E-RIHS
EUROPEAN RESEARCH INFRASTRUCTURE
FOR HERITAGE SCIENCE

E-RIHS progress towards EOSC: Developments and challenges for improving interoperability throughout the Heritage Science data lifecycle

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http://www.e-rihs.eu/e-rihs-is-coming/

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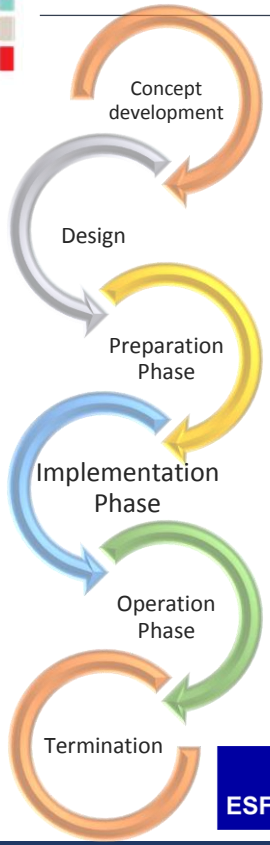
E-RIHS Implementation Phase: a step forward to the establishment of the European Research Infrastructure Consortium (ERIC)



Preparing the operation of E-RIHS ERIC
and
its positioning as the reference RI for the HS domain at the EU and global level.

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An interdisciplinary community

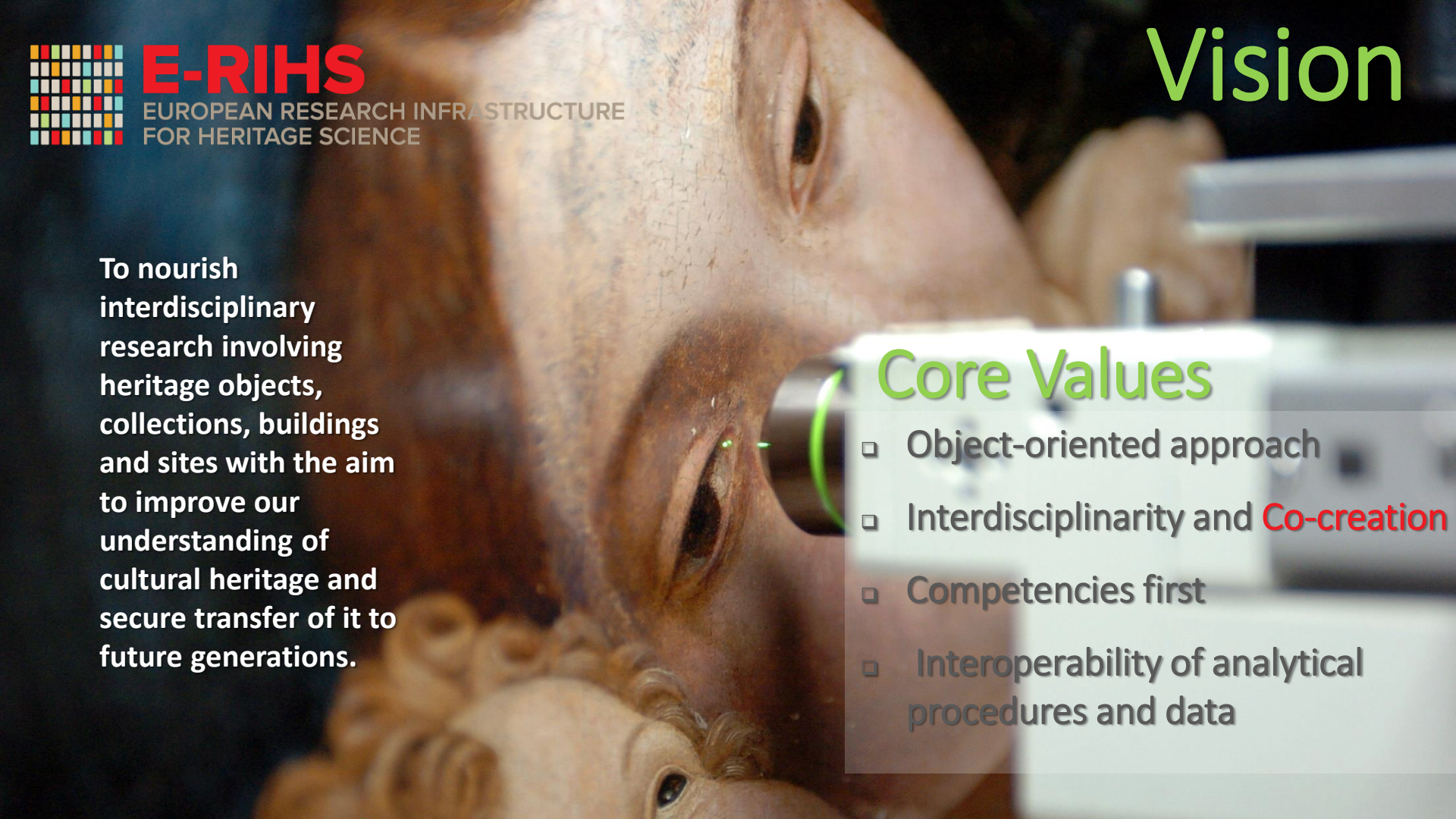
Heritage Science

is the interdisciplinary domain of scientific study of cultural and natural heritage.

HS draws on diverse humanities, sciences and engineering disciplines.

It focuses on enhancing the understanding, care, sustainable use and management of tangible and intangible heritage so it can enrich people's lives, both today and in the future.

(E-RIHS community)



E-RIHS
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Vision

To nourish interdisciplinary research involving heritage objects, collections, buildings and sites with the aim to improve our understanding of cultural heritage and secure transfer of it to future generations.

Core Values

- Object-oriented approach
- Interdisciplinarity and Co-creation
- Competencies first
- Interoperability of analytical procedures and data

E-RIHS
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An intersectoral community

Co-creation of knowledge and values

Researchers:

Access Providers and users

Stake-holding persons

Research institutions

Universities

Museums

Cultural Institutions

Conservation Centers

Cultural and Creative Industries

Society

Levels of interoperability for co-operation and co-creation

Heritage Domain Community and Users

Heritage Science researchers

Humanities & Science

Specialists in the same techniques

CIDOC CRM CONCEPTUAL REFERENCE MODEL

Semantic interoperability

Findable Accessible Interoperable Reusable

Interoperability of data

Interoperability of instruments, analytical procedures, documentation

Heritage knowledge communication

Object –centered approaches

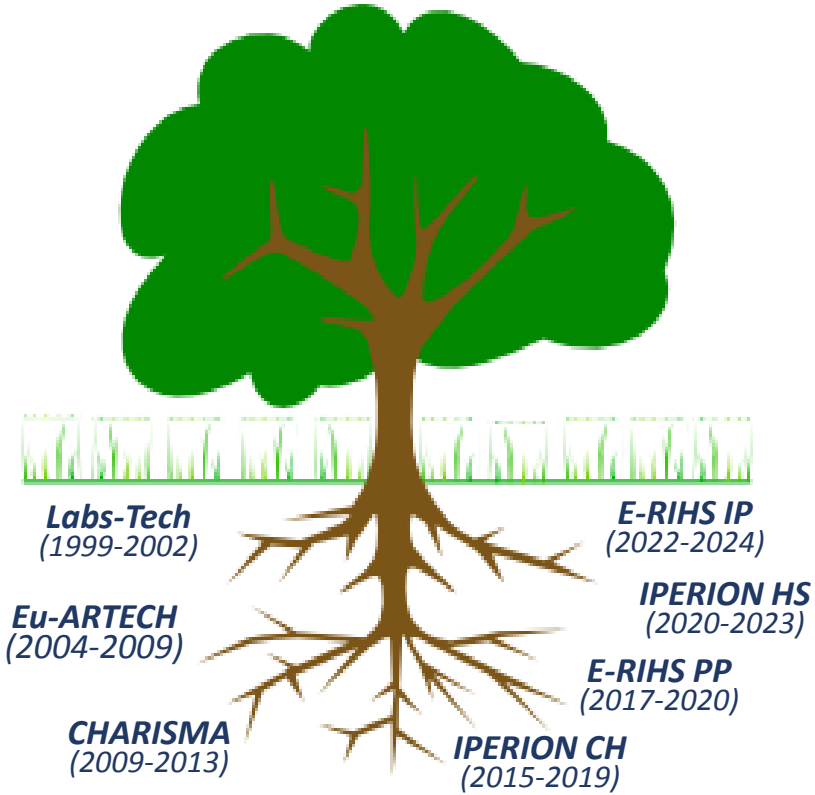
Wealth of resources

Infrastructures
Methods
Protocols
Archives

Developing /adopting metadata models to document data creation processes

Developing tools for facilitating population of metadata storage models

The legacy of E-RIHS



National and External resources
(e.g. EU-funded projects outcomes)

PARTHENOS

SSHOC

NIOS
National Initiatives for Open Science in Europe

HESCIDA
Heritage Science Data Archive

ESPADON

THE NATIONAL GALLERY

ΠΟΛΙΤΕΙΑ ΚΡΗΠΙΣ

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Mission

- to provide access to cutting-edge instruments and services for a cross-disciplinary community of researchers supporting advancements in heritage science
- engaging a broad range of interdisciplinary skills
- stimulates innovation in large-scale and medium-scale instrumentation, portable technologies and data science
- empower researchers, organizations and industry to develop skills, knowledge and innovation to enable the understanding and sustainable preservation of cultural heritage.

E-RIHS Catalogue of Services

IPERION HS

https://www.iperionhs.eu/catalogue-of-services/

SERVICE PLATFORMS

ARCHLAB

Access to physical and digital (offline) data collections in European museums or conservation institutes, such as objects, technical images, samples and reference materials, analytical data and conservation documentation.

FIXLAB

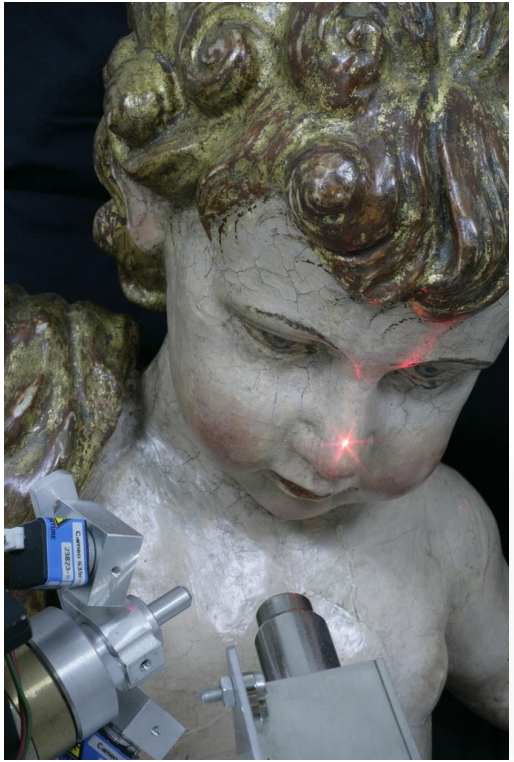
Access to key fixed facilities for heritage science research, e.g. particle accelerators, neutron and laser sources and other non-transportable research facilities.

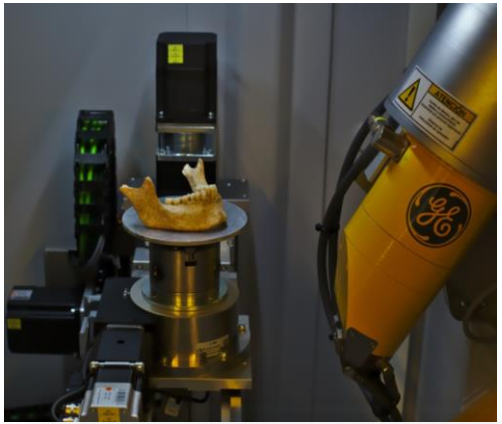
MOLAB

Access to a comprehensive selection of mobile analytical instrumentation for in-situ measurements (close-range and remote sensing) on objects, collections, buildings, and sites, allowing non-invasive investigations for complex multi-technique diagnostic projects.

FIXLAB

access to LSF and advanced laboratory facilities



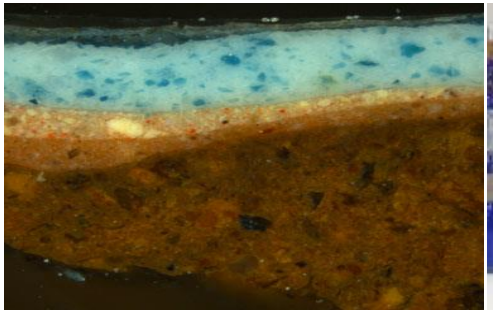


MOLAB

mobile instruments for *in-situ* diagnostics

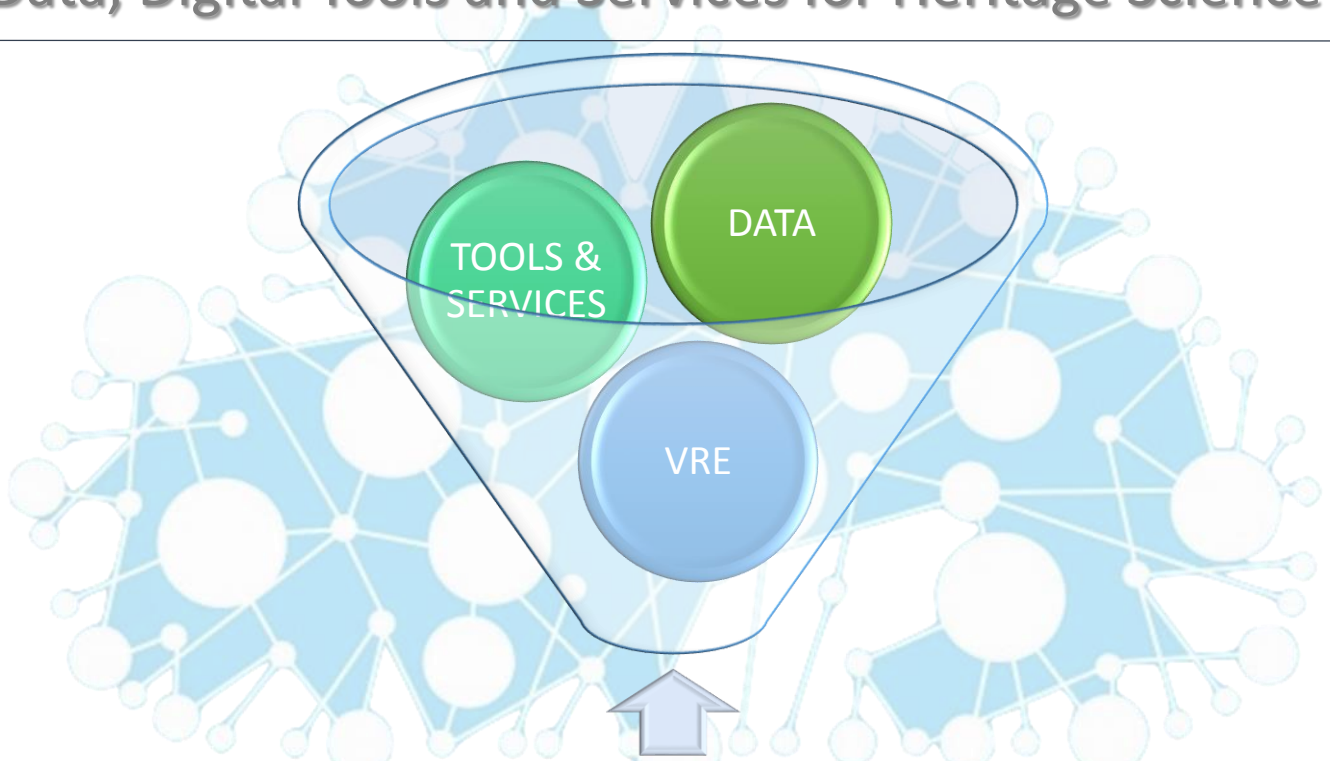
ARCHLAB

Scientific archives for Heritage Science



DIGILAB the new platform for E-RIHS

Data, Digital Tools and Services for Heritage Science



INTEGRATED ACCESS

Unique access point to the cat. of Services

ARCHLAB

Access to archives

FIXLAB

Ion beam analyses
Neutron techniques
Synchrotron techniques

MOLAB

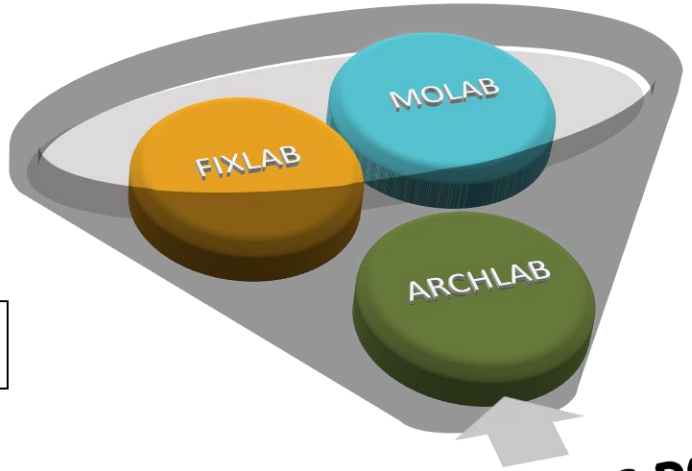
Mobile laboratory for in-situ analyses

DIGILAB

e-access for Data management and digital services

DIGILAB

Gluing services of the three other platforms together for heritage object-centered research



UNIQUE ACCESS POINT

Interoperability in focus as a driving force

Ambition

- Integrated access to E-RIHS services and to Heritage knowledge
  - Integrating multidisciplinary and multiscale approaches towards a comprehensive study of complex heritage systems for a deeper Interpretation and effective Preservation of Heritage
  - Building a gateway as a single entry point to discover all resources and research outputs for Heritage objects, sites and systems as part of the European Open Science Cloud ecosystem will create new opportunities for the unhampered flow of knowledge in the field.

- To ensure Data Quality and Open Data FAIRness

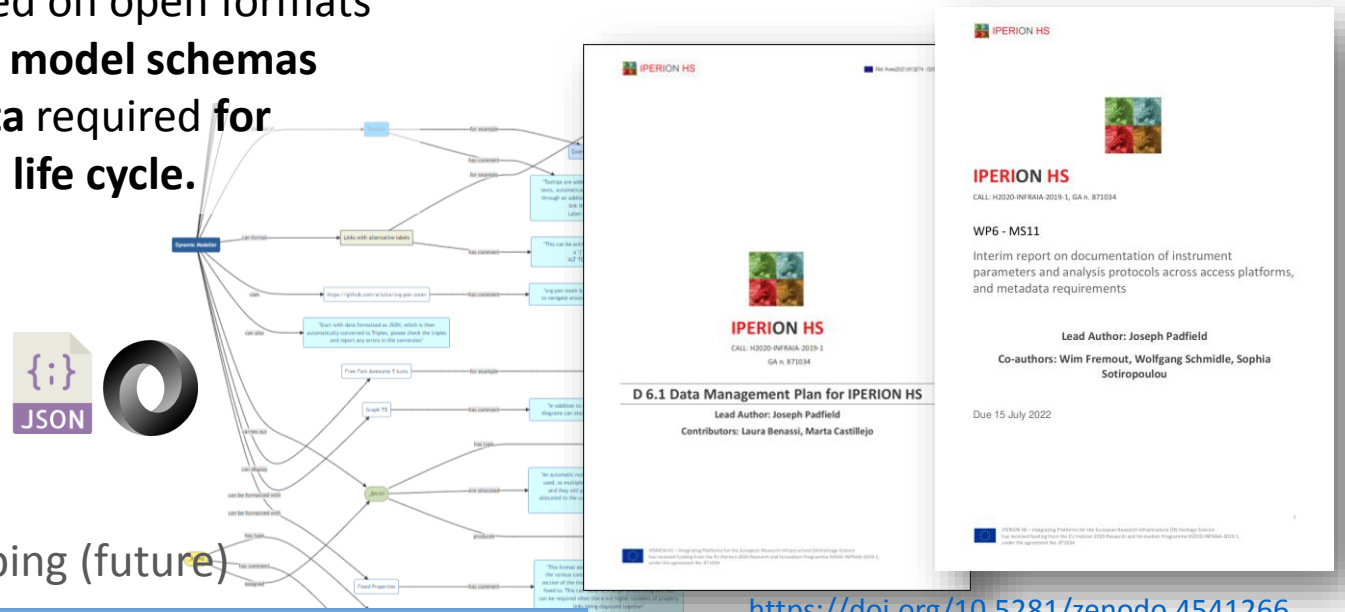
Developments to improve Interoperability

Work in progress within and after IPERION HS - **T6.3 Interoperability Task**

A practical approach, based on open formats and tools to **share agreed model schemas including critical metadata** required **for documenting the HS data life cycle.**

Process:

- *.TSV Description
- Simple Model
- JSON Schema
- Test generated forms
- Embed Semantic Mapping (future)



https://github.com/E-RIHS

https://doi.org/10.5281/zenodo.4541266

https://doi.org/10.5281/zenodo.7101169

Developments to improve Interoperability

Modelling of data creation processes and capturing metadata

(i) Draw workflow models based on concrete examples and common process patterns of the diverse categories of services;

(ii) Systematically gather information on how data is produced and managed, at each of the data-cycle stages: acquisition, processing, post-processing, analysis, interpretation and publication.

Heritage Science Resources (Practical Interoperability)

E-RIHS towards EOSC and ECCCH level of readiness and challenges

Excellence → Interoperability → Digital readiness

High quality data stored in local Servers

- Scientific excellence
  - Expertise, innovation and best practices
- Documented protocols of data acquisition workflows
  - Annotation practices
  - Best practices for FAIR data
- Domain or method specific core metadata schemas
  - Ex. SEM, IRUG, MASC,
- Semantic thinking enabling interdisciplinary interpretation of data

Digital tools, services and expertise are at elementary level. A lot of “manual” work.

Challenge: Adopt existing standards and tools, to be adapted and customised to the HS Community specifics

(i) PID services, Licence management, data storage, curation services , FAIRification T&S

(ii) Data formats, Ontologies, Controlled Vocabularies, ELNs, searching tools and methods, publishing – communicating tools

(iii) HS domain - specific tools and e-services for advanced data processing and interpretation (visualization, computing, analysis, classification, AI techniques, modelling);

(iv) Virtual collaborative Research Environment with personalized dashboard

Fostering Open Science in Heritage Science

IPERION HS

Collaboration @ OpenAIRE

IPERION HS started to work together with OpenAIRE using services, supporting the DIGILAB platform, focused on digital access to data.

- OpenAIRE CONNECT to build a single entry point to access research outcomes in the field of Heritage Science
- OpenAIRE MONITOR to customize a service to configure a dashboard to monitor the impact of IPERION HS on the research community.