



Project **HANDBOOK**

by Editorial Board

H2IOSC Project - Humanities and cultural Heritage Italian Open Science Cloud funded by the European Union NextGenerationEU - National Recovery and Resilience Plan (NRRP) - Mission 4 "Education and Research" Component 2 "From research to business" Investment 3.1 "Fund for the realization of an integrated system of research and innovation infrastructures" Action 3.1.1 "Creation of new research infrastructures strengthening of existing ones and their networking for Scientific Excellence under Horizon Europe" - Project code IR0000029 - CUP B63C22000730005. Implementing Entity CNR.

Version V1 February 2024

Abstract

The 'H2IOSC Handbook' aims to provide an overview of the H2IOSC Project's state of the art and to introduce people who make it possible, not only to the H2IOSC community but also to a wider audience.

The 'H2IOSC Handbook' is an open and dynamic document, constantly evolving, and will be updated as required throughout the project.

The 'H2IOSC Handbook - V1 February 2024' is the first edition, produced in conjunction with the H2IOSC General Meeting that took place on February 6th and 7th, 2024. done by the Editorial Board:

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Thanks to all the people who contributed to the production of this document.

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Introduction

ACCELERATING THE DIGITAL TRANSFORMATION

Humanities and cultural Heritage Italian Open Science Cloud (H2IOSC) is a pioneering project funded by the European Union Next Generation EU and the Italian Ministry of University and Research as part of the National Recovery and Resilience Plan (PNRR). H2IOSC foresees the collaboration of four existing Research Infrastructures (RIs) to accelerate innovation and promote the digital transformation of the humanities and cultural heritage sectors.

The project builds on a long-term strategy developed by the Department of Humanities and Social Sciences, Cultural Heritage of the National Research Council (CNR DSU), to create a cluster of distributed technological infrastructures across Italy. Its goal is to provide researchers, businesses, and citizens with a federated and open multidisciplinary environment. This environment enables access to advanced tools for conducting innovative and computationally intensive research on complex digital data and objects.

H2IOSC is a clear reference to the establishment of an Italian platform for open science, following the European Open Science Cloud (EOSC) model. It aims to strengthen and enhance the national nodes of European Research Infrastructures present in Italy, in line with the recommendations of the European Council's Pact for Research and Innovation in Europe. By reducing fragmentation through shared practices, standards, and processes and, by collaborating with other high-tech innovation domains, H2IOSC seeks to import experiences and solutions, fostering a competitive digital research ecosystem in Italy.

Through the enhancement and federation of the Italian nodes of the four high-priority research infrastructures CLARIN, DARIAH, E-RHIS, and OPERAS, H2IOSC will develop a network of high-performance computing nodes connected at high speeds to the Italian research network. These nodes will provide shared services for the creation, management, retrieval and reuse of open and interoperable digital resources and processes, including data, tools, and digital objects provided by participating infrastructures or produced by researchers.

Introduction

ACCELERATING THE DIGITAL TRANSFORMATION

H2IOSC will also establish customizable digital laboratories dedicated to cutting-edge research in various disciplines, including linguistics, art history, archaeology, and cultural heritage sciences. These laboratories will leverage technologies, such as virtual and augmented reality, artificial intelligence, and big-data analysis.

Promoting the adoption of open science paradigms, H2IOSC aims to become a national reference model for the development of open and interoperable digital research ecosystems. Through extensive collaborations with universities, libraries, archives, museums, and other research actors, H2IOSC will involve the scientific community directly in its activities, ensuring that their needs are represented.

The H2IOSC innovative potential lies in the multidisciplinary collaboration between high-tech sectors such as computer science, data science, and artificial intelligence, and traditionally considered "long-tail" disciplines like the humanities. This synergy is made possible by the research infrastructures involved, which create a distributed network of high-power and high-efficiency computing nodes using state-of-the-art technologies to facilitate the digital transformation in these domains.

In the long run, H2IOSC's ultimate challenge is to facilitate the development of innovative sustainability models for RIs in the Social and Cultural Innovation European Strategy Forum on Research Infrastructures (ESFRI) landscape, including collaborations with the cultural and creative industries sector across different regions of Italy, to generate positive economic and social impact.

Visit the **H2IOSC website**



Meet **THE TEAM**



Emiliano Degl'Innocenti

PRINCIPAL INVESTIGATOR

CNR OVI Researcher
DARIAH.it Coordinator



Costanza Miliani

LEADING H2IOSC CLUSTER

CNR ISPC director
E-RIHS.it coordinator



Veronica Colautti

INFRASTRUCTURE MANAGER

CNR ISPC Technological
Research Director

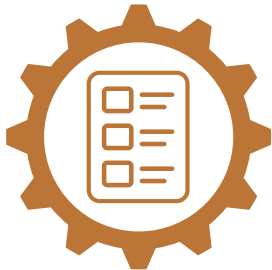


Daniela Maria Palamà

FINANCIAL OFFICER

CNR ISPC Technologist

What WE DO



LANDSCAPING AND BUILDING COMMUNITIES

Detailed and extensive investigation of the panorama in the SSH domain, usually carried out through a survey to gather information concerning existing projects, resources, tools, communities, best practices, and standards in use.



DATA CENTERS

Bringing high-performance computing, trusted repositories and high-speed networking to support data driven Science in the SSH domain.



MARKETPLACE

An Online platform fostering discoverability and access to services, tools, datasets and other resources produced by the participating RIs.



COMMUNITY PILOTS

Development of Virtual Environments to support interdisciplinary research in the Humanities and Heritage Science.



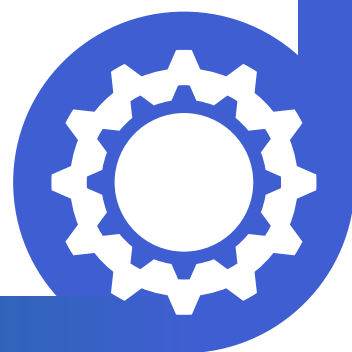
TRAINING

Provide to users and researchers high-quality training materials, support resources FAIRification, promote Open Science & Open Publishing cultures.

RESEARCH COMMUNITIES

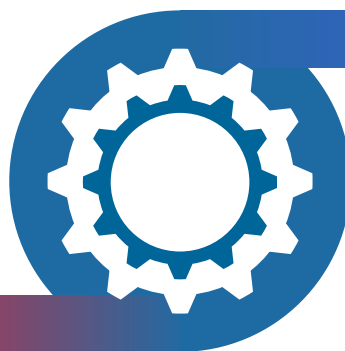


The European RIs **INVOLVED**



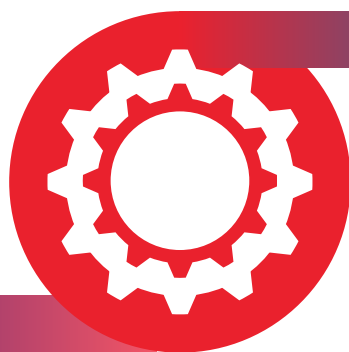
CLARIN

ERIC from 2012
National nodes 24
Observers 2
Third party 1



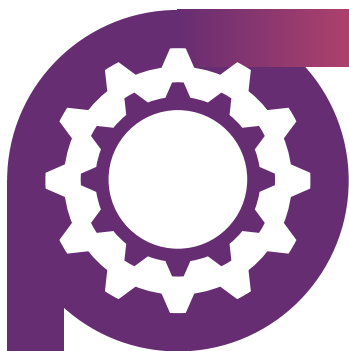
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OPERAS

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The European RIs involved **CLARIN**

www.clarin.eu

Common Language Resources and Technology Infrastructure (CLARIN) is a distributed digital infrastructure providing access to multimodal digital language data (text, audio, video) and advanced tools, supporting research in the humanities, social sciences and other fields.

CLARIN
Common Language Resources and
Technology Infrastructure



Since the tools and data from different centres are interoperable, they can be combined, and tools from various sources can be chained to perform operations at different levels of complexity, regardless of their location. Members can access all tools and resources with a single sign-on. Many of the resources are also open access for other interested communities of use, both within and outside the academia.

CLARIN was founded in 2012 as a European Research Infrastructure Consortium (ERIC), an international legal entity established by the European Commission in 2009. CLARIN, selected for the European Research Infrastructures Roadmap by ESFRI, the European Strategy Forum on Research Infrastructures, in 2016, received the status of a Landmark on the ESFRI roadmap.

CLARIN has today **24 members** (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, The Netherlands, Norway, Poland, Portugal, Slovenia, South Africa, Spain, Sweden), **2 observers** (Switzerland, United Kingdom), **1 Third Party** (USA) and **> 70 centres**.

The European RIs involved CLARIN

MISSION AND VISION

CLARIN's mission is to create and maintain an infrastructure to support the sharing, use and sustainability of language data and tools for research in the humanities and social sciences.

CLARIN's vision is for all digital language resources and tools from all over Europe and beyond to be accessible through a single sign-on online environment for the support of researchers in the humanities and social sciences.

CLARIN'S Technical Pillars and Knowledge Infrastructure

CLARIN's **Technical Pillars** are:

- Federated Identity: Letting users log in to protected data and services with their own institutional login and password
- Persistent Identifiers: Enabling sustainable citations of electronic resources
- Repositories: Digital archives where language resources can be stored, accessed and shared
- Component Metadata and concept definitions: To ensure semantic interoperability when describing language resources
- Content Search: Offering a search engine for a wide range of language resources
- Web service chaining: giving users the possibility to freely combine language processing services

The **Knowledge Infrastructure** (KI) is a set of facilities aimed at securing a continuous transfer of knowledge between all players involved in the construction, operation and use of the infrastructure. Each of them needs knowledge and expertise to do their jobs, and they continue to generate new knowledge and expertise.

The European RIs involved **DARIAH**

www.dariah.eu

The Digital Research Infrastructure for the Arts and Humanities (DARIAH) was established as an ERIC for Social & Cultural Innovation in August 2014.

DARIAH is a network of people, expertise, information, knowledge, content, methods, tools and technologies from its member

countries. It develops, maintains and operates an infrastructure to support the ICT-based research practices and sustains researchers in using them to build, analyse and interpret digital resources. DARIAH brings together individual state-of-the-art digital arts and humanities activities and scales their results to a European level. It preserves, provides access to and disseminates research that stems from these collaborations and ensures that best practices, methodological and technical standards are followed.

Currently, DARIAH has **22 Members** (Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Poland, Portugal, The Netherlands, Serbia, Slovenia, Spain, Switzerland) and **several Cooperating Partners** in eleven non-member countries (Egypt, Finland, Hungary, Iceland, Latvia, Norway, Romania, Slovakia, Sweden, the United Kingdom, and the United States of America). It aims to enhance and support digitally enabled research and teaching across the arts and humanities.



The European RIs involved **DARIAH**

MISSION AND VISION

DARIAH's mission is to empower research communities with digital methods to create, connect and share knowledge about culture and society.

DARIAH's vision is that the Arts and Humanities are anchored at the centre of a technologically evolving knowledge society. DARIAH works towards developing an infrastructure that supports researchers working in the diverse community of practice known as the arts and humanities to build, analyse and interpret digital or hybrid resources.

As such, DARIAH supports and enhances the sustainable development of digitally enabled research and teaching through its network of people, knowledge, content, methods and tools. The main areas of activities aim towards ensuring that humanities researchers are:

- able to assess the impact of technology on their work in an informed manner,
- access the data, tools, services, knowledge and networks they need seamlessly and in contextually rich virtual and human environments
- produce excellent, digitally enabled scholarship that is reusable, visible and sustainable

The challenges emerging from the intersection of these long-standing research fields and methods with technology and technological advancement lie at the heart of DARIAH's strategy, based upon four pillars that derive from our mission and vision. These pillars represent the organisational priorities, and the services provided to the community, as outlined in the DARIAH Strategic Plan 2019 – 2026:

- Build a Marketplace to facilitate fluid exchange of tools, services, data and knowledge
- Build access to education and training
- Build Working Groups, Hubs and other forms of Transnational and Transdisciplinary organisation
- Build bridges between research policy and communities of practice

The European RIs involved E-RIHS

www.e-rihs.eu

E-RIHS is **the European Research Infrastructure for Heritage Science**, created to support the research community on heritage interpretation, preservation, documentation, innovation and management.

The E-RIHS project is being led by the CNR.



Thanks to over twenty years of experience in EU-funded projects, the E-RIHS community has developed a new paradigm in heritage science.

E-RIHS applies an innovative and interdisciplinary approach to answer the specific needs of cultural and natural heritage assets and improve their understanding and preservation.

In 2016, E-RIHS entered the ESFRI Roadmap and it is on track to become a legal entity as ERIC in 2024.

E-RIHS is a distributed research infrastructure with a formal structure and two operational levels: **a Central Hub** (or Headquarters) **hosted in Florence, Italy** at the Manifattura Tabacchi, **and 14 National Nodes**.

Currently, the National Nodes are active in Belgium, Cyprus, France, Greece, Hungary, Italy, Malta, Netherlands, Poland, Portugal, Romania, Spain, Slovenia and the United Kingdom.

The European RIs involved E-RIHS

MISSION AND VISION

E-RIHS vision is to ensure that heritage remains meaningful, relevant, and accessible in a diverse and changing world for the benefit of present and future citizens. E-RIHS uncovers the cultural and historical layers embedded in heritage, seeks optimal ways to preserve it by understanding material changes, and harnesses its potential as a source of socioeconomic and environmental sustainability.

The mission is to deliver integrated access to expertise, data and technologies for protecting heritage.

To serve the **Heritage Science community** of both scholars and practitioners by:

- providing access to world-class laboratories, data and collections coupled with high-specialised expertise to address complex research questions
- delivering interdisciplinary and intersectoral training
- promoting open science and FAIR principles in cultural heritage
- enhancing service value as a result of user-provider co-creation process
- stimulating open innovation in heritage practices and interventions
- integrating world-leading EU facilities into a unique organisation with a significant cohesive role in the global HS community
- increasing the impact of HS for the benefit of society

Based on these principles and **Open Science**, E-RIHS is working to achieve its mission through the following **E-RIHS key points** to producing a decisive impact on heritage science research:

- Catalysing new cross-disciplinary research by mobilising expertise and researchers in the humanities and natural sciences
- Integrating world-class facilities across Europe to connect the global community of heritage science
- Building state-of-the-art tools and services for research communities and the heritage industry
- Driving scientific excellence and innovation through visionary research projects
- Leading the way to develop digital platforms for the improved understanding, visualisation and use of heritage
- Developing skills and capabilities to build strong science and to foster collaboration.

The European RIs involved E-RIHS

The E-RIHS platforms

E-RIHS has **140 facilities and laboratories** distributed throughout Europe, accessible and organised in four integrated platforms:

1. **ARCHLAB**, with its local physical and digital archives of samples, reference materials, restoration reports.
2. **FIXLAB**, including large-scale laboratories, synchrotrons, particle accelerators, neutron laboratories for the study of mobile works of art or samples.
3. **MOLAB**, consisting of mobile instruments that are moved to museums, archaeological sites for the study of immovable objects through non-invasive in situ multi-diagnostic techniques.
4. **DIGILAB**, with online access to digital data generated by ARCHLAB, FIXLAB and MOLAB integrated with digital tools for the creation of new knowledge.

The European RIs involved **OPERAS**

www.operas-eu.org

Open scholarly communication in the European research area for social sciences and humanities (OPERAS) is a distributed research infrastructure supporting open scholarly communication in the Social Sciences and Humanities (SSH) in the European Research Area (ERA), enabling and promoting Open Science in line with the EOSC.



Selected as a key research infrastructure in Europe in the ESFRI Roadmap 2021, it is **headquartered in Brussels**.

OPERAS is currently transitioning from the status of an international non-profit association under Belgian law (AISBL) to that of an ERIC, to become fully operational as an ERIC in 2028.

The **OPERAS national nodes** play a key-role as two-way hubs:

- they bring local communities together to help identify their needs and act as catalysts to connect people and projects;
- they bring back what is new and what is happening in the wider European context.

Today OPERAS has **22 Countries**: Belgium, Brazil, Canada, Croatia, Cyprus, Finland, France, Georgia, Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Serbia, Slovenia, Spain, Sweden, Switzerland, United Kingdom; and **63 members**.

The European RIs involved **OPERAS**

MISSION AND VISION

OPERAS's vision is to achieve an open scholarly communication system that benefits researchers, academics, students in general, across Europe and worldwide, without barriers.

OPERAS's mission is to enable the SSH research community to find, access, create, edit, disseminate and validate research results across Europe in a simple and efficient way and to coordinate and federate resources to best meet their needs.

The European scholarly communication systems in the SSH face major challenges, such as a patchy and fragmented landscape, the diversity of publication languages, the persistence of heterogeneous cultural backgrounds and specific forms of scholarly communication (e.g. monographs, critical editions, edited bibliographies). OPERAS contributes to the structuring of the European research infrastructure ecosystem by:

- pooling resources and providing services to enable all SSH stakeholders to streamline their activities and maximise societal impact, in an interdisciplinary, mission-driven approach;
- fostering the co-creation and adoption of open scholarly communication services that meet research needs in terms of discovery, content creation, quality assurance, dissemination, outreach, exploitation, and evaluation of results.

OPERAS Special Interest Groups (SIGs) are dedicated to key topics, such as Common Standards and FAIR Principles, Tools and Platforms, Multilingualism, Advocacy, Open Access Business Models.

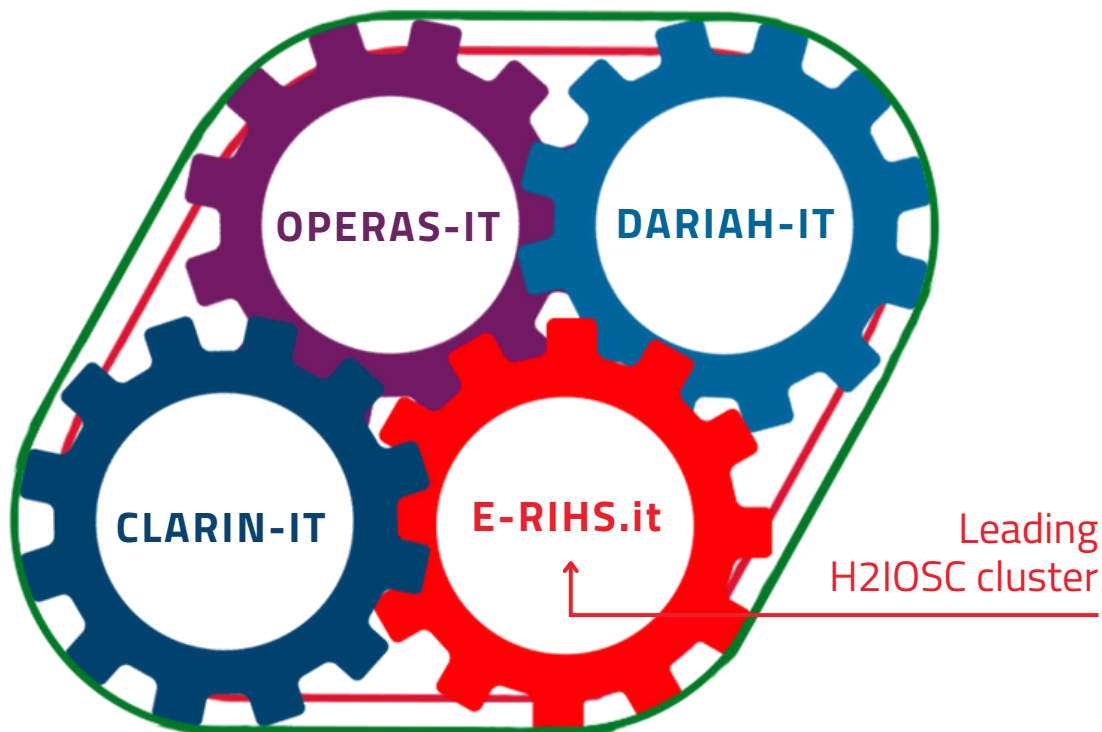
SIGs work collaboratively, share information, and prepare projects. Their work is the foundation on which the Research Infrastructure will build its strategy and prepare its next projects.

OPERAS has implemented many **projects and services** at the European level within its main study and research strands, addressing the specific needs of the SSH research community with tools for discovery, publishing, evaluation metrics, collaboration, etc.

OPERAS services pool, aggregate, or federate existing resources from across Europe to provide European researchers with a single point of access to the full range of available resources. They are aimed at providing transnational access to scholarly communication resources and services to researchers across the ERA, and at integrating them into the EOSC marketplace.

The RIs CLUSTER

④ FEDERATED RIs



The RIs cluster **CLARIN-IT**

THE ITALIAN NODE

www.clarin-it.it

CLARIN-IT is the Italian node of CLARIN. **On the 1st of October 2015, Italy became the 16th Full Member of CLARIN ERIC.** The Italian Representative at the CLARIN General Assembly is the Italian Ministry of University and Research (MUR). **CNR is the lead institution of CLARIN-IT** and the Institute of Computational Linguistics "A.

Zampolli" (CNR ILC) coordinates and hosts ILC4CLARIN, the Italian node of the CLARIN infrastructure. The Italian consortium, coordinated by Monica Monachini, Research Director at CNR ILC. The CLARIN-IT consortium gathers experts who operate in the field of computational linguistics, language resources and language technologies. It has strong contacts with various research communities, such as digital humanities, computational philology, oral history, thus including Libraries and Archives and Foundations.



CLARIN-IT Consortium

CLARIN-IT Consortium is being formed and will include several of the major universities and research institutes of the country:

- Dipartimento di Filologia e Critica delle Letterature Antiche e Moderne - Università di Siena
- Associazione EURAC Research (Bolzano)
- Fondazione Bruno Kessler (Trento)
- Soprintendenza Archivistica e Bibliografica della Toscana (Firenze)
- Dipartimento di Ingegneria Elettrica e delle Tecnologie dell'Informazione - Centro Interdipartimentale di Ricerca "URBAN/ECO" - Università degli Studi di Napoli Federico II
- Università Cattolica del Sacro Cuore (Milano)
- Università di Parma
- Università degli Studi di Padova
- Centro Linguistico di Ateneo - Università degli Studi di Ferrara
- Dipartimento di Studi Letterari, Linguistici e Comparati - Università degli Studi di Napoli "L'Orientale"
- Fondazione RUT (Rome and Ercolano)

The RIs cluster

CLARIN-IT

THE ITALIAN NODE

CLARIN-IT main research topics

Resources for regional languages and multilingual corpora

- Learner corpus of German, Italian and Czech

Resources for the Italian Language

- Creation new resources (by enriching existing ones).
- Lexical datasets with Linked Open Data (LOD).
- Specialized corpora for computer-mediated communication
- NLP and analysis tools, offered as web services and integrated into Weblicht.

Digital Classics

- Resources for ancient Greek and Latin (LOD version of the TEI-dict Perseus Liddell-Scott Jones. dictionary); Latin of the Middle Ages.
- Digital editions of ancient fragmentary texts.

Speech Archives

- Grafo, Caterina Bueno Archive

CLARIN-IT technical infrastructure

The CLARIN-IT technical infrastructure comprises three centres

1. Pisa ILC4CLARIN data centre hosts data for the Italian language as well as for the classical languages and Arabic. In the evolving open science paradigm context, many Italian universities recognize the importance of depositing their data in institutional open repositories. ILC4CLARIN is among the only 3 with certification awarded by an external body (Trust Seal). This certification underscores our commitment to maintaining high standards in data management and accessibility, aligning with the principles of open science.

 [Link](#)
Repository

2. Eurac Research CLARIN Centre (ERCC), a CLARIN metadata providing centre (CLARIN Centre of Type C).

 [Link](#)
ERCC

3. The Digital and Public Textual Scholarship Knowledge Centre (DiPText-KC), established under the aegis of CLARIN-IT, is focused on digital philology. DiPText-KC offers expertise on methods, data, instruments and technologies relevant in the field of Philological and Literary Studies, History, Art History and Cultural Heritage.

 [Link](#)
DiPText-KC

The RIs cluster

DARIAH-IT

THE ITALIAN NODE

www.dariah.cnr.it

DARIAH-IT is supported by a diverse and cohesive partnership: the Italian Ministry of Universities and Research (MUR), the Italian Ministry of Culture (MIC) and the CNR, which acts as implementing organization.

DARIAH IT aims to enhance and disseminate Italian humanistic research and expertise, strengthen its presence and role on the international scene, and seize funding opportunities at national, European, and international levels. The organization's autonomy, which is both strong and well-structured, supports these goals.

The Italian network started as a strong network of researchers and over time transitioned into a fully-fledged research infrastructure, involved in the management of a complex service-oriented infrastructure.

DARIAH IT is based at the Istituto Opera del Vocabolario Italiano (OVI-CNR), in the Villa Medicea di Castello in Florence.



DARIAH-IT Consortium

30 Partners (and counting):

- CNR Research Institutes
- Universities
- Public / private research and memory organizations
- SMEs in the Cultural and Creative industry

6 Data centres in the country:

- 3 large data centres for access and service provision
- 3 smaller data centres for continuity, redundancy

2023 Nation Roadmap:

- ICT backbone implementation completed
- DARIAH.it technical staff strengthening plan implementation
- PNRR-H2IOSC kick-off

The RIs cluster

DARIAH-IT

THE ITALIAN NODE

From a technical standpoint, the DARIAH IT distributed infrastructure will offer to the SSH scientific communities of reference tools and services to support the transition to Open Science and Data Driven science:

- HPC and HTC
- big data storage
- computation on knowledge graphs
- data visualisation
- simulation and game programming
- 3D rendering
- language analysis, DL, ML, AI

The DARIAH-IT data centers are developed as part of a big scale, long-term project, funded by the Italian Ministry of University and Research, to create a complex infrastructure allowing access to a digital ecosystem with datasets, tools, services. The DARIAH.it infrastructure will provide basic services, such as data storage, hosting, virtual machines, and virtual desktop environments with support for specific tools and software as well as more advanced domain oriented research services – developed by the DARIAH network or acquired otherwise. While certain data centers will focus on specific activities, researchers will be able to access the services offered by DARIAH.it through a single-entry point, unifying and federating the community. Having multiple data centers will also ensure redundancy to account for any potential service failures.

The RIs cluster

E-RIHS.it

THE ITALIAN NODE

www.e-rihs.it

E-RIHS.it, supported by the MUR, strengthens the Italian position in Europe in the field of Heritage Science and improves its capabilities in the technological and scientific fields related to Cultural Heritage, integrating cutting-edge facilities and offering access to a wide range of high-level scientific tools, as well as methodologies and data, to promote knowledge and innovation in the conservation of Cultural Heritage. E-RIHS.it connects researchers from different organisations and contributes to their mobility, fostering the dissemination and exploitation of national research and technological development.



Currently, the **node consists of:**

- CNR - National Research Council of Italy
- INFN - Italian National Institute for Nuclear Physics
- ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development

National Institution involved in the integrated platforms (ARCHLAB, FIXLAB and MOLAB):

- CNR ISPC - Istituto di Scienze del Patrimonio Culturale
E-RIHS Italian node coordinator
Local branches: Naples, Florence, Milan, Rome, Catania, Potenza, Lecce
- CNR SCITEC - Istituto di Scienze e Tecnologie Chimiche "Giulio Natta"
Local branch: Perugia
- CNR INO - Istituto Nazionale di Ottica
Local branch: Florence
- CNR ISTI - Istituto di Scienza e Tecnologie dell'Informazione
Local branch: Pisa
- CNR IAC - Istituto per le Applicazioni del Calcolo "Mauro Picone"
Local branch: Rome, Naples
- CNR IMATI - Istituto di Matematica Applicata e Tecnologie Informatiche "E. Magenes"
Local branch: Genoa

The E-RIHS Italian node is under enlargement, involving universities already engaged in European projects to establish E-RIHS as an ERIC.

The RIs cluster **OPERAS-IT**

THE ITALIAN NODE

OPERAS-IT is the Italian node of OPERAS. It was legally established in August 2023 as a Joint Research Unit (JRU), coordinated by the CNR through the ILIESI - Istituto per il Lessico Intellettuale Europeo e la Storia delle Idee and its Director Enrico Pasini.



OPERAS-IT encourages broad participation of the national scientific community and helps to maximise the results of investment in research in the Humanities and Social Sciences in Italy. Moreover, it promotes the transfer of technology and knowledge, and contributes to carry out activities in the multidisciplinary field of open scientific communication in the SSH.

OPERAS-IT provides a voice and offers services to the national SSH community, which is often underrepresented in the scientific arena. It enables the Italian SSH community to address common issues and share methods, tools and best practices, and to disseminate knowledge of what is being developed in the wider European context. It is committed to the active support and promotion of Open Science within the Italian SSH community, providing theoretical and practical training on the various topics related to Open Science and FAIR principles.

Joint Research Unit

- Consiglio Nazionale delle Ricerche, Rome
- Università degli Studi di Torino
- Università degli Studi di Bologna
- Università degli Studi di Macerata
- Università degli Studi di Messina
- Università degli Studi di Milano
- Università degli Studi di Roma Tor Vergata
- Firenze University Press
- Lexis Compagnia editoriale srl, Torino
- Net7 srl, Pisa

OPERAS-IT next goals

- use the expertise, actions and results of the H2IOSC project to provide studies, analyses and advanced tools as needed by the Italian SSH community;
- collaborate with OPERAS PLUS Innovation Lab to provide innovative tools (e.g. on critical editions);
- collaborate with DIAMAS and CRAFT-OA projects on the institutional capacity building for Open Access publishing.

Partner INSTITUTIONS



CNR IAC
CNR ICAR
CNR ILC
CNR ILIESI

CNR IMATI
CNR INO
CNR ISPC
CNR ISPF

CNR ISTI
CNR NANOTEC
CNR OVI
CNR SCITEC

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CNR|DSU

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Partner INSTITUTIONS

CNR IAC | Istituto per le Applicazioni del Calcolo "Mauro Picone"

Territories: Naples

www.iac.cnr.it

CNR ICAR | Istituto di Calcolo e Reti ad Alte prestazioni

Territories: Naples

www.icar.cnr.it

CNR ILC | Istituto di Linguistica Computazionale "Antonio Zampolli"

Territories: Pisa

www.ilc.cnr.it

CNR ILIESI | Istituto per il Lessico Intellettuale Europeo e Storia delle Idee

Territories: Rome

www.iliesi.cnr.it

CNR IMATI | Istituto di Matematica Applicata e Tecnologie Informatiche

Territories: Genoa

www.imati.cnr.it

CNR INO | Istituto Nazionale di Ottica

Territories: Florence

www.ino.cnr.it

CNR ISPC | Istituto di Scienze del Patrimonio Culturale

Territories: Catania, Florence, Lecce, Milan, Naples and Rome

www.ispc.cnr.it

CNR ISPF | Istituto per la Storia del Pensiero Filosofico e Scientifico

Territories: Naples

www.ispf.cnr.it

CNR ISTI | Istituto di Scienza e Tecnologie dell'Informazione "Alessandro Faedo"

Territories: Pisa

www.isti.cnr.it

CNR NANOTEC | Istituto di Nanotecnologia

Territories: Lecce

www.nanotec.cnr.it

CNR OVI | Istituto Opera del Vocabolario Italiano

Territories: Florence and Pisa

www.ovi.cnr.it

CNR SCITEC | Istituto di Scienze e Tecnologie Chimiche "Giulio Natta"

Territories: Perugia

www.scitec.cnr.it

Outline of the WPs

WP 1

Project and Financial Management, Quality Assurance

Leader:
Emiliano Degl'Innocenti
CNR OVI

WP 3

Digital Resources Standardization, Consolidation & Alignment

Leader:
Alberto Bucciero
CNR ISPC

WP 5

MarketPlace

Leader:
Enrico Pasini
CNR ILIESI

WP 7

Community pilots: innovative cross-domain services and environments

Leader:
Enrico Pasini
CNR ILIESI

WP 2

Landscaping & building communities

Leader:
Monica Monachini
CNR ILC

WP 4

RIs Nodes and Resources Interoperability

Leader:
Emiliano Degl'Innocenti
CNR OVI

WP 6

Resources Accessibility: Servification, Virtualization, Remotization

Leader:
Bruno Fanini
CNR ISPC

WP 8

Training, Capacity Building, Engagement

Leader:
Francesca Frontini
CNR ILC



H2IOSC PEOPLE¹



WP 1

Project and financial Management, Quality Assurance

WP1 is focused on ensuring that the objectives, milestones, and deliverables of the work program are achieved within budget and on time. It will facilitate communication with MUR and manage external relationships with other stakeholders. WP1 will establish project agreements, ensure compliance with ministerial and PNRR regulations, and meet reporting requirements.

Leader: Emiliano Degl'Innocenti, Researcher, CNR OVI, Florence

WP 1 TEAM MEMBERS

VERONICA COLAUTTI

CNR ISPC Technological Research Director, Florence

Activity 1.1: Project and financial Management & Quality Assurance

CRISTINA MASSI BENEDETTI

CNR ISPC Technologist, Florence

Activity 1.1: Project and financial Management & Quality Assurance

SILVIA IACHELLO

CNR ISPC Technologist, Catania

Activity 1.2: H2IOSC Access Coordination and Management Unit (TNA, OA, VA)

LETIZIA MARTINELLI

CNR ISPC Technologist, Catania

Activity 1.2: H2IOSC Access Coordination and Management Unit (TNA, OA, VA)

¹ The people included in this version 'H2IOSC Handbook - V1 February 2024' refer only to fixed-term personnels recruited until February 2024. A new version will include also the structured personnel.

H2IOSC PEOPLE

WP 1
Project and financial Management,
Quality Assurance



WP 1 TEAM MEMBERS

DANIELE CARPITA

CNR ILC Technologist, Pisa

Activity 1.3: H2IOSC Training and Outreach Activities Coordination and Management Unit

MICHELA PERINO

CNR OVI Researcher, Florence

Activity 1.4: H2IOSC Sustainability HUB

IRENE FALINI

CNR OVI Researcher, Florence

Activity 1.5: H2IOSC Forum: promoting shared governance for the H2IOSC federation



WP 2

Landscaping and building communities

The main goal of WP2 is to conduct a comprehensive survey of language technologies, humanities, and heritage science in Italy. This survey will consider the existing projects, resources, tools, communities, best practices, and standards that need to be onboarded in the national marketplace and the national nodes of the four Research Infrastructures involved.

Leader: Monica Monachini, Research Director, CNR ILC, Pisa

H2IOSC PEOPLE

WP 2
**Landscaping and building
communities**



WP 2 **TEAM MEMBERS**

ROBERTA BIANCA LUZIETTI

CNR ILC Researcher, Pisa

Activity 2.1: Design of the H2IOSC landscaping Framework
(communities of reference, user needs, stakeholders)

Activity 2.2: Landscaping the Language resources and national needs
panorama

ALESSIA SPADI

CNR OVI Researcher, Florence

Activity 2.3: Landscaping the Digital Arts and Humanities resources
and needs panorama

GIACOMO MANCUSO

CNR ISPC Researcher, Rome

Activity 2.4: Landscaping the Cultural Heritage and Heritage Science
resources and needs panorama

ANTONIO D'EREDITÀ

CNR ISPC Researcher, Rome

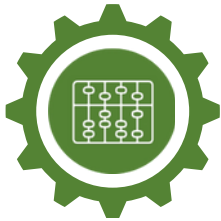
Activity 2.4: Landscaping the Cultural Heritage and Heritage Science
resources and needs panorama

NICOLA GIAMPIETRO

CNR ILIESI CTER, Rome

Activity 2.5: Landscaping the Open Science and Open Publishing
resources and needs panorama

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WP 3

Digital Resources Standardization, Consolidation and Alignment

WP3 aims to consolidate and align both research infrastructures and priority resources identified in WP2 Landscaping. This WP will focus on two main objectives based on the outcomes of WP2:

1. Filling the gaps identified within each infrastructure to meet the maturity threshold set by the project as the entry point.
2. Aligning the participating infrastructures to reduce the lack of interoperability, encompassing different layers, including but not limited to technological, ICT, and scientific issues.

Leader: Alberto Bucciero, Researcher, CNR ISPC, Lecce

WP 3 TEAM MEMBERS

MARTIN CRITELLI

CNR ILC Researcher, Pisa

Activity 3.2: Consolidating the Language resources (CLARIN)

FEDERICA SPINELLI

CNR OVI Technologist, Florence

Activity 3.3: Consolidating the Arts and Humanities resources (DARIAH)

RICCARDO COLELLA

CNR ISPC Researcher, Lecce

Activity 3.4: Consolidating the Cultural Heritage resources (E-RIHS)

H2IOSC PEOPLE

WP 3
**Digital Resources Standardization,
Consolidation and Alignment**



WP 3
TEAM MEMBERS

MATTEO PAOLUZZI

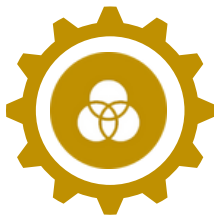
CNR IAC Researcher, Naples

Activity 3.5: Consolidating the Cultural Heritage resources (E-RIHS):
Damage prediction Environment

SARA DI FRAIA

CNR ISPF CTER, Naples

Activity 3.6: Consolidating the Cultural Heritage resources (E-RIHS):
Damage prediction Environment



WP 4

RIs Nodes and Resources Interoperability

WP4 is intended to enhance the interoperability of multidisciplinary resources at both the physical and semantic levels. This will involve creating a dedicated national cloud infrastructure and translating the knowledge and resources offered by each RI into a common interdisciplinary and interoperable representation.

Leader: Emiliano Degl'Innocenti, Researcher, CNR OVI, Florence

WP 4
TEAM MEMBERS

PAOLA STOLFI

CNR IAC Researcher, Naples

Activity 4.2: Nodes Interoperability: DARIAH Data Center in Naples

RAFFAELE GUARASCI

CNR ICAR Researcher, Naples

Activity 4.4: Nodes interoperability: DARIAH AI Hub in Naples

H2IOSC PEOPLE

WP 4
RI's Nodes and Resources
Interoperability



WP 4 **TEAM MEMBERS**

LAURA DE SANTIS

CNR ICAR Technologist, Naples

Activity 4.4: Nodes interoperability: DARIAH AI Hub in Naples

ANDREA PANDURINO

CNR ISPC Senior Technologist, Lecce

Activity 4.5: Nodes interoperability: E-RIHS AI Data Center in Lecce

MATTEO GRECO

CNR ISPC Technologist, Lecce

Activity 4.5: Nodes interoperability: E-RIHS AI Data Center in Lecce

STEFANO PASCALI

CNR NANOTEC Senior Technologist, Lecce

Activity 4.8: Nodes interoperability: E-RIHS AI Data Center in Lecce

RICCARDO VALENTE

CNR ISPC Researcher, Milano

Activity 4.10: Resources interoperability: DIGILAB resources (E-RIHS)

ERICA SCARPA

CNR ISPC Technologist, Milano

Activity 4.10: Resources interoperability: DIGILAB resources (E-RIHS)

H2IOSC PEOPLE



WP 5 MarketPlace

The goal of WP5 is to develop the framework for the 'H2IOSC Marketplace', an online tool to increase the visibility and value of data sources, services, and resources provided by the RIs and the research community. The H2IOSC Marketplace will be hosted in the H2IOSC national cloud and fully complies with the FAIR principles. The H2IOSC Marketplace structure has been identified in the European research area as an essential step to support the transition from the ordinary research landscape to cloud-based infrastructures. The H2IOSC Marketplace will, firstly, offer a universal entry point for various user types and different usage models of the national research communities involved in finding and employing services and resources. It will also feature tools and methodologies, introduce collaboration instruments, and foster innovation. Participants can share research datasets and tools as training materials through dedicated hubs, contextualized catalogues, presentation, visualization, and aggregation tools.

Leader: Enrico Pasini, Institute Director, CNR ILIESI.

WP 5 TEAM MEMBERS

MARTA STEFANI
CNR ILIESI Researcher, Rome
Activity 5.1: Design of the H2IOSC MarketPlace

PIETRO SICHERA
CNR ILIESI Technological Research Director, Rome
Activity 5.1: Design of the H2IOSC MarketPlace

DIEGO IVÁN QUINTERO BALBAS
CNR INO Researcher, Florence
Activity 5.3: Community support: E-RIHS

H2IOSC PEOPLE

WP 5
MarketPlace



WP 5
TEAM MEMBERS

LUCIA FRANCALANCI
CNR OVI Researcher, Florence
Activity 5.4: Community support: DARIAH

SALVATORE CRISTOFARO
CNR ILIESI Technologist, Rome
Activity 5.6: Marketplace implementation

VITTORIA FABIANI
CNR ILIESI CTER, Rome
Activity 5.6: Marketplace implementation



WP 6 **Resources Accessibility:** **Servification, Virtualization, Remotization**

WP6 aims to enhance the accessibility of existing tools and services available from the involved RIs through servification, virtualization, and remotization. The tasks related to these activities are based on the outcomes of landscaping tasks carried out in WP2, standardization in WP3, interoperability in WP4, and national cloud marketplace in WP5. Currently, each RI offers valuable tools targeting various fields, but they are not always accessible to researchers through a common layer, or they are not yet servified. To provide uniform and unified access to researchers and scientific communities, involved RIs will carry out refactoring and re-engineering tasks for existing tools and services in compliance with the common layer for the project developed in previous WPs. WP6 will deal with the diverse nature of the tools and their maturity level, with each RI focused on servification or virtualization efforts.

Leader: Bruno Fanini, Researcher, CNR ISPC

H2IOSC PEOPLE

WP 6
Resources Accessibility:
Servification, Virtualization, Remotization



WP 6 TEAM MEMBERS

FRANCESCO PINNA

CNR OVI Technological Research Director, Florence

Activity 6.2: DARIAH services Development: AEON - DARIAH Service Oriented Infrastructure

PAOLO CIMADOMO

CNR ISPC Researcher, Naples

Activity 6.3: E-RIHS services Development: WebXR services for HS

ALESSANDRO MUNTONI

CNR ISTI Technologist, Pisa

Activity 6.4: E-RIHS services Development: Media tools and integrated documentation systems

PREISLER ZDENEK

CNR ISPC Researcher, Catania

Activity 6.6: E-RIHS services development: AI/ML solutions and visualization tools for multimodal datasets

MICHELA BOTTICELLI

CNR ISPC Researcher, Catania

Activity 6.7: E-RIHS Remotization: HyMolab platform

PAOLO MARCO RIELA

CNR ISPC Researcher, Catania

Activity 6.7: E-RIHS Remotization: HyMolab platform

H2IOSC PEOPLE

WP 6
Resources Accessibility:
Servification, Virtualization, Remotization



WP 6 **TEAM MEMBERS**

FRANCESCO VELENTINO TAURINO

CNR ISPC Technologist, Lecce

Activity 6.8: E-RIHS Remotization: Wireless sensor networks for cultural heritage conservation and monitoring

ALICE DAL FOVO

CNR INO Researcher, Florence

Activity 6.11: E-RIHS Remotization for Digital Twins



WP 7

Community pilots: innovative cross-domain services and environments

WP7 will play a critical role in the architecture of the H2IOSC, providing a common basis for researchers from different domains to use the platform. Its aim is to define and implement a range of innovation-oriented services and proof-of-concept resources that researchers can directly use. These resources will be in the form of 'Pilot' applications hosted on the H2IOSC platform. WP7 will validate the developments delivered by W5 and WP6 and their potential for innovation in the WP7 Pilots.

Leader: Enrico Pasini, Institute Director, CNR ILIESI

H2IOSC PEOPLE

WP 7
**Community pilots: innovative
cross-domain services and environments**



COMMUNITY PILOTS

The following is an overview of the **pilot projects within the H2IOSC Federation**, highlighting their role in advancing research capabilities and promoting collaboration between disciplines.

The list of community pilots is provided according to the research infrastructure involved in the development.

E-RIHS

- Open Digital Archaeology and Epigraphy HUB
- Immersive Spatial Environment and Illuminated Manuscripts HUB
- Scientific Digital HUB For Painting Collections
- Cultural Heritage Innovative Interfaces
- Scientific Digital HUB for Metal Artworks
- Prototyping Platform for Virtual / Physical Exhibitions

CLARIN

- Speech and Oral Archives Platform
- Linguistic Linked Open Data Platform
- Cognitive Data HUB

DARIAH

- Digital Philology HUB
- Digital Heritage and Memory HUB

OPERAS

- Open Resources Publishing Pilot
- Diamond OA Publishing HUB for Scholarly Editions and Learned Journals Pilot

H2IOSC PEOPLE

WP 7
**Community pilots: innovative
cross-domain services and environments**



WP 7 **TEAM MEMBERS**

MICHELE MALLIA

CNR ILC Technologist, Pisa

Activity 7.2: Language Community Pilots: CLARIN

FRANCESCO CORADESCHI

CNR OVI Technological Research Director, Florence

Activity 7.3: Digital Arts and Humanities Community Pilots: DARIAH

CHIARA ELENA SALVADOR

CNR ISPC Researcher, Milano

Activity 7.4: Cultural Heritage Pilot (E-RIHS): Open Digital Archaeology and Epigraphy HUB

DAVIDE ZECCA

CNR ISPC Researcher, Lecce

Activity 7.5: Cultural Heritage Pilot (E-RIHS): Immersive Spatial Environment and Illuminated Manuscripts HUB

SARA MATTANA

CNR SCITEC Researcher, Perugia

Activity 7.6: Cultural Heritage Pilot (E-RIHS): Scientific Digital Hub For Painting Collections

GIORGIO GOSTI

CNR ISPC Researcher, Rome

Activity 7.7: Cultural Heritage Pilot (E-RIHS): Innovative Interfaces

MARCELLO MASSIDDA

CNR ISPC Researcher, Florence

Activity 7.9: Cultural Heritage Pilot (E-RIHS): Prototyping platform for Virtual / Physical Exhibitions

H2IOSC PEOPLE

WP 7
**Community pilots: innovative
cross-domain services and environments**



WP 7 **TEAM MEMBERS**

FRANCESCO SAVERIO GRECHI

CNR ILIESI CTER, Rome

Activity 7.10: Open Resources Publishing Pilot (OPERAS)

FEDERICO SILVESTRI

CNR ILIESI Researcher, Rome

Activity 7.10: Open Resources Publishing Pilot (OPERAS)

LAURA BAGGIANI

CNR ILIESI CTER, Rome

Activity 7.10: Open Resources Publishing Pilot (OPERAS)

MARCO BAGGIACCHI

CNR ILIESI CTER, Rome

Activity 7.10: Open Resources Publishing Pilot (OPERAS)

FRANCESCO MARIA BONACCORSI

CNR ILIESI CTER, Rome

Activity 7.10: Open Resources Publishing Pilot (OPERAS)

FABRIZIO GRECO

CNR ISPF CTER, Naples

Activity 7.11: Diamond OA Publishing Hub for Scholarly Editions and
Learned Journals Pilot (OPERAS)

SALVATORE PRINZI

CNR ISPF Researcher, Naples

Activity 7.11: Diamond OA Publishing Hub for Scholarly Editions and
Learned Journals Pilot (OPERAS)

H2IOSC PEOPLE



WP 8

Training, Capacity Building, Engagement

The goal of WP8 is to provide interdisciplinary and domain-specific FAIR and Open Science skills and competencies to user communities. Additionally, they will be trained on the disciplinary infrastructures available to them at the national and international level. This will allow them to better utilize the services of the RIs national nodes, ERICs, and national marketplace. Furthermore, this will help them correctly manage the lifecycle of their data.

Leader: Francesca Frontini, Researcher, CNR ILC

WP 8 TEAM MEMBERS

ROBERTA OTTAVIANI

CNR ILC Technologist, Pisa

Activity 8.1: Design of the H2IOSC Training, Capacity Building and Engagement framework

GIULIA PEDONESE

CNR ILC Technologist, Pisa

Activity 8.2: Teach CLARIN, Teach with CLARIN: Training, Communication and Impact

ANTONINA CHABAN

CNR INO Technologist, Florence

Activity 8.4: Teach E-RIHS, Teach with E-RIHS: Training, Communication and Impact

PHDs funded BY H2IOSC

5 **PHDs funded by H2IOSC**
39° cycle (2023-2024)

11 **PhD Students**



PHDs funded BY H2IOSC

39° CYCLE
(2023-2024)

H2IOSC is implementing a strategy to enhance the potential of new generations of researchers by improving their skills and expertise through doctoral scholarships with high scientific and technical competence.

Currently H2IOSC is actively involved in the following PhDs:

National PhD in Heritage Science (PhD-HS.it)

Coordinated by Sapienza Università di Roma

 [PhD Link](#)

PhD in Modeling and Data Science

Coordinated by Università di Torino

 [PhD Link](#)

PhD Programme Humanism and Technologies

Coordinated by Università di Macerata

 [PhD Link](#)

PhD in Philosophy

Coordinated by Università Roma Tre

 [PhD Link](#)

PhD in Italian and Romance Philology in the Digital Turn | FROID

Coordinate by Scuola Normale Superiore di Pisa

 [PhD Link](#)

PHDs STUDENTS

39° CYCLE
(2023-2024)

Shown below, the PhD students participating in H2IOSC project, collaborating with a CNR Institute.

PHDs STUDENTS & WPs INVOLVEMENT

LUCA BONDI

PhD student in Modeling and Data Science
CNR ILIESI Rome | Università di Torino
Involved in WP5 Marketplace

FEDERICA BONACINI

PhD student in Philosophy
CNR ILIESI Rome | Università Roma Tre
Involved in WP7 Community pilots: innovative cross-domain services and environments

FRANCESCO DI CONCILIO

PhD student in Heritage Science
CNR ISPC Lecce | Sapienza Università di Roma
Involved in WP6 Resources Accessibility: Servification, Virtualization, Remotization

SILVIA INNOCENTI

PhD student in Heritage Science
CNR INO Florence | Sapienza Università di Roma
Involved in WP7 Community pilots: innovative cross-domain services and environments

CLAUDIO BENEDETTO MAGGI

PhD student in Italian and Romance Philology in the Digital Turn (FROID)
CNR OVI Florence | Scuola Normale Superiore di Pisa
Involved in WP7 Community pilots: innovative cross-domain services and environments

PHDs STUDENTS

39° CYCLE
(2023-2024)

PHDs STUDENTS & WPs INVOLVEMENT

VALERIA MINISINI

PhD student in Heritage Science

CNR ISPC Rome | Sapienza Università di Roma

Involved in WP7 Community pilots: innovative cross-domain services and environments

IRENE MUCI

PhD student in Heritage Science

CNR ISPC Lecce | Sapienza Università di Roma

Involved in WP3 Digital Resources Standardization, Consolidation & Alignment

PAOLO RURALE

PhD student in Philosophy

CNR ILIESI Rome | Università Roma Tre

Involved in WP7 Community pilots: innovative cross-domain services and environments

ELISA SQUADRITO

PhD student in Humanism and Technologies

CNR ILC Pisa | Università di Macerata

Involved in WP7 Community pilots: innovative cross-domain services and environments

MANUELE VEGGI

PhD student in Heritage Science

CNR ISPC Florence | Sapienza Università di Roma

Involved in WP7 Community pilots: innovative cross-domain services and environments

MINGYANG YU

PhD student in Modeling and Data Science

CNR ILIESI Rome | Università di Torino

Involved in WP5 Marketplace

Project **GLOSSARY**

10 H2IOSC's keywords

8 WPs' keywords

The glossary consists of ten terms that provide context to the H2IOSC project regarding research infrastructure in Europe and the disciplines involved in the project. Additionally, eight key terms have been identified representing each project WP. At present, the eight keyword definitions provided for WP are intentionally broad, as it will be possible to provide more context-specific meanings for each term at a later stage of the project.



H2IOSC KEYWORDS

GLOSSARY

DH | Digital Humanities

Tecnologie informatiche per le discipline umanistiche

ENG

An interdisciplinary field of study representing the intersection of information technology and the humanities. The relationship between these two components involves both the application aspect, i.e. the systematic use of resources, digital languages and computational methods in the humanities, and the methodological aspect, in the critical reflection on their application in the humanities and how this convergence can generate new research directions.

ITA

Campo di studi interdisciplinari che si colloca all'intersezione tra le tecnologie informatiche e le discipline umanistiche. Il rapporto tra le due componenti coinvolge sia l'aspetto applicativo, ovvero l'uso sistematico di risorse, linguaggi digitali e metodologie computazionali nelle scienze umane, sia l'aspetto metodologico, nella riflessione critica sulla loro applicazione nel dominio umanistico e su come tale convergenza possa generare nuove direzioni di ricerca.

H2IOSC KEYWORDS

GLOSSARY

ERA | European Research Area

Spazio Europeo della Ricerca

ENG

ERA stands for European Research Area. It was launched in 2000 with the aim of creating a single market for research and innovation that fosters the free movement of researchers, scientific knowledge and innovation and promotes a more competitive European industry. To achieve these goals, the European research landscape needed both an improvement of national research policies and systems and more cross-border cooperation. ERA prioritises investments and reforms in research and innovation, encourages the mobility of researchers and the free flow of knowledge and technology, and improves access to excellence.

ITA

ERA è l'acronimo di Spazio Europeo della Ricerca. È stato lanciato nel 2000 con l'obiettivo di creare un mercato unico per la ricerca e l'innovazione che favorisca la libera circolazione dei ricercatori, delle conoscenze scientifiche e dell'innovazione e promuova un'industria europea più competitiva. Per raggiungere questi obiettivi, il panorama della ricerca europeo necessitava sia di un miglioramento delle politiche e dei sistemi di ricerca nazionali sia di una maggiore cooperazione transfrontaliera. ERA dà priorità agli investimenti e alle riforme nel campo della ricerca e dell'innovazione, favorisce la mobilità dei ricercatori e il libero flusso di conoscenze e tecnologie e migliora l'accesso all'eccellenza.



Source: <https://european-research-area.ec.europa.eu/>

H2IOSC KEYWORDS

GLOSSARY

ESFRI | European Strategy Forum on Research Infrastructures

Forum Strategico Europeo sulle Infrastrutture di Ricerca

ENG

ESFRI stands for European Strategy Forum on Research Infrastructures. Created in 2002, the Forum is a self-regulating body that operates openly and on a consensus basis. ESFRI is a strategic instrument for developing Europe's scientific integration and strengthening its international outreach. It operates at the forefront of European and global science policy and contributes to its development, translating policy objectives into concrete advice for research in Europe. Since its inception, ESFRI has made significant progress towards unity and international impact in the field of research infrastructures.

ITA

ESFRI è l'acronimo di Forum Strategico Europeo sulle Infrastrutture di Ricerca. Creato nel 2002, il Forum è un organismo di autoregolamentazione che opera in modo aperto e su base consensuale. L'ESFRI è uno strumento strategico per lo sviluppo dell'integrazione scientifica dell'Europa e per il rafforzamento della sua proiezione internazionale. Opera in prima linea nella politica scientifica europea e mondiale e contribuisce al suo sviluppo, traducendo gli obiettivi politici in consigli concreti per la ricerca in Europa. Dalla sua nascita, l'ESFRI ha compiuto progressi significativi verso l'unità e l'impatto internazionale nel campo delle infrastrutture di ricerca.



Source: www.esfri.eu

H2IOSC KEYWORDS

GLOSSARY

HS | Heritage Science

Scienze del Patrimonio Culturale

ENG

Heritage Science is a multi- and interdisciplinary field of study that focuses on tangible and intangible cultural heritage. The term was first used by the Science and Technology Committee of the UK House of Lords in 2006. Specifically, Heritage Science draws on various disciplinary skills: humanities (archaeology, philosophy, philology, geography, art history, etc.), social sciences (economics, sociology), hard sciences (chemistry, physics, geology, mathematics), architecture, computer science and engineering. Its ultimate goal is to improve the understanding, conservation and sustainable use of heritage so that it can enrich people's lives now and in the future. Heritage Science has thus bridged the gap between scientific and humanistic cultures, proving a fertile field of study for cognitive, cultural and even economic spin-offs.

ITA

L'Heritage Science è un ambito di studi multi- e interdisciplinare che rivolge le sue attenzioni al patrimonio culturale. Il termine è stato usato per la prima volta dallo Science and Technology Committee della UK House of Lords nel 2006. Specificamente, l'Heritage Science attinge a varie competenze disciplinari: scienze umane (archeologia, filosofia, filologia, geografia, storia dell'arte), scienze sociali (economia, sociologia), scienze dure (chimica, fisica, geologia, matematica), architettura, informatica e ingegneria. Il suo fine ultimo è quello di migliorare la comprensione, la conservazione e l'uso sostenibile del patrimonio in modo che possa arricchire la vita delle persone, oggi e in futuro. L'Heritage Science ha quindi gettato un ponte tra la cultura scientifica e quella umanistica, dimostrandosi un ambito di studi fertile per le sue ricadute conoscitive, culturali e anche economiche.



Source: European Commission, Horizon Europe framework programme for 2021-2027

H2IOSC KEYWORDS

GLOSSARY

LR | Language Resources

Risorse Linguistiche

ENG

The term Language Resources has rarely been defined in an explicit way. Calzolari et al (2011) define LR as any textual, audio or multimodal data available in a digitised format and containing linguistic information. In this sense corpora, lexical databases, formal grammars and language models may be considered LR. At the same time researchers also include in the definition of LR all NLP tools, such as for instance morphosyntactic analysers, taggers, or text mining technologies. Such tools may be used to evaluate or improve language technologies, as well as applications used to explore or visualise textual data. Language Resources are generally developed within the framework of Computational Linguistics and natural language processing (NLP), but their creation constitutes a specific subdomain of investigation, which is devoted to the discussion and research on the methods, best practices and standards for the creation and preservation of LR.

ITA

Il termine Risorse Linguistiche è stato raramente definito in modo esplicito.

Calzolari et al. (2011) definiscono le LR come qualsiasi dato testuale, audio o multimodale disponibile in formato digitalizzato e contenente informazioni linguistiche. In questo senso, corpora, database lessicali, grammatiche formali e modelli linguistici possono essere considerati LR. Allo stesso tempo, i ricercatori includono nella definizione di LR anche tutti gli strumenti di NLP, come ad esempio gli analizzatori morfosintattici, i tagger o le tecnologie di text mining. Tali strumenti possono essere utilizzati per valutare o migliorare le tecnologie linguistiche, così come le applicazioni utilizzate per esplorare o visualizzare i dati testuali. Le risorse linguistiche sono generalmente sviluppate nell'ambito della linguistica computazionale e dell'elaborazione del linguaggio naturale (NLP), ma la loro creazione costituisce un sottodominio specifico di indagine, dedicato alla discussione e alla ricerca sui metodi, le migliori pratiche e gli standard per la creazione e la conservazione delle LR.

H2IOSC KEYWORDS

GLOSSARY

Open Science

Scienza Aperta

ENG

Open Science is a set of principles and practices that aim to make scientific research from all fields accessible to everyone for the benefits of scientists and society as a whole. Open science is about making sure not only that scientific knowledge is accessible but also that the production of that knowledge itself is inclusive, equitable and sustainable. Open Science represents a new approach to the scientific process based on cooperative work and new ways of diffusing knowledge by using digital technologies and new collaborative tools. Open science encompasses unhindered access to scientific articles, access to data from public research, and collaborative research enabled by ICT tools and incentives.

ITA

La Scienza Aperta è un insieme di principi e pratiche che mirano a rendere accessibile a tutti la ricerca scientifica in tutti i campi, a beneficio degli scienziati e della società nel suo complesso. La scienza aperta si prefigge di garantire non solo l'accesso alla conoscenza scientifica, ma anche che la produzione stessa di tale conoscenza sia inclusiva, equa e sostenibile. La scienza aperta rappresenta un nuovo approccio al processo scientifico basato sul lavoro cooperativo e su nuove modalità di diffusione della conoscenza attraverso l'uso di tecnologie digitali e nuovi strumenti collaborativi. La scienza aperta comprende l'accesso libero agli articoli scientifici, l'accesso ai dati della ricerca pubblica e la ricerca collaborativa abilitata da strumenti e incentivi ICT.



Source: European Commission, Directorate-General for Research and Innovation, *Open innovation, open science, open to the world – A vision for Europe*, Publications Office, 2015

H2IOSC KEYWORDS

GLOSSARY

RI | Research Infrastructure

IR | Infrastruttura di ricerca

ENG

A Research Infrastructure (RI) is an organisation (distributed, virtual or single-site) that enables the research community to use specific facilities, resources and services in order to accelerate scientific progress and promote sustainable research. RIs include research laboratories, scientific instruments and technologies, data resources, computing tools, and communication networks. Research Infrastructures are implemented according to different organisational models, including central or geographically distributed laboratories and observatories for experiments and measurements, remote computing resources, databases, physical sample repositories, surveys and longitudinal studies. RIs are open and accessible to the best researchers from Europe and beyond to foster breakthrough innovations, also for the benefit of citizens and society.

ITA

Un'Infrastruttura di Ricerca (IR) è un'organizzazione (distribuita, cioè una rete di risorse distribuite; virtuale o single-site, cioè una singola struttura situata in un unico luogo) che consente alla comunità di ricerca di utilizzare strutture, risorse e servizi specifici per accelerare il progresso scientifico e promuovere una ricerca sostenibile. Le IR comprendono laboratori di ricerca, strumenti e tecnologie scientifiche, risorse di dati, strumenti informatici e reti di comunicazione. Le Infrastrutture di ricerca sono realizzate secondo diversi modelli organizzativi, tra cui laboratori e osservatori centrali o geograficamente distribuiti per esperimenti e misurazioni, risorse informatiche remote, banche dati, depositi di campioni fisici, indagini e studi longitudinali. Le IR sono aperte e accessibili ai migliori ricercatori europei ed extraeuropei per promuovere innovazioni rivoluzionarie, anche a beneficio dei cittadini e della società.



H2IOSC KEYWORDS

GLOSSARY

Social and Cultural Innovation

Innovazione Sociale e Culturale

ENG

Social and Cultural Innovation refers to the development and implementation of new ideas, practices, or solutions that address social and cultural challenges or improve the well-being of communities. These innovations often aim to bring about positive societal change, enhance inclusivity, and foster cultural development.

ITA

L'Innovazione Sociale e Culturale si riferisce allo sviluppo e all'implementazione di nuove idee, pratiche o soluzioni che affrontano le sfide sociali e culturali o migliorano il benessere delle comunità. Queste innovazioni spesso mirano a produrre un cambiamento sociale positivo, a migliorare l'inclusività e a promuovere lo sviluppo culturale.

H2IOSC KEYWORDS

GLOSSARY

SSH | Social Science and Humanities Cluster

ENG

A cluster projects implement interfaces to integrate computer and data management solutions to create cross-border, interdisciplinary and open cooperation spaces for European researchers.

The SSH cluster project SSHOC (Social Science and Humanities Open Cloud) develops the social sciences and humanities area of EOSC (European Open Science Cloud), transforming the current data landscape with its disciplinary silos and separate facilities into an integrated, cloud-based network of interconnected data infrastructures.

The cluster SSHOC aims to: establish common AAI across Europe; low barriers for entry and access, with identification for restricted resources; provide secured environments for storage, sharing, accessing and using data, coupled to compute resources for the (re)analysis of data; build a platform service to integrate the SSHOC Marketplace; define and adopt common open standards for interoperability.

ITA

Un progetto cluster implementa interfacce per integrare soluzioni informatiche e di gestione dei dati per creare spazi di cooperazione transfrontalieri, interdisciplinari e aperti per i ricercatori europei.

Il progetto cluster SSH SSHOC sviluppa l'area delle scienze sociali e umane dell'EOSC, trasformando l'attuale panorama dei dati con i suoi settori disciplinari e le sue strutture separate in una rete integrata e basata su cloud di infrastrutture di dati interconnesse.

Il cluster SSHOC si propone di: stabilire AAI comuni in tutta Europa; abbassare le barriere per l'ingresso e l'accesso, con identificazione delle risorse ad accesso limitato; fornire ambienti sicuri per l'archiviazione, la condivisione, l'accesso e l'utilizzo dei dati, abbinati a risorse di calcolo per la (ri)analisi dei dati; costruire un servizio di piattaforma per integrare il Marketplace SSHOC; definire e adottare standard aperti comuni per l'interoperabilità.

H2IOSC KEYWORDS

GLOSSARY

Stakeholder

ENG

The term stakeholder refers to 'any of the subjects (individuals or organisations) directly or indirectly involved in an economic initiative (project, business)'. A stakeholder is someone who has an interest in the realisation of a project or in the activity of a company, influences its decisions and is in turn affected by the outcome of the execution or the performance of the initiative. Stakeholders include customers, suppliers, shareholders, employees, lenders and other types of users.

ITA

Il termine stakeholder (letteralmente 'portatore di interesse') indica 'ciascuno dei soggetti (individui o organizzazioni) direttamente o indirettamente coinvolti in un'iniziativa economica (progetto, azienda)'. Lo stakeholder è colui che detiene un interesse nella realizzazione di un progetto o nell'attività di un'azienda, ne influenza le decisioni ed è a sua volta condizionato dal risultato dell'esecuzione o dall'andamento dell'iniziativa. Si possono considerare stakeholder i clienti, i fornitori, gli azionisti, i dipendenti, i finanziatori e altre tipologie di fruitori.

WPs' KEYWORDS



WP 1

Project and financial
Management,
Quality Assurance

ENG

The preconditions for the long-term sustainability (LTS) of RIs include the funding and governance aspects of RIs themselves, their socio-economic impact, as well as their management and use of data and their innovation potential. In addition to scientific excellence as an undisputed key element, LTS requires an adequate legal and financial framework and must be embedded in a supportive policy-driven environment to be successful. A joint effort combining European, national or other funding sources is essential for the development of the pan-European RI ecosystem. Effective governance and adequate human resources are other key elements to ensure the long-term sustainability of RIs at each stage of their life cycle. The H2IOSC Sustainability HUB will continuously monitor sustainability and innovation as key factors for the development of the H2IOSC digital ecosystem.

GLOSSARY

Sustainability

Sostenibilità

ITA

I prerequisiti per la sostenibilità a lungo termine (LTS) delle IR comprendono gli aspetti di finanziamento e di governance delle IR stesse, il loro impatto socio-economico, nonché la loro gestione dei dati e il loro potenziale innovativo. Oltre all'eccellenza scientifica come elemento chiave indiscusso, la LTS richiede un quadro giuridico e finanziario adeguato e, per avere successo, deve essere inserita in un contesto politico di sostegno. Uno sforzo congiunto che combini fonti di finanziamento europee, nazionali o di altro tipo è essenziale per lo sviluppo dell'ecosistema paneuropeo delle IR. Una governance efficace e risorse umane adeguate sono altri elementi chiave per garantire la sostenibilità a lungo termine delle IR in ogni fase del loro ciclo di vita. H2IOSC Sustainability HUB monitorerà costantemente la sostenibilità e l'innovazione come fattori chiave per lo sviluppo dell'ecosistema digitale H2IOSC.

WPs' KEYWORDS



WP 2

Landscaping and building
communities

ENG

Landscape refers to a detailed and extensive investigation of the panorama in the language technologies, humanities and heritage science, usually carried out through a survey to gather information concerning existing projects, resources, tools, communities, best practices, and standards in use.

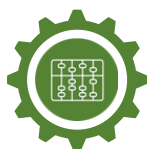
GLOSSARY

SSH Landscaping

ITA

Landscape si riferisce a un'indagine dettagliata ed estesa del panorama delle tecnologie linguistiche, delle scienze umane e delle scienze del patrimonio, solitamente condotta attraverso un questionario per raccogliere informazioni sui progetti, le risorse, gli strumenti, le comunità, le migliori pratiche e gli standard in uso.

WPs' KEYWORDS



WP 3

Digital Resources
Standardization, Consolidation
and Alignment

ENG

The acronym FAIR (Findable, Accessible, Interoperable, Reusable) was coined in 2014 at a Lorentz workshop in Leiden, the Netherlands. In the following years, a group of experts worked on a set of guiding principles to ensure optimal use of research data. In 2016, the FAIR Principles were officially published. Making data FAIR (i.e. implementing data fairification) means making them findable (they must be findable, i.e. described with appropriate metadata and unique and persistent identifiers), accessible (they must be made accessible to others and persistent over time), interoperable (they must be able to be integrated and used with other data or tools and in different contexts) and reusable (they must be reusable and thus well described and documented).

GLOSSARY

Fairification

Fairificazione

ITA

Nel 2014, in occasione di un workshop Lorentz a Leida, nei Paesi Bassi, viene coniato l'acronimo FAIR (Findable, Accessible, Interoperable, Reusable). Negli anni successivi, un gruppo di esperti lavora a una lista di principi guida utili a garantire un uso ottimale dei dati della ricerca e nel 2016 vengono pubblicati ufficialmente i Principi FAIR. Strutturare i dati secondo i principi FAIR, ovvero attuare una fairificazione dei dati, significa renderli findable 'rintracciabili' (devono essere reperibili, ossia descritti con metadati appropriati e identificativi univoci e persistenti), accessible 'accessibili' (devono essere resi accessibili ad altri e persistenti nel tempo), interoperable 'interoperabili' (devono poter essere integrati e utilizzati con altri dati o strumenti e in diversi contesti) e reusable 'riutilizzabili' (devono essere riutilizzabili e dunque ben descritti e documentati).

WPs' KEYWORDS



WP 4

RIs Nodes and Resources
Interoperability

ENG

In computer science, ontologies represent information in a formal, structured way by describing entities and their relationships. They enable the transformation of unstructured knowledge into computable information. The H2IOSC project's WP4 focuses on addressing isolation and disconnection of specialized resources. It aims to achieve accessibility, contextualization, and reuse through interoperability and semantic interoperability. Tools will be developed for managing thesauri and vocabularies based on results from WP2 and WP3. A common ontology will be selected for data mapping and modeling, along with a mapping scheme for resource integration and data transformation. This ensures consistency and integration among resources, promoting project sustainability.

GLOSSARY

Ontology

Ontologia

ITA

In informatica, le ontologie rappresentano le informazioni in modo formale e strutturato, descrivendo le entità e le loro relazioni. Esse consentono di trasformare la conoscenza non strutturata in informazioni computabili. Il WP4 del progetto H2IOSC si concentra sul problema dell'isolamento e della disconnessione delle risorse specializzate. Mira a raggiungere l'accessibilità, la contestualizzazione e il riutilizzo attraverso l'interoperabilità e l'interoperabilità semantica. Verranno sviluppati strumenti per la gestione di thesauri e vocabolari basati sui risultati dei WP2 e WP3. Verrà scelta un'ontologia comune per la mappatura e la modellazione dei dati, insieme a uno schema di mappatura per l'integrazione delle risorse e la trasformazione dei dati. Ciò garantisce la coerenza e l'integrazione tra le risorse, promuovendo la sostenibilità del progetto.

WPs' KEYWORDS



WP 5
Marketplace

ENG

It is a web platform hosted in the H2IOSC national cloud that brings together and contextualises the catalogues, resources and services provided by the infrastructures and research communities involved in the project, in full compliance with the FAIR principles. It allows to find and share tools, software, training materials, datasets, publications, pilot projects. It helps to develop synergies and complementarities in data management and to ensure their integration and interoperability, linking the national and European dimensions in terms of visibility, availability and awareness of user communities.

GLOSSARY

Marketplace

ITA

È una piattaforma web ospitata nel Cloud nazionale H2IOSC che riunisce e contestualizza cataloghi, risorse e servizi forniti dalle infrastrutture e dalle comunità di ricerca partecipanti al progetto nel pieno rispetto dei principi FAIR. Consente di trovare e condividere strumenti, software, materiali formativi, dataset, pubblicazioni, progetti pilota. Contribuisce a sviluppare sinergie, complementarità nella gestione dei dati e a garantirne l'integrazione e l'interoperabilità, collegando la dimensione nazionale e quella europea in termini di visibilità, disponibilità e sensibilizzazione delle comunità di utenti.

WPs' KEYWORDS



WP 6

Resources Accessibility:
Servification, Virtualization,
Remotization

ENG

Servification is defined as the process of identifying and developing strategies, organizational resources and processes to create a business model focused on services and not on products. In the context of software development, servification refers to the process of transforming software tools and web applications into services, understood as a set of functionalities that can be reused by different users for various purposes.

GLOSSARY

Servification

Servificazione

ITA

Si definisce servificazione il processo di identificazione e di sviluppo di strategie, risorse organizzative e processi per creare un modello incentrato sui servizi. Nel contesto dello sviluppo di software, per servificazione si intende il processo di trasformazione di strumenti software ed applicazioni web in servizi, intesi come una serie di funzionalità che possono essere riutilizzate da diversi utenti per scopi vari.

WPs' KEYWORDS



WP 7

Community pilots: innovative cross-domain services and environments

ENG

The term refers to innovative services and experimental resources implemented as "proof of concepts" to be made available to researchers through the H2IOSC Marketplace catalogue. "Pilot projects" enable information and tools to be made available to researchers, institutions and other members and stakeholders of the SSH scientific community within the framework of Open Science and Open Data and according to the FAIR principles, including enabling the use of innovative tools.

GLOSSARY

Pilot

Pilota

ITA

Il termine fa riferimento ai servizi orientati all'innovazione e a risorse sperimentali implementate come "proof of concepts" da rendere disponibili ai ricercatori attraverso il catalogo del Marketplace H2IOSC. I "progetti pilota" consentono di rendere accessibili le informazioni e gli strumenti agli studiosi, alle istituzioni e ad altri membri e stakeholder della comunità scientifica delle SSH nell'ambito dell'Open Science e dell'Open Data e secondo i principi FAIR, consentendo anche l'uso di strumenti innovativi.

WPs' KEYWORDS



WP 8

Training, Capacity Building,
Engagement

ENG

Outreach can be defined as the planning of a user involvement or training program that actively involves a broad community. This involvement may take place through the creation of events, initiatives, or the dissemination of materials that not only satisfy the relevant scientific community but also reach other possible stakeholders. The main objective of outreach is to maximize the impact of research and communicate knowledge and good practices, thus contributing to positive community involvement. More generally, outreach activities also include information and orientation initiatives dedicated to promoting the knowledge of products, services, and possibilities offered by Research Infrastructures to potential users.



Source: International Organization for Standardization
ISO 5127:2017(en) Information and documentation - Foundation and vocabulary



Source: International Organization for Standardization
ISO 30400:2022(en) Human resource management - Vocabulary

GLOSSARY

Outreach

ITA

L'outreach può essere definito come la pianificazione di un programma di coinvolgimento utenti o di formazione che coinvolga attivamente una ampia comunità. Tale coinvolgimento può avvenire attraverso la creazione di eventi, iniziative o la diffusione di materiali che soddisfino non solo la comunità scientifica di riferimento ma raggiungano altri possibili stakeholders. L'obiettivo principale dell'outreach è quello di massimizzare l'impatto della ricerca e comunicare conoscenze e buone pratiche, contribuendo così a creare un coinvolgimento positivo della comunità. Più in generale, fanno parte delle attività di outreach anche iniziative di informazione e orientamento dedicate a promuovere la conoscenza di prodotti, servizi e possibilità offerti dalle Infrastrutture di Ricerca nei confronti di potenziali utilizzatori.

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