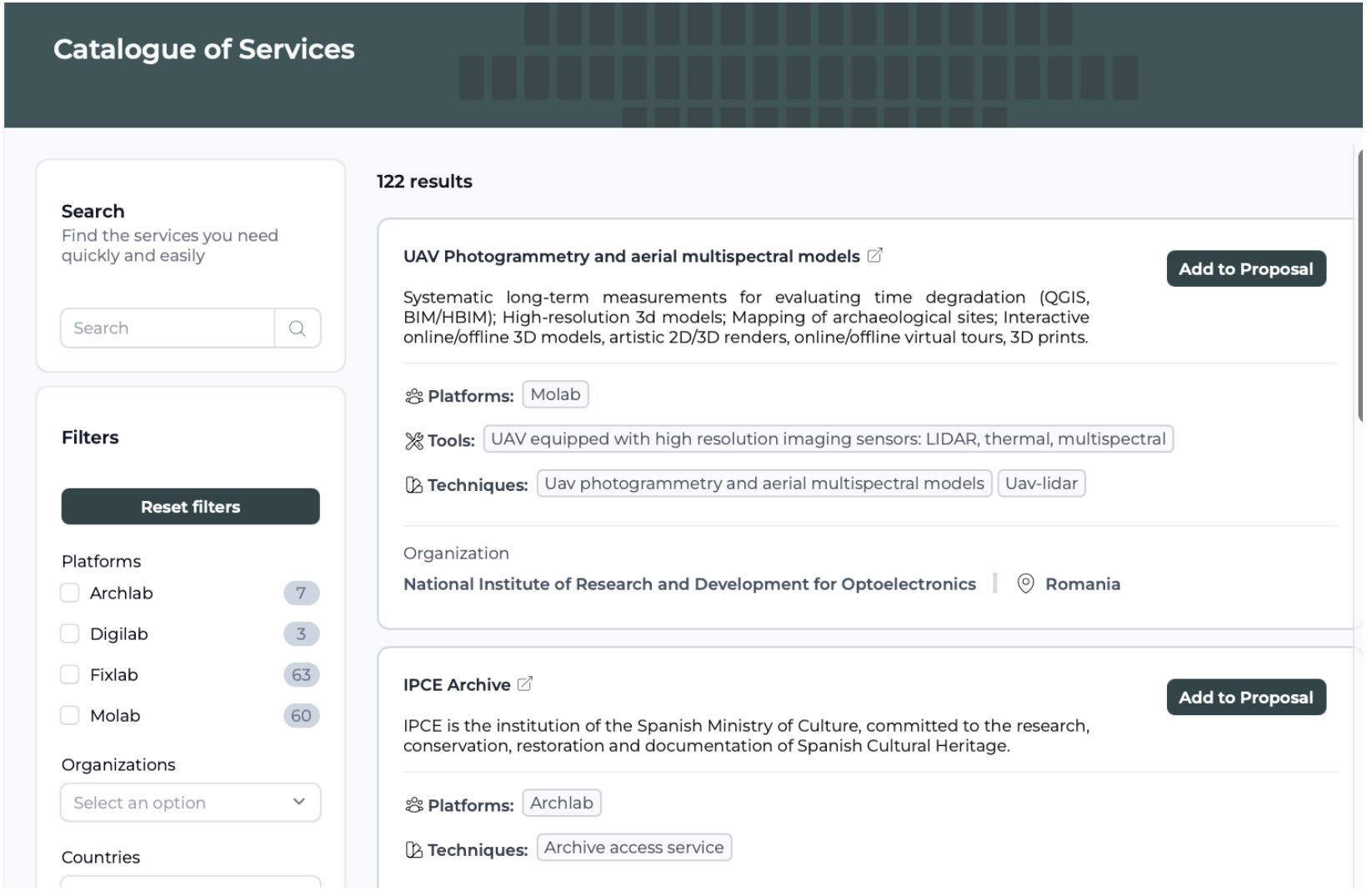
https://zenodo.org/records/13622848

E-RIHS

Unique access point
https://catalogue.e-rihs.eu/login

Currently >100 services





OPENING: 30 June 2025
DEADLINE: 30 September 2025

E-RIHS.it

DIGILAB Service: ATON

Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA
Consiglio Nazionale delle Ricerche

3D semantic annotations
including free-form volumetric shapes

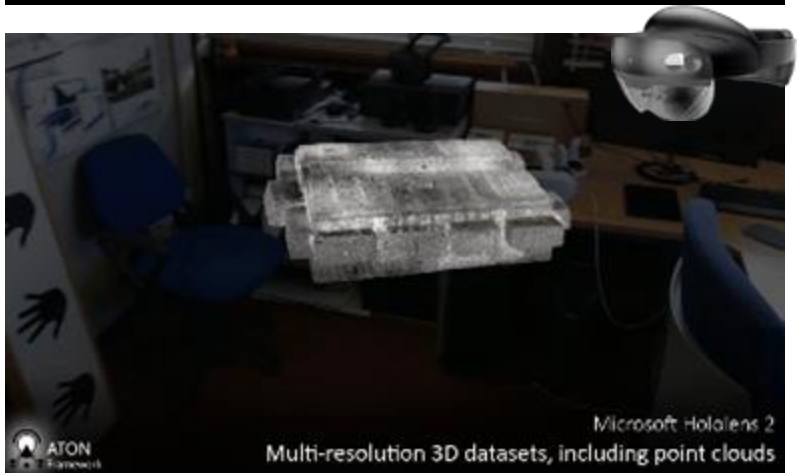
Measurement tool

Navigation modes
orbit, first-person, device-orientation and immersive VR

Immersive VR/AR
for 3DOF and 6DOF devices

Spatial UI
3D labels, media panels, buttons, etc.

Real-time synchronous collaboration
multi-user sessions

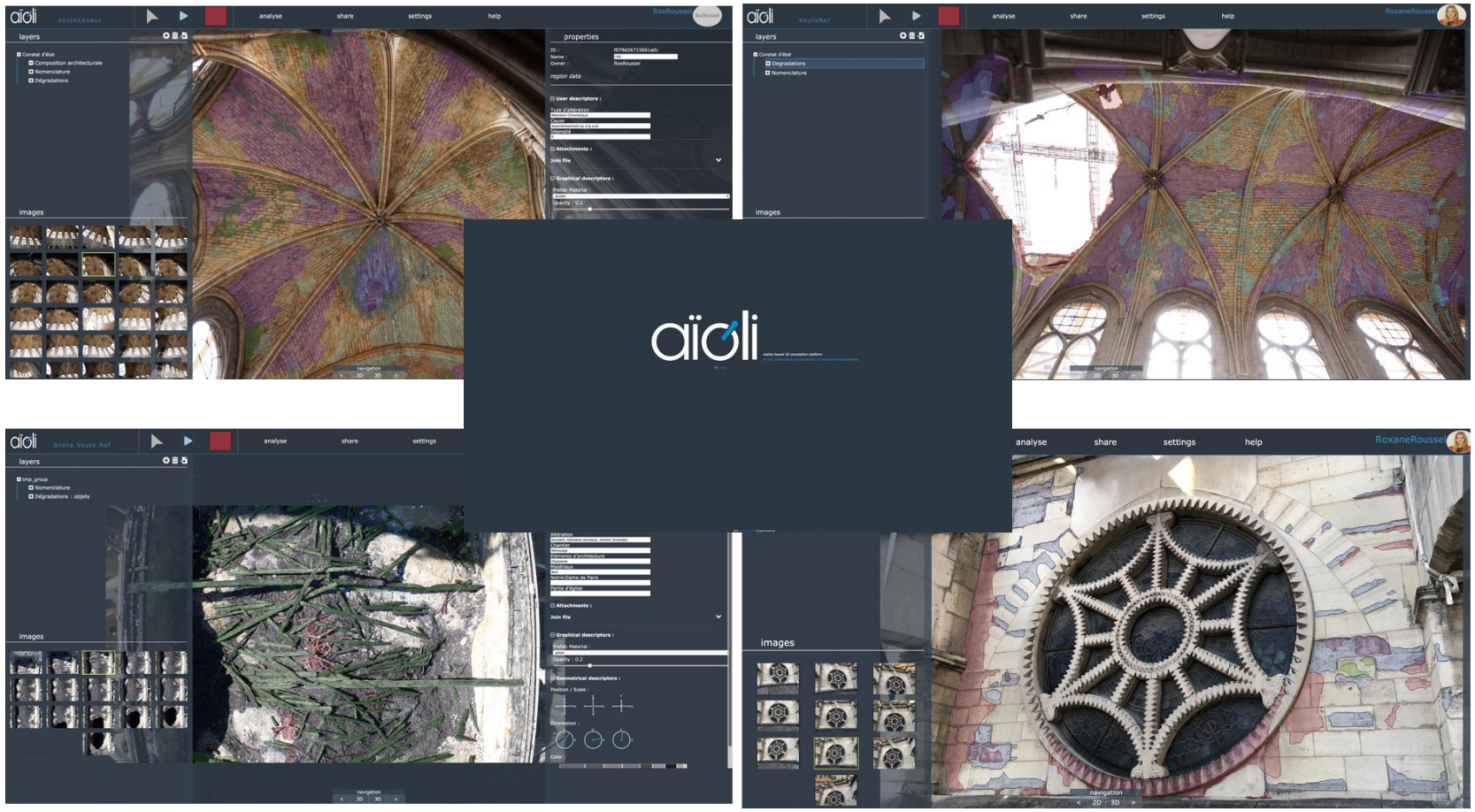


H2IOSC
Humanities and cultural Heritage Italian Open Science Cloud

E-RIHS.fr

aioli.espadon

2D/3D semantic annotation platform for the collaborative documentation of CH



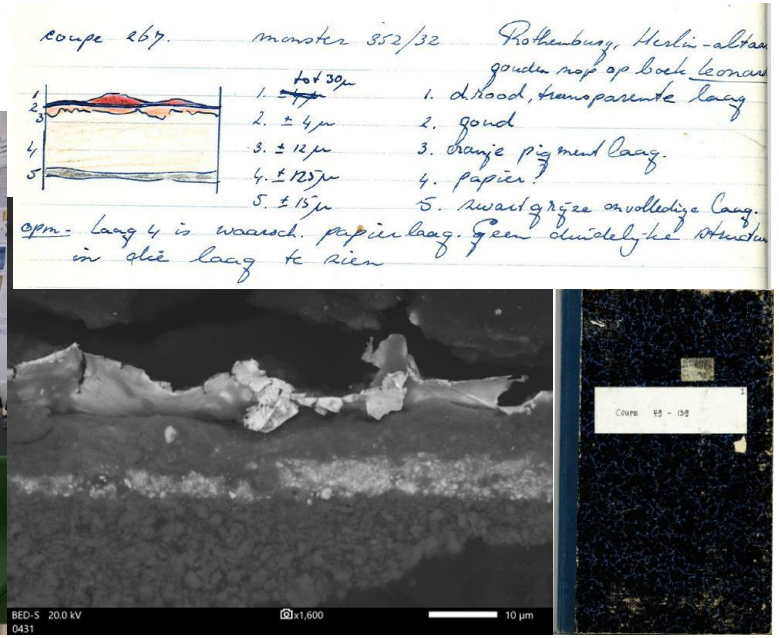
- 3D spatialization of 2D images
- 2D/3D annotation layers
- Configurable qualitative descriptors
- Thesaurus terms (OpenTheso)
- Additional multimedia resources
- Computed geometrico-visual descriptors

E-RIHS

AORUM:

Analysis of gold and its uses as a painting material, end 15th – mid-17th c.

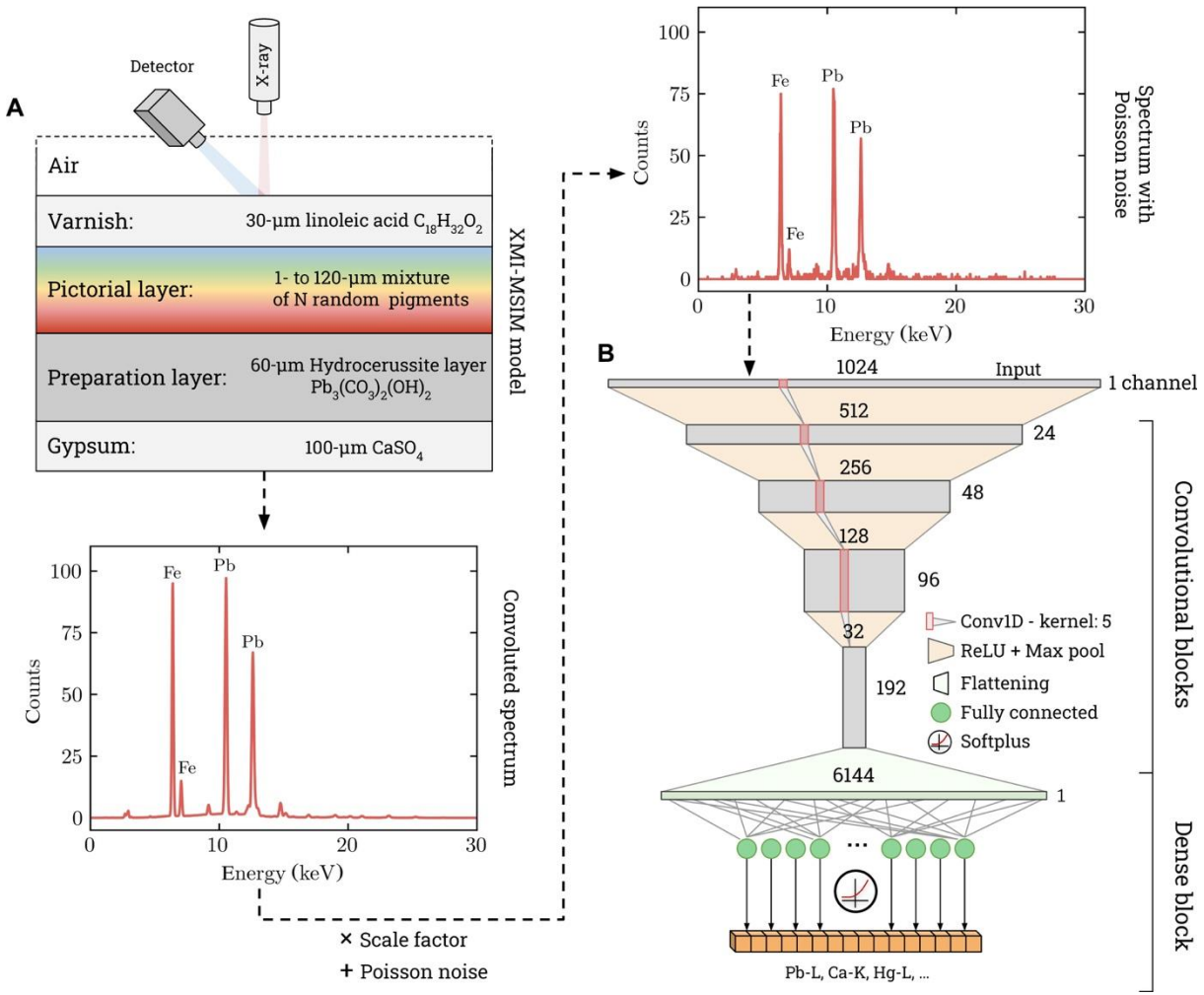
RCE Archives, Netherlands



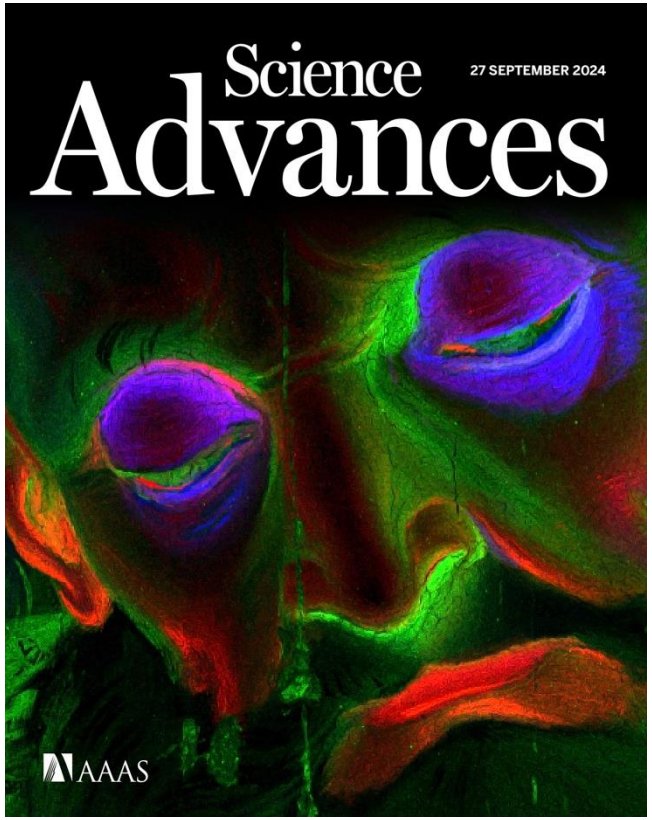
Instituto del Patrimonio Cultural de España

HTTPS://AORUM.HYPOTHESES.ORG/

Deep learning for enhanced spectral analysis of MA-XRF datasets of paintings



God the Father, 1500-1501
(wood panel, 110x73 cm)
Raphael
Museo di Capodimonte
Naples



Z. Prisler et al., Sci. Adv. 10, eadp6234 (2024)

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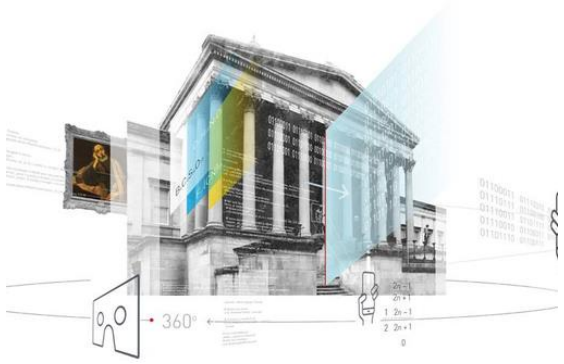

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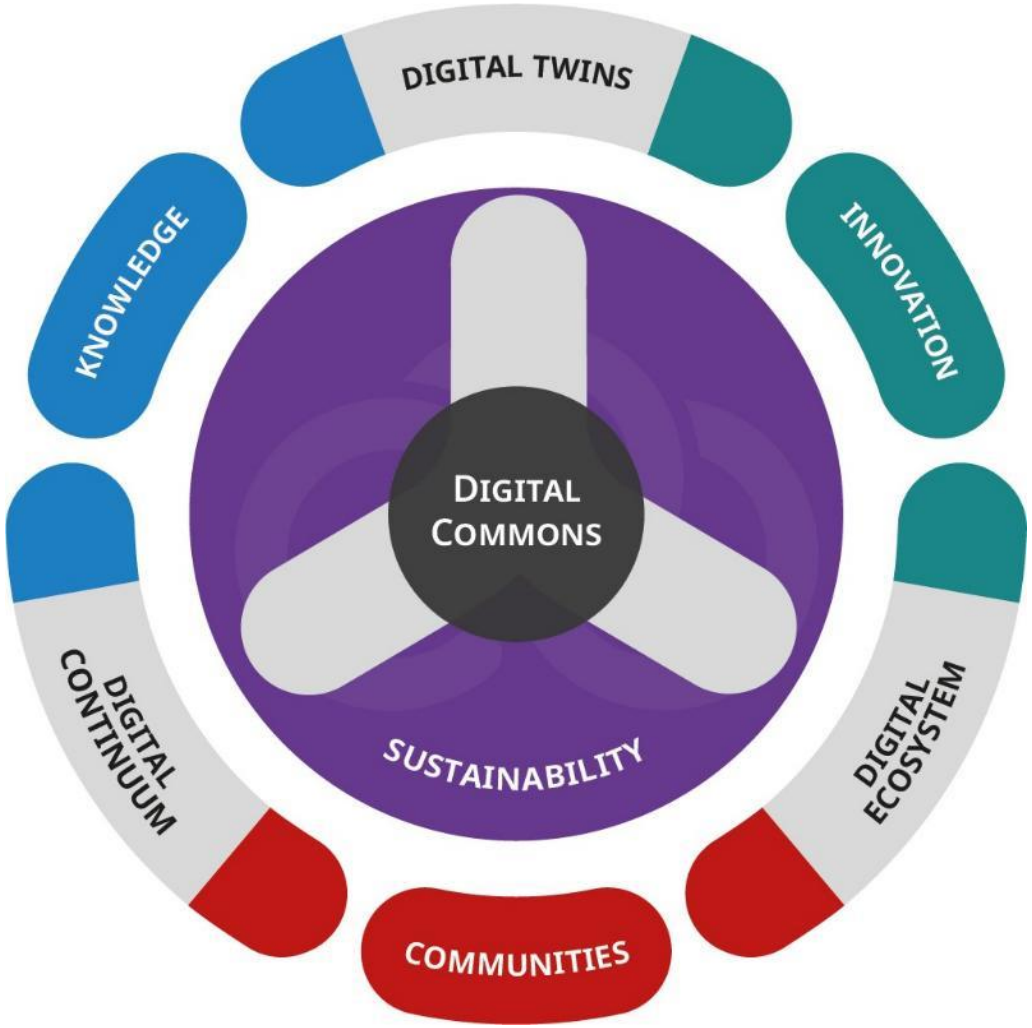
GRAPHIA project

European Cloud for Heritage OpEn Science

MISSION

ECHOES' mission is to set up the **Cultural Heritage Cloud** or **European Collaborative Cloud for Cultural Heritage (ECCCH)**, a shared platform designed to facilitate collaboration among heritage professionals and researchers, providing them with access to data, scientific resources, training, and advanced digital tools tailored to suit their needs.

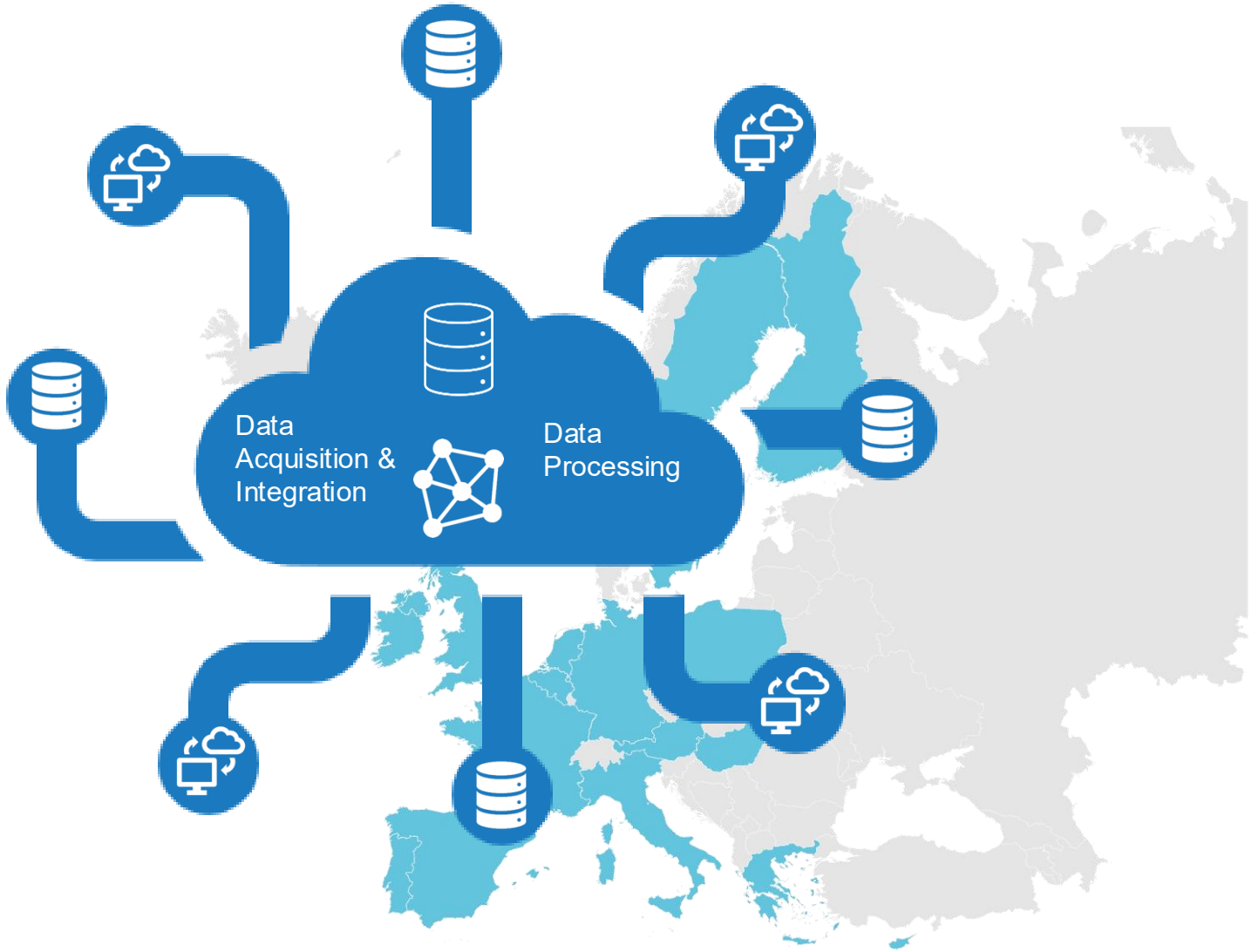


Distributed Storage

Distributed Processing

Data Space(s)
Data Sets
Metadata

DC Knowledge Base



https://www.echoes-eccch.eu/cascading-grants/

GET INVOLVED

First Call – Data

February 2025

12 projects

€ 60.000,00 per project

View Details

Second Call – Engagement and Collaboration

September 2025

20 projects

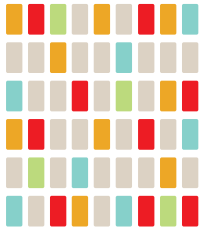
€ 30.000,00 per project

Third Call – Data and Vertical Application

January 2027

18 projects

€ 60.000,00 per project



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www.e-rihs.eu

THANK YOU

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