

FROM LANDSCAPING TO MONITORING: THE H2IOSC OBSERVATORY

1. INTRODUCTION

This paper aims to present the H2IOSC Observatory: a platform conceived to provide long-term monitoring of the digital research ecosystem federated within the Humanities and Heritage Italian Open Science Cloud project (H2IOSC - <https://www.h2iosc.cnr.it/>). H2IOSC built a national federated network for research in the humanities, linguistics, cultural heritage, and heritage science, developed through the collaboration of the Italian nodes of four ESFRI Research Infrastructures in the Social Sciences and Humanities (SSH) domain: CLARIN, DARIAH, E-RIHS, and OPERAS (ESFRI RIs Portfolio - <https://ri-portfolio.esfri.eu/ri-portfolio/catalogue>). In alignment with the principles of the European Open Science Cloud (EOSC), the project seeks to foster access to interoperable data, tools, and services across these domains, thereby reinforcing the capacity of Italian infrastructures to respond to evolving research demands (DEGL'INNOCENTI *et al.* 2023; CARVALE *et al.* 2026).

To build the federated ecosystem, a comprehensive assessment of the resources and communities associated with the four participating Research Infrastructures (RIs) was essential. The activities carried out within 'Landscaping and Building Communities' activity addressed this challenge by conducting a systematic analysis of the Italian landscape in the fields of language technologies, digital humanities, and heritage science. The survey encompassed existing projects, digital resources, tools, research communities, best practices, and adopted standards, providing a comprehensive overview of the national ecosystem (LUZIETTI *et al.* 2025). The outcomes of this effort were consolidated into a dedicated H2IOSC Observatory, designed to monitor the evolution of the landscape and support evidence-based decision-making for the development of the H2IOSC infrastructure (§3-5). The rationale for an observatory, however, is not primarily institutional. RIs are increasingly recognized as strategic instruments for innovation, interdisciplinarity, and openness; as such, they require systematic knowledge of their communities, of the resources these communities produce and use, of the practices they follow, and of the needs they express as those needs evolve over time (LI *et al.* 2024). Such knowledge cannot be obtained through a single survey. A one-time mapping records a given moment but cannot track an ecosystem in continuous transformation, and its value diminishes as soon as practices change. The challenge, accordingly, is to move from landscaping, intended as

a preparatory survey, to monitoring, understood as repeatable and permanent functions of an infrastructure. Accordingly, the H2IOSC Observatory can be introduced as the long-term outcome of a broader landscaping process rather than as a stand-alone product.

The Observatory is not merely a dissemination website or a dashboard, but a methodological and operational set of instruments that transforms the community-mapping efforts into a permanent monitoring system. It constitutes the mechanism through which a finite mapping campaign acquires continuity, becoming a standing capacity of the federation rather than a closed deliverable. Conceived as a recurring health check of the federated research ecosystem, the Observatory supports the identification of resources, tools, services, projects, standards, protocols, and community practices, while also contributing to the assessment of gaps, needs, FAIRness, and digitization levels with a view to future integration and service development (WILKINSON *et al.* 2016).

This transition from landscaping to observation also entails a participatory dimension. By involving scholarly communities in the production, validation, and interpretation of evidence, the Observatory does not simply describe the ecosystem it monitors, but contributes to its co-construction, through continuous interaction with research communities and stakeholder engagement activities. It will therefore be presented as an evidence-based and participatory layer of the H2IOSC federation, designed to support continuous monitoring, strategic planning, and the alignment of digital services with the evolving needs of scholarly communities.

2. METHODOLOGICAL FRAMEWORK: THE MIXED-METHODS STRATEGY

The methodological foundation of the H2IOSC Observatory rests on a mixed-methods strategy designed to address the complexity of a federation composed of different Research Infrastructures, each characterized by specific disciplinary communities, data types, services, and scholarly traditions (LUZIETTI *et al.* 2024). Rather than relying on a single source of evidence, this strategy combines quantitative and qualitative instruments to produce a multidimensional representation of the research landscape (LUZIETTI *et al.* 2025):

- Questionnaire-based surveys provide aggregated data on the use and production of digital resources, awareness of research infrastructures, publication practices, training needs, and attitudes towards Open Science and FAIR principles.
- Semi-structured interviews – conducted individually using a flexible guiding framework, and without audio recording to ensure participant privacy and comfort – made it possible to explore in greater depth how researchers understand, create, manage, and share digital data in their everyday work.

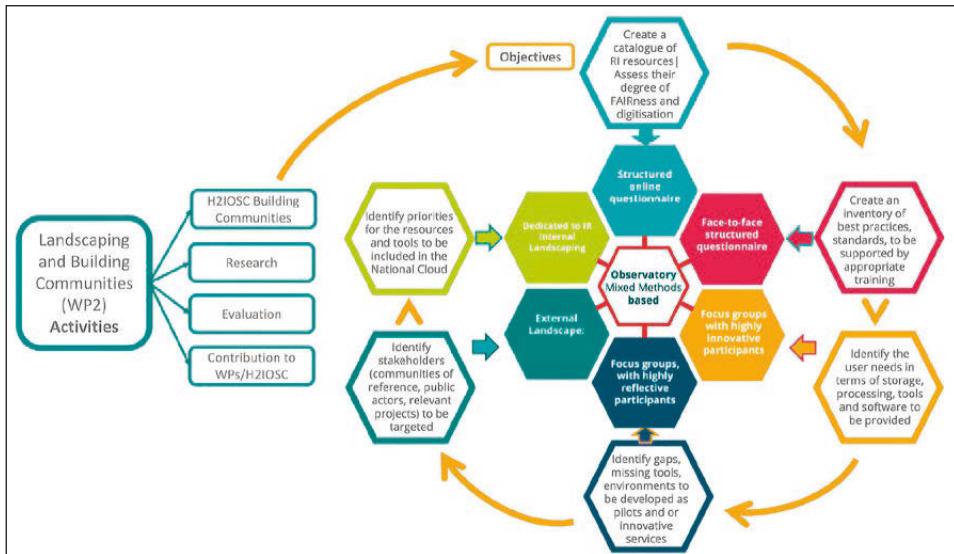


Fig. 1 – Schema illustrating the Mixed Methods approach employed in the H2IOSC surveying activity.

- Focus groups – conducted as interactive group sessions based on a pre-defined guide and audio-recorded for detailed analysis – complement these instruments by creating a space for discussion among different career stages and disciplinary profiles, thus helping to capture expectations, perceived gaps, and shared priorities.
- Finally, complementary targeted discovery activities contribute to the identification and description of datasets, tools, projects, protocols, standards, and community practices.

The integration of these instruments enables the Observatory to combine statistical indicators with interpretive evidence, making it not only a repository of information, but also a reflexive tool for understanding how research communities interact with digital infrastructures (Fig. 1).

The articulation of these four strands gives evidential depth to the Observatory. The questionnaire-based survey was designed to engage stakeholder communities at large and to provide a broad quantitative picture of practices, tools, infrastructure awareness, and training needs. A single questionnaire was deployed across all four communities, rather than four separate instruments, in order to prevent data fragmentation and to mitigate the ‘community overload’ affecting researchers whose expertise often spans more than one infrastructure. Particular care was also devoted to defining potentially opaque terms and

acronyms, such as 'FAIR' and 'PID', so that responses would be as accurate and comparable as possible. The semi-structured interviews offered a deeper insight into the data cultures of the communities, including how scholars define and use digital data, how they choose between familiar systems and new resources, and how they approach sharing and dissemination beyond traditional publication. Structured as informal conversations and documented through structured notes, they created a setting in which participants could raise critical points freely (MANCUSO *et al.* 2025). The focus groups, a technique well established in the social sciences for eliciting rich data from group interaction, enabled a participatory comparison between junior and senior researchers across disciplines; they were designed to surface expectations and shared priorities rather than to produce statistically generalizable measures (MONACHINI *et al.* 2025). Finally, landscaping matrices and databases, including DHeLO, the Digital Heritage Landscaping Platform (<https://dhelo.cnr.it>), provided the structured backbone for cataloguing and navigating information on datasets, tools, services, projects, protocols, and standards, supporting longitudinal analysis and the development of dashboard and observatory functions (MANCUSO, D'EREDITÀ 2024; MANCUSO 2025).

The decisive methodological aspect lies in the convergence of these different strands. Quantitative data, drawn principally from the questionnaires and integrated with evidence from interviews and focus groups, are analyzed through descriptive statistics in order to reveal usage patterns, levels of awareness, and potential gaps. Qualitative data from interviews and focus groups are instead thematically coded to extract recurrent concerns, needs, and suggestions. Triangulation is therefore not invoked as a rhetorical guarantee, but functions as an operative procedure: a pattern emerging from the survey data remains provisional until it is compared with the evidence gathered through interviews or focus groups, while a concern voiced in a focus group gains broader relevance when the questionnaire shows it to be more widely shared. The Observatory is the virtual place in which these heterogeneous forms of evidence converge, and in which their convergence can be made visible to the communities that produced them.

3. THE H2IOSC OBSERVATORY: CONCEPT, AIMS, AND TARGET USERS

The H2IOSC Permanent Observatory (soon to be released on <https://www.h2iosc.cnr.it>) is conceived as a digital and methodological instrument designed to monitor, analyze, and valorize the ecosystem of research infrastructures, services, resources, and user practices that converge within the federation. It may be characterized, in turn, as a permanent monitoring environment; as a public interface through which evidence gathered through surveys, interviews, focus groups, and landscaping activities is made accessible

in a structured and transparent manner; as an intelligence layer supporting the strategic governance of H2IOSC as a cluster and of the 4 RIs individually; and as a bridge between community-generated evidence and infrastructure development. This dual character, at once a scientific output and an operational tool, is central: the Observatory documents the national research ecosystem while actively informing the design of policies, infrastructures, and services aligned with the principles of openness, interoperability, and sustainability.

The H2IOSC Observatory is conceptually aligned with the EOSC Observatory (<https://www.eoscobservatory.eu/>), which serves as its reference model and benchmark, although it operates with a deliberately more targeted and granular focus, calibrated to the practices and communities of the four federated Italian infrastructures. Unlike conventional landscape analyses or static observatories, in which methodologies and data sources may remain opaque, the H2IOSC Observatory is grounded in replicable and validated instruments developed and tested within the project. Transparency, methodological rigor, and accountability to the contributing communities are therefore not subsequent concerns, but constitutive features of the Observatory itself.

The Observatory addresses a plural audience, and its specificity resides in its connection to the H2IOSC federation rather than in any generic monitoring function. Researchers and scholarly communities may explore data, resources, tools, and community trends relevant to their fields, together with the qualitative context that clarifies how such resources are perceived and used. Infrastructure staff may draw upon evidence concerning uptake, gaps, and emerging demand to improve services and plan integration. Service designers and technical teams may use the same evidence to identify priorities and missing components. Those responsible for training may rely on documented information about skills and needs in order to shape capacity-building initiatives. Observatory curators may use accumulated evidence to refine future landscaping campaigns, design targeted follow-up activities, deepen the investigation of specific issues that have emerged, or adjust the scope of subsequent mapping efforts. Policy makers and institutional stakeholders, finally, may consult indicators on Open Science practices, FAIRness, interoperability, and community engagement in support of strategic decisions. The interface is designed to remain usable across this diverse readership, without obliging any one group to navigate the specialized concerns of the others.

4. INFORMATION ARCHITECTURE AND MAIN FUNCTIONALITIES

The Observatory is designed in accordance with user-centered and evidence-driven principles, grounded in accessibility, clarity, and methodological robustness, and developed through close collaboration among research teams, data engineers, and UX/UI specialists. Technically, it is implemented as



Fig. 2 – The H2IOSC Observatory home page.

a modular web application whose architecture allows each thematic section to be managed independently while preserving the coherence of the whole, thereby supporting long-term maintainability and scalability. The interface adopts a minimalist, institutional aesthetic, aligned with the visual identity of H2IOSC and compliant with the Web Content Accessibility Guidelines (WCAG), so that usability is built in rather than retrofitted.

The information architecture is organized around seven core thematic areas, corresponding to the principal research and monitoring axes of the project. It is designed to accommodate both the diversity of data types and the heterogeneity of user profiles. An introductory section sets out the conceptual and methodological framework, situating the Observatory within the H2IOSC and EOSC contexts. Subsequent sections present qualitative material derived from interviews and focus groups, providing insight into researchers' experiences, institutional practices, and perceived challenges. Other sections display the results of the online surveys through aggregated visualizations, including charts, tables, and key performance indicators, accompanied by interpretive texts that help readers move from figures to

meaning. A participatory section invites external users to contribute suggestions, request data, or propose collaborations, while a regularly updated news area reports on activities, publications, and events. Navigation across these areas relies on dynamic visual components, such as interactive dashboards, linked datasets, and contextual breadcrumbs, which bind the experience into a coherent whole (Fig. 2).

The dashboard constitutes one of the core functions of the Observatory, enabling users to explore metrics, charts, KPIs, and thematic visualizations. Its purpose, however, is not visualization for its own sake, but interpretability: data are organized so that users can move fluidly between evidence, explanation, and related resources in the Marketplace, rather than encountering figures in isolation. A dedicated subsection highlights the projects mapped through landscaping activities. These are not stored statically within the Observatory but drawn dynamically from the DHeLO platform through the H2IOSC Marketplace, so that the project data displayed remain consistent with their source and can be updated as the underlying landscaping evolves.

5. OBSERVATORY AND MARKETPLACE: A COMPLEMENTARY RELATIONSHIP

The H2IOSC Marketplace is the central gateway through which researchers can discover and access the digital resources made available by the H2IOSC infrastructure. It provides a single environment where datasets, software tools, digital services, training materials, and other research resources contributed by the participating Research Infrastructures are organized, described, and made searchable. By bringing together resources that would otherwise remain distributed across independent repositories and platforms, the Marketplace simplifies resource discovery, promotes reuse, and facilitates access to the digital ecosystem supporting research (FABIANI *et al.* 2025).

The Observatory and the Marketplace operate in continuous synergy, constituting two complementary nodes of the same federated infrastructure. The Marketplace exposes and makes available digital assets, tools, and services, whereas the Observatory analyses how these assets are mapped, used, updated, and aligned with community needs. The two are interconnected through a bidirectional flow of information, such that the Observatory is not a parallel or redundant platform but the analytical counterpart of the Marketplace (SICHERA *et al.* 2025).

This interaction may be read at three levels. The first is resource ingestion and monitoring: through its dashboard, the Observatory is able to track the growth and evolution of the resources available across the H2IOSC ecosystem, supporting the near real-time monitoring of resource ingestion, user behavior, and service uptake. The second is the alignment between community needs and services: the evidence gathered through the landscaping activities makes

it possible to assess whether the Marketplace offerings correspond to the actual needs of the communities, by visualizing correlations among community needs, research domains, and the availability of tools and datasets. The third is the strategic feedback loop: usage data, community feedback, and landscape indicators may be combined in order to inform future development, supporting the periodic generation of analytical reports on the progress of FAIRification, interoperability, and community engagement, and informing decisions concerning integration and training priorities. Taken together, these levels establish the Observatory as the reflexive complement of the Marketplace – the component that transforms the federation’s digital offer into an object of continuous analysis rather than a static catalogue.

6. PRELIMINARY INSIGHTS FROM THE H2IOSC OBSERVATORY

This section presents a selection of the preliminary results surfaced by the Observatory, drawing on two of the principal community-facing instruments deployed: the questionnaire-based survey and the focus groups; presented as a demonstration of the type of evidence the Observatory makes exploitable, and of the priorities that emerge when quantitative breadth and qualitative depth are read together. After a brief characterization of the communities from which this evidence is drawn, the discussion concentrates on three themes of relevance to the federation: awareness of the research infrastructures, expectations, and training needs.

A brief characterization of the respondents is in order. The respondents to the questionnaire-based survey form a community firmly rooted in the social sciences and humanities, and their disciplinary distribution maps closely

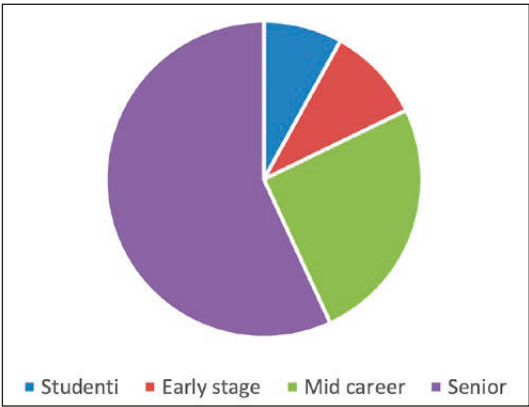


Fig. 3 – Pie chart of the Questionnaire respondents career level.

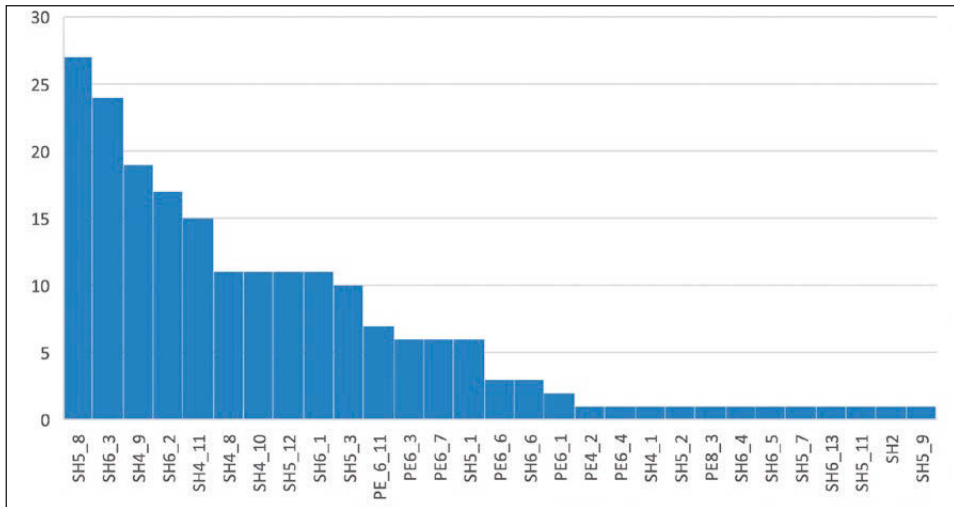


Fig. 4 – Bar chart of the Questionnaire respondents ERC disciplinary fields.

onto the four federated infrastructures. The most strongly represented ERC fields are SH4, SH5 and SH6 (Fig. 4). These domains roughly correspond to the communities served by the partnering RIs, with some likely overlap: the linguistic and language-resource communities addressed by CLARIN, the digital-humanities communities gathered around DARIAH, and the heritage-science and archaeological communities represented by E-RIHS, with OPERAS cutting across all of them on the side of scholarly communication. Among these survey respondents, the sample is also weighted towards established scholars (99 senior researchers, against 44 mid-career, 17 early-stage and 14 students) and drawn mainly from the National Research Council (106 respondents) and the universities (70) (Fig. 3). This composition matters for the interpretation that follows: the evidence reflects, above all, the perspective of experienced researchers within the SSH core of the federation, while the relative underrepresentation of early-career scholars can itself be read as a suggestion for future outreach. The focus groups complement this profile with a deliberately balanced sample: twenty-four participants, evenly split by gender, organized into two junior groups (PhD students and post-doctoral or junior research fellows) and two senior groups (senior researchers and university professors), with a mean age of 35.4 years. Here too, the SSH disciplines predominate, linguists being the most numerous, followed by philosophers, archaeologists and philologists.

The first theme concerns awareness of the research infrastructures; 79% of questionnaire respondents declared themselves aware of the existence of

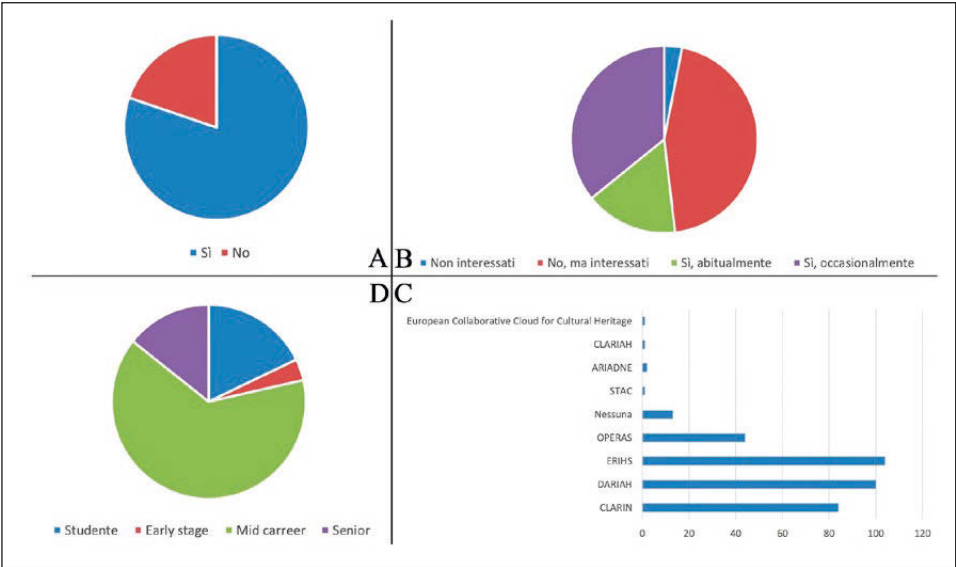


Fig. 5 – Awareness of RIs according to Questionnaire data: A) knowledge on the existence and characteristics of RIs by respondents; B) list of RIs known by respondent; C) respondents use and consultation of RIs service; D) professional profiles of respondents unaware of the existence and characteristics of RIs.

RIs, with E-RIHS, DARIAH and CLARIN the best known (104, 100 and 84 responses respectively) (Fig. 5). Awareness, however, does not coincide with use; 20% of respondents were unfamiliar with the RI services actually available and, more tellingly, 73% of those who do not currently use them expressed an interest in doing so. These figures describe a community that knows the infrastructures exist yet engages with them only partially, leaving a substantial reserve of latent demand. For the Observatory, this gap between awareness and uptake is among the most actionable findings, since it identifies a population already disposed towards the infrastructures but in need of clearer routes into their services.

The focus groups corroborate this reading. Participants were divided into those who had both heard of an infrastructure and used it, and those who had only heard of it without ever employing it; among the latter, a significant proportion expressed a sense of curiosity about the potential use of such a system in the future. Across all the meetings, considerable expectations were voiced regarding the study and research opportunities that a digital infrastructure should provide, with consistent variance from one disciplinary community to another. The qualitative evidence thus puts a human face on the latent demand registered by the survey: those who remain outside the

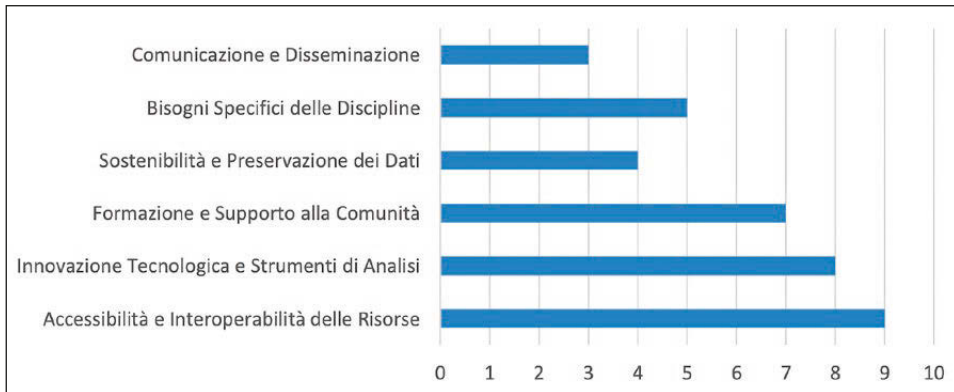


Fig. 6 – Bar chart showing Questionnaire respondents' future expectations on RIs.

infrastructures are, for the most part, not indifferent to them but simply waiting for clearer points of entry.

The second theme follows naturally from the first: if many researchers are waiting for clearer points of entry, it is worth asking what they expect to find once inside. When asked about their expectations of the four infrastructures, the open answers to the questionnaire were not numerous. However, respondents placed the accessibility and interoperability of resources at the very top of their priorities (9 mentions), ahead of technological innovation and analysis tools (8) and training and community support (7), with discipline-specific needs (5), data sustainability and preservation (4), and communication and dissemination (3) following. This hierarchy is coherent with the awareness gap described above: the community asks, before anything else, for infrastructures that make existing resources easier to reach and to combine – that is, for lower barriers to access and reuse rather than for novelty for its own sake (Fig. 6).

The reluctance to answer this question in the survey was not mirrored in the focus groups, where participants translated this broad ranking into concrete, discipline-specific expectations. Linguists called for an interoperable platform able to bring together the resources, tools and services needed to manage their corpora, so that the same resource could be used in the same way by colleagues working in different countries; archaeologists, for their part, expected such a platform to act as a repository not only for publications but also for 'field' materials, and raised pointed questions about excavation rights and the use of materials, especially when research is conducted abroad. Beneath these differences, however, lay a shared horizon: both junior and senior participants approached the digital future with curiosity and a marked openness to collaborative, shared research, and the generational divergence

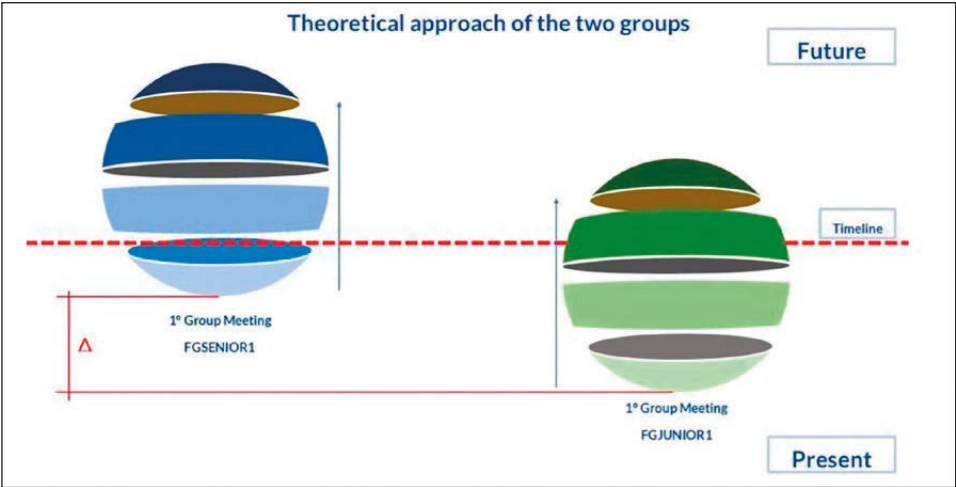


Fig. 7 – Expected conceptual positioning of the two focus groups.

anticipated at the planning stage proved less pronounced than expected. The ‘delta’ between experienced and entering researchers narrowed over the course of discussion, and the four groups ultimately converged in their conception of what a digital infrastructure for the social sciences and humanities should offer (Fig. 7).

The third theme stems directly from the second, since many of the expectations described above can be interpreted, in the end, as questions of competence: a community can only take advantage of digital resources if it has the skills to do so. When asked about training, respondents expressed the strongest demand for access to archives and repositories (112 responses), data-analysis tools (104), and data management and preservation (80) – a profile that mirrors, almost point for point, the priorities they assigned to the infrastructures themselves. Preferences regarding delivery were equally clear: self-paced distance learning (109) and live online sessions (87) were favored over in-person (36) and hybrid (40) formats, confirming the value of the scalable, online provision that the federation is well placed to offer. A particularly encouraging result is that 89 respondents declared themselves willing to share training materials, against only 6 opposed: the community is not merely a recipient of capacity-building but a potential contributor to it, and the Observatory can help match this latent supply to the demand it has documented.

The focus groups lend this demand a generational nuance (LUZIETTI *et al.* 2025). Senior researchers tended to frame training as the bridge between

principles they already endorse and a research practice they find harder to change, whereas junior participants, closer to the tools and more at ease with collaborative, web-based work, were as ready to provide training as to receive it. This complementarity is itself an asset: the willingness to share materials registered by the survey is matched, in the qualitative evidence, by a cohort of early-career scholars who could help carry such provision forward, reinforcing the case for the federation to act as a hub for community-driven capacity-building.

Read together, these three themes triangulate on a coherent, if preliminary, picture: an SSH community that knows the infrastructures and approaches their digital future with real openness, but whose engagement, expectations and skills remain uneven and only partly realized. These are precisely the dimensions the Observatory is designed to keep under continuous observation – tracking them over time, aligning them with the Marketplace offer, and revisiting them as practices evolve – so that the snapshot offered here becomes the first point in a longitudinal reading rather than a closed result.

7. SUSTAINABILITY, ADAPTABILITY, AND LONG-TERM VISION

A defining feature of the Observatory is its iterative and adaptive nature. Conceived as a living system, it is continuously updated through repeated cycles of data collection, validation, and analysis. This emphasis on adaptability is deliberate: scholarly practices, digital tools, standards, and community needs all evolve over time, and the Observatory provides a mechanism for monitoring these changes rather than fixing them in a static representation. In due course it may expand into adjacent domains of research and innovation, progressively broadening the spectrum of perspectives it represents.

This orientation is reinforced by an explicit commitment to Open Science. The methodologies, datasets, and analytical instruments of the Observatory are openly documented and, wherever possible, made reusable by other projects, so that the same instruments validated within the H2IOSC landscaping activities may be examined, criticized, and replicated elsewhere. Because the underlying methods are transparent, the findings of the Observatory remain open to scrutiny, validation, and revision in a manner that opaque or proprietary monitoring systems do not permit. By providing an evidence-based understanding of how researchers interact with data, tools, and infrastructures, the Observatory helps align research practices with the digital services furnished by the federation and supports the long-term sustainability of the H2IOSC ecosystem over its ten-year maintenance horizon. The essential point is that the Observatory does not merely preserve the results of the project's landscaping activities but maintains them as active and serviceable well beyond the initial phase of the project.

8. CONCLUSIONS

The H2IOSC Observatory is, above all, a bridge between community mapping and infrastructure development. It transforms the evidence gathered through surveys, interviews, focus groups, and landscaping activities into a permanent, transparent, and reusable monitoring environment, converting a finite mapping campaign into a standing function of the federation. Three considerations are paramount. First, the Observatory provides a structured understanding of communities, resources, practices, and needs, grounded in a validated methodology and open by design. Second, it supports strategic decision-making within H2IOSC, particularly in relation to the Marketplace, FAIRification processes, training priorities, and service development, thereby embedding evidence within the everyday governance of the infrastructure. Third, the Observatory may serve as a model for RI observatories supporting evidence-based stewardship of infrastructures, especially in the humanities and heritage domains, by demonstrating how landscape analysis and community engagement can be translated into a durable monitoring tool rather than a one-time report.

By embedding community-generated evidence within the operational life of the infrastructure, the H2IOSC Observatory contributes to shaping the federation not merely as a provider of digital services, but as a reflexive, adaptive, and community-driven Open Science ecosystem.

GIACOMO MANCUSO, ALESSANDRA CARAVALLE
Istituto di Scienze del Patrimonio Culturale - CNR
giacomo.mancuso@cnr.it, alessandra.caravale@cnr.it

MONICA MONACHINI, VALERIA QUOCHI
Istituto di Linguistica Computazionale “Antonio Zampolli” - CNR
monica.monachini@ilc.cnr.it, valeria.quochi@ilc.cnr.it

ALESSIA SPADI
Opera del Vocabolario Italiano - CNR
alessia.spadi@cnr.it

MARTA CARADONNA
Istituto per il Lessico Intellettuale Europeo e Storia delle Idee - CNR
marta.caradonna@cnr.it

Acknowledgements

This research was supported by 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.

REFERENCES

- CARVALE A., MOSCATI P., ROSSI I. (eds.) 2026, *The H2IOSC Project and Its Impact on Digital Antiquity within the E-RIHS Infrastructure*, Firenze, All'Insegna del Giglio (<https://doi.org/10.19282/h2iosc.2026>).
- DEGL'INNOCENTI E., MONACHINI M., BUCCIERO A., PASINI E., FANINI B., FRONTINI F. 2023, *H2IOSC: Humanities and Heritage Open Science Cloud*, in E. CARBÉ, G. LO PICCOLO, A. VALENTI, F. STELLA (eds.), *La memoria digitale: forme del testo e organizzazione della conoscenza. Atti del XII Convegno Annuale AIUCD*, Siena, AIUCD, 63-64.
- FABIANI V., MARRAS C., REGGIANI L., RUSSO A., SICHERA P., PASINI E. 2025, *D5.1 CLARIN/OPERAS/DARIAH/E-RIHS and the H2IOSC MarketPlace (Final)* (<https://doi.org/10.5281/zenodo.19481374>).
- LI Y., DONG L., FAN X., WEI R., GUO S., MA W., LI Z. 2024, *New roles of research data infrastructure in research paradigm evolution*, «Journal of Data and Information Science», 9 (<https://doi.org/10.2478/jdis-2024-0011>).
- LUZIETTI R.B., SPADI A., GIAMPIETRO N., MANCUSO G., CARVALE A., D'EREDITÀ A., DEGL'INNOCENTI E. 2024, *Digital Humanities and Heritage Science: Moving from landscaping to a dynamic research observatory in an Open Science Cloud*, in A. DI SILVESTRO, D. SPAMPINATO (eds.), *Me.Te. Digitali. Mediterraneo in rete tra testi e contesti, Proceedings del XIII Convegno Annuale AIUCD (Catania 2024)*, «Quaderni di Umanistica Digitale», 565-599 (<https://dx.doi.org/10.6092/unibo/amsacta/7927>).
- LUZIETTI R.B., SPADI A., GIAMPIETRO N., MANCUSO G., CARVALE A., D'EREDITÀ A., DEGL'INNOCENTI E. 2025, *Digital Humanities and Heritage Science: Moving from landscaping to a dynamic research observatory in an Open Science Cloud*, «Umanistica Digitale», 9, 20, 419-439 (<https://doi.org/10.6092/issn.2532-8816/21226>).
- MANCUSO G. 2025, *Beyond monitoring. Reimagining DHeLO as a Linked Open Data infrastructure for Cultural Heritage research*, «Archeologia e Calcolatori», 36.1, 443-454 (<https://doi.org/10.19282/ac.36.1.2025.24>).
- MANCUSO G., CARVALE A., D'EREDITÀ A., MOSCATI P. 2025, *Merging knowledge and tools in Heritage Science and Digital Archaeology. Practices from H2IOSC WP2*, in S. CAMPANA, D. FERDANI, H. GRAF, G. GUIDI, Z. HEGARTY, S. PESCARIN, F. REMONDINO (eds.), *Digital Heritage 2025 (Siena 2025)*, Goslar, The Eurographics Association (<https://doi.org/10.2312/dh.20253320>).
- MANCUSO G., D'EREDITÀ A. 2024, *DHeLO and BiDiAr: New digital resources within the H2IOSC Project*, «Archeologia e Calcolatori», 35.1, 521-542 (<https://doi.org/10.19282/ac.35.1.2024.31>).
- MONACHINI M., QUOCHI V., LUZIETTI R.B., SPADI A., MANCUSO G., D'EREDITÀ A., MELACCIO D. 2025, *D2.2 Updated Report on the H2IOSC Landscapes* (<https://doi.org/10.5281/zenodo.17737101>).
- SICHERA P., MONACHINI M., QUOCHI V., GIAMPIETRO N., FABIANI V., OTTAVIANI R., LUZIETTI R.B. 2025, *Synergies between CLARIN-IT and OPERAS-IT within H2IOSC: Monitoring communities and orchestrating digital services*, in C. GRISOT, T. KONTINO (eds.), *CLARIN Annual Conference Proceedings*, Vienna, 26-30 (<https://dx.doi.org/10.5281/zenodo.17357825>).
- WILKINSON M.D., DUMONTIER M., AALBERSBERG I.J., APPLETON G., AXTON M., BAAK A., MONS B. 2016, *The FAIR guiding principles for scientific data management and stewardship*, «Scientific Data», 3, 1 (<https://doi.org/10.1038/sdata.2016.18>).

ABSTRACT

This paper presents the H2IOSC Observatory, the platform conceived for the long-term monitoring of the digital research ecosystem federated within the Humanities and Heritage

Italian Open Science Cloud (H2IOSC) project, which brings together the Italian nodes of four ESFRI Research Infrastructures in the Social Sciences and Humanities domain: CLARIN, DARIAH, E-RIHS, and OPERAS. Originating from the landscaping activity carried out to map resources, tools, and communities across the national landscape, the Observatory turns its outcomes into a permanent and participatory function of the infrastructure, grounded in a mixed-methods strategy that integrates questionnaires, semi-structured interviews, focus groups, and targeted discovery activities. The paper describes its information architecture, organized into seven thematic areas, and its complementary relationship with the H2IOSC Marketplace, of which the Observatory constitutes the analytical counterpart. It also presents preliminary results from the first data collection, concerning awareness of the infrastructures, community expectations, and training needs. Finally, the Observatory is presented as an open, replicable, and adaptive tool, capable of supporting the strategic governance of H2IOSC and offering a model for future research-infrastructure observatories in the humanities and cultural heritage domains.