

Defining, Observing, and Accelerating Innovation in SSH: The OPERAS Innovation Lab Approach to Scholarly Communication

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ABSTRACT

This paper introduces a specific approach to innovation developed by the OPERAS Innovation Lab. It positions co-design as a core methodological principle of the OPERAS Innovation Lab and describes the Lab's two main components – the Observatory and the Accelerator – as complementary mechanisms for observing emerging practices and accelerating innovation in social sciences and humanities (SSH) scholarly communication. It examines how innovation in SSH extends beyond STEM-centric and business-oriented models that prioritise technological novelty or marketable solutions. While acknowledging these models, the SSH field adds unique value, such as epistemic diversity and free access to knowledge, and develops its own approach that fosters a culture of innovation and reshapes how research is conducted, communicated, and evaluated in pursuit of broader societal impact. This culture is enabled by digital transformation, but it also emerges from the intrinsic characteristics of SSH, which have long relied on human-centred, interpretative, and creative practices that support epistemological diversity and critical reflection.

Keywords: Innovation; social sciences and humanities; co-creation; co-design; research infrastructure

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INTRODUCTION

This paper aims to demonstrate how the concept of innovation and innovative practices can be defined and operationalised for a field that has long remained among the most ambiguous in relation to dominant, widely used understandings of innovation as a market-oriented, economically driven improvement of existing practices (Bakhshi et al., 2008). While innovation in social sciences and humanities (SSH) may encompass technological and organisational change, it extends beyond STEM-centric and business-oriented models that prioritise novelty or marketable solutions (Aaslestad et al. 2006, Ghazinoory et al., 2025; Gulbrandsen & Aanstad, 2015). Though currently often enabled by digital transformation, innovation in this field emerges from the intrinsic characteristics of the humanities – and, to a certain extent, the social sciences – which have long relied on human-centred, interpretative, and creative practices that support epistemological diversity and critical reflection (Ghazinoory et al., 2025; Kagan, 2009).

The central question addressed in this paper is how innovation can be meaningfully conceptualised and

operationalised for SSH in ways that reflect its epistemic conditions, value systems, and modes of impact. As a case study, it presents the OPERAS Innovation Lab as a concrete, empirically grounded and operational response to the challenge of structuring innovation within SSH. Drawing on five years of the Lab's development – from an initial proof-of-concept emerging from research on scholarly practices to a sustainable service embedded in a European research infrastructure – the paper introduces an SSH-specific approach to innovation grounded in qualitative research, case studies, and user-centred co-creation. It contributes (1) an operational definition of innovation tailored to SSH, (2) co-creation and co-design methodologies adapted to academic contexts, and (3) an infrastructural innovation management model, implemented within the OPERAS Research Infrastructure and based on the complementary roles of the Observatory and the Accelerator. Together, these elements demonstrate how innovation in SSH can be systematically observed, supported, and scaled while remaining aligned with the field's epistemic and societal values.



DEFINING INNOVATION IN SSH

According to the classical economic definition articulated by Joseph Schumpeter, innovation is the practical implementation of ideas that not only add novelty to existing structures but also transform and disrupt them to create new value (Ghazinoory et al., 2025). Although originally developed for market-based analyses, this understanding of innovation can be productively extended to other domains, including scholarly ecosystems. When applied to research infrastructures, innovation in this sense may encompass tools, applications, products, services, processes, or even new organisational structures that enable and reshape scholarly practices. In this sense, it consolidates understanding of innovation related to technologies, efficiency and profit (or benefit). However, as it has been demonstrated by various scholars, innovation also has other aspects that are less evident in Schumpeterian definitions but are present in various academic discourses (Ghazinoory et al., 2025; Gulbrandsen & Aanstad, 2015).

To understand why Schumpeterian understandings and applications of innovation are not always adequate for the two domains under discussion, it is important to note, firstly, that the social sciences and humanities, particularly the latter, are characterised by distinctive epistemic priorities and modes of knowledge production compared with STEM fields. Furthermore, the assessment and evaluation of humanities and SSH outputs and outcomes are not easily quantified, and their value is not necessarily immediately visible.

As for the first – the difference in knowledge production paradigms – the SSH research tends to rely less on deduction and discovery and more on interpretation, contextualisation, and the reworking of existing concepts, within new cultural or historical settings (though the former is also exercised) (Bakhshi et al., 2008; Ghazinoory et al., 2025; Kagan, 2009; Lowatcharin et al., 2016). Drawing on Dilthey's distinction between explanation and understanding, humanistic inquiry is both analytical and interpretive, as seen in disciplines such as philosophy, history, and philology (Dilthey, 1991). However, rather than focusing primarily on causal explanations of the phenomena, SSH disciplines often aim to provide a deeper understanding of the human condition expressed in culturally rooted terms and narratives.

As for the second distinction – the evaluation of SSH impact – there has been growing interest in developing metrics that enable more accurate assessment of impact within a shorter timeframe than the period typically required for a humanities monograph to reach its readership or demonstrate broader influence. However, existing approaches to measuring SSH impact remain diverse and highly contextualised, often depending on available resources (often in local languages), institutional capacities, and funding policies (Pedersen et al. 2020).

To illustrate the two arguments, one may consider that in the humanities, innovation may be associated with the development of new concepts or interpretations that transform how people perceive, understand, or communicate with one another, whereas in the social sciences, innovation may generate novel analytical frameworks for social policy or institutional practices.

Further insight into disciplinary differences can be drawn from Ghazinoory et al.'s three-layer model of innovation: novelty, value, and acceptance, each of which may be realised differently across disciplines. Novelty characterises innovation in all fields, from natural sciences through social sciences and humanities, the meaning of which is to bring new ways of producing results of the scientific inquiry. Differences between the domains emerge more clearly in the value and acceptance dimensions. In SSH (and precisely in the humanities), the success of an innovation is often not determined primarily by its utilitarian function or immediate visible effects (that are represented by the value layers), but rather by its endurance, adaptability, and long-term influence, related to the layer of acceptance. From this perspective, innovations such as infrastructures, tools, or services are considered successful in SSH when they meaningfully reshape scholarly communication and generate sustained intellectual or societal impact (Ghazinoory et al., 2025).

Consequently, Schumpeterian understandings of innovation present significant limitations when applied to the humanities and, to a considerable extent, the social sciences. When interpreted primarily through economic and market-oriented frameworks, they risk marginalising forms of innovation that generate cultural, societal, or epistemic value. Free access to knowledge, epistemic diversity, and long-term, horizontal forms of impact characteristic of SSH research are difficult to capture through conventional economic metrics. Secondly, innovation in SSH is often oriented less toward commercialisation and profit generation and more toward forms of cultural, epistemic, and societal value creation. Through robust sustainability models, SSH innovations can transcend the constraints of specific funding cycles, ensuring long-term access to knowledge.

Recognising that approaches to innovation in SSH differ from those dominant in STEM disciplines, this does not mean that the Schumpeterian approach is irrelevant within SSH, nor that this approach has remained unaffected by SSH perspectives throughout its development and application. The social sciences and humanities are both characterised by practice-oriented approaches that inform creative industries, contribute to the development of user-centred technologies, and shape innovation processes in science and engineering (Bakhshi et al., 2008; Steen, 2003; Zhu et al., 2024; Carlgren et al., 2016). Although still relatively uncommon, innovations originating from scholarly activities in the SSH increasingly draw on approaches developed within more economically oriented frameworks of innovation management (Giannopoulou et al., 2019; Yordanova et

al., 2019). At the same time, innovation is increasingly understood as a process that creates value by recombining existing knowledge to address complex societal, cultural, and policy challenges. In this context, the digital social sciences, arts, and humanities are uniquely positioned to bridge the gap between technological advances and social and cultural needs. For example, the humanities and social sciences have contributed to the development of human-centred design approaches that are widely applied in sectors such as information and communication technologies (ICT) (Steen 2003).

Nevertheless, the key distinction between dominant innovation frameworks and SSH approaches remains: rather than defining innovation primarily through novelty, implementation, and measurable outcomes, SSH innovation foregrounds epistemic diversity, endurance and inclusivity. In this context, innovation is not limited to the development of new tools; it also encompasses the cultivation of an innovation culture that reshapes how research is produced, shared, and evaluated, particularly affecting scholarly communication practices. Given that scholarly communication constitutes a central mechanism through which SSH knowledge is created and disseminated, innovation in SSH can be understood as the continuous evolution of communication practices beyond traditional print-based models towards dynamic, digital, and collaborative approaches that better respond to changing research needs and enable broader societal impact. However, achieving this alignment requires appropriate methodological approaches and support structures. This was the challenge facing the OPERAS Innovation Lab from its very beginning: to ensure the effective development of infrastructures for SSH scholarly communication while at the same time leveraging their unique attributes, including critical reflection, openness, adaptability, and diversity.

CO-DESIGN AS CORE METHODOLOGY FOR INNOVATIVE SCHOLARLY COMMUNICATION

In their 2019 study, shortly before the idea of establishing the OPERAS Innovation Lab emerged, Yordanova et al. pointed out that complex project management methodologies were rarely applied to scientific processes. Innovation management, as a part of project management processes, was often neglected, with little attention paid to practices such as user research analysis, market potential and competition analysis, selection of targeted groups or iterative validation. As a result, innovation — which lies at the core of all scientific and scholarly work — could not be fully exercised and developed. The study proposed the creation of a flexible framework that combines ICT management methodologies with agile approaches (Yordanova et al., 2019). Building on the general thesis of Yordanova et al.'s study, this paper argues that innovative projects implemented within the SSH scholarly community

require a specific methodology to ensure effective management and the creation of sustainable innovations. From its inception, the OPERAS Innovation Lab had to consider that common, market-oriented understandings of innovation often differ from what SSH scholars perceive as most valuable for their work. At the same time, innovation, understood as “novelty put into practice”, requires robust management to translate ideas into meaningful shifts in scholarly practices. The Lab’s first goal, therefore, was to understand how scholars themselves perceive innovation and to identify how it is developed and implemented within the SSH field to ensure alignment of Lab’s vision and mission with the SSH communities’ expectations.

Given that SSH scholars are often resistant to external influence and prefer to retain control over definitions and processes, a participatory approach proved ideal for shaping the Lab’s mission, strategy, and ultimately its management model (Bergold & Thomas, 2012). This methodology was also chosen based on the assumption that innovation is inherently collaborative, grounded in networks of trust, close connections, ongoing interactions, and social capital (Bakhshi et al., 2008; Chesbrough, 2003; Steen, 2013). The methods employed include focus groups and interviews, and user-oriented approaches, such as co-creation and co-design.

Qualitative research

The establishment of the OPERAS Innovation Lab was informed by qualitative, participatory research conducted as part of the OPERAS-P project in 2020-2021. The study addressed how digital transformation reshapes scholarly communication in the SSH and how emerging formats are integrated into academic ecosystems. The research followed a user-centred design and combined multiple methods to capture diverse perspectives on innovation in SSH.

Data collection was based on interviews, surveys, and workshops involving key stakeholder groups, including researchers, publishers, editors, infrastructure providers, funders, and policy makers. In total, 655 participants from 33 countries contributed to the study, comprising 57 interviews, 134 survey responses, and 464 workshop participants. This mixed qualitative approach enabled the triangulation of empirical evidence on innovation practices, user needs, and structural challenges in scholarly communication.

Validation was embedded throughout the research process through iterative consultation with the community. The resulting insights provided an empirical foundation for the Lab’s user-driven strategy and informed its participatory, co-design-based development model (Avanço et al., 2021, Maryl 2024).

Case studies

The participatory study of innovative SSH projects was conducted through four case studies capturing diverse

endeavours in scholarly communication as a part of OPERAS Plus project in 2023-2024. Data collection and analysis were guided by three core research questions: (1) Definition – clarifying each project’s goals, scope, users, technologies, and accessibility constraints; (2) Evaluation – assessing the innovativeness of each project, identifying limitations, and exploring sustainability models; and (3) Research Assessment – determining the scholarly value and recognition pathways of each initiative.

A mixed-method approach was employed, combining desk research and documentation review, group interviews with project authors and contributors, and analysis of bibliometric and usage data. These methods were complemented by a validation workshop at the OPERAS 2024 Conference (Maryl et al., 2024).

Validation workshop

A validation workshop was held on April 24 at the OPERAS 2024 Conference in Zadar to evaluate preliminary results and situate the Lab’s case study findings within the broader SSH community. The workshop provided a platform for presenting case studies and engaging experts and practitioners in focused discussions around key challenges, including sustainability, visibility, and research assessment in innovative SSH projects. Participants collectively examined implementation challenges and co-created actionable guidelines aimed at empowering researchers and informing the Lab’s support strategies (Wnuk et al., 2024).

Collaborative prototyping

Another participatory method employed by the OPERAS Innovation Lab is a collaborative prototyping workshop, which brings together researchers and innovators from different SSH projects to explore shared functionalities and co-create ideas for integrated services (Andrews et al., 2012; Danesi et al., 2006). In a hybrid workshop “Mapping Cross-Project Functionalities – Towards a Service-Based Innovation Model”, conducted on October 1 2025, participants from the LUMEN and GRAPHIA projects worked across breakout groups to map existing and emerging features onto a shared functionality map, identify cross-links between tools and services, and collectively prioritise ideas based on clarity, feasibility, and potential impact.

Beyond discrete co-creation activities, the OPERAS Innovation Lab treats multi-level stakeholder collaboration as a core participatory methodology. Representatives from governance boards, project consortia, and strategic initiatives engage continuously, ensuring diverse perspectives inform decisions, design, and implementation. This structural embedding extends participation beyond workshops and consultations, enabling sustained knowledge exchange, co-design, and co-decision, and ensuring that innovations remain

context-sensitive, relevant, and responsive to the SSH community.

THE OPERAS INNOVATION LAB: OBSERVING, ACCELERATING AND EVALUATING

According to the OPERAS-P qualitative research findings (Avanço et al., 2021), researchers primarily associate innovation with enhanced dissemination and societal impact, particularly through expanded reach and engagement with diverse audiences. It was commonly understood in relation to technological developments that enable new scholarly formats, such as computational essays, web-based publications, and video essays, and improve the accessibility of more traditional outputs, including articles, monographs, and grey literature, through digital platforms. At the same time, the study revealed structural barriers to adoption, including limited discoverability, constrained recognition within prevailing research assessment systems, uneven digital competencies, and the complexity of tools. These insights pointed to the need for durable, infrastructural support mechanisms that would enable innovation within the scholarly community while ensuring its academic legitimacy and long-term sustainability. They directly informed the creation of the OPERAS Innovation Lab’s dual operational structure: the Observatory and the Accelerator.

Firstly, as part of the OPERAS Plus project in 2023, the Observatory was initiated in response to the growing need to better understand various aspects of innovation in SSH scholarly communication. The Observatory’s mission was to continuously monitor and interpret innovation as experienced by researchers, a broader SSH community and other stakeholders. Operating through an online platform and blog, it adopts a user-centred perspective to track evolving practices, competencies, and expectations related to innovative outputs and scholarly reward structures. Through ongoing research, mapping activities, and community engagement, the Observatory provides the evidence base that guides the Lab’s strategic priorities and identifies systemic needs.

Next, to shape the support model that the Lab would offer, we needed to gather insights directly from innovators about the challenges they face and the strategies they use to address them. Therefore, the second part of the exploration informing the Lab was a multiple case study, also conducted as part of the same OPERAS-PLUS project. We selected four endeavours: two journals and two discovery tools, to better understand their experiences, identify common barriers, and explore the support mechanisms they might need. The *Journal for Digital History* offered perspectives on the operational models of born-digital journals, while *Transformations: A DARIAH Journal* problematised the recognition of non-traditional research outputs and the limitations of existing peer-review practices. An OAPEN open-access book

recommender system explored technical and methodological strategies to improve discoverability, and the SHAPE-ID toolkit demonstrated a collaborative approach to publishing interdisciplinary resources and facilitating discovery and knowledge reuse.

Across all cases, we identified three overarching challenges: networking and visibility, sustainability and maintenance, and research assessment, although not all cases faced these challenges to the same extent.

Networking and visibility were particularly important for the journals, as both lacked the prestige associated with established metrics and a long publication history. For the *Journal for Digital History*, its distinctive publishing model and technical complexity also made it difficult to recruit peer reviewers. In one instance, the editorial team received 12 review invitations declined before securing suitable reviewers. For this innovative journal, devoted to bringing together different aspects of digital history in a single publishing venue, building a recognition through a broad network of supporting scholars was a priority.

The problems related to sustainability reflected inadequate or insufficient research assessment criteria and structural constraints arising from the fact that practical innovations in the SSH are typically supported only through time-limited grant funding schemes. This was particularly evident in the case of the SHAPE-ID toolkit, which, at the time the study was conducted, was the outcome of a project that had already ended. In our conversations with the project leaders, a consistent message emerged: sustainability should not be a matter of concern only after an output has been delivered but should instead be planned from the moment the idea is conceived.

Research assessment represented a structural characteristic of the academic environment in which these outputs are produced. Without appropriate recognition, innovative outputs struggle to secure sustainable funding and long-term maintenance. Such recognition is shaped by research policies, evaluation and measurement systems, and scholarly practices such as peer review. Research assessment, therefore, emerged as a cross-cutting issue for innovation in the SSH, and it needed to be understood as such. Among the cases, *Transformations* most explicitly emphasised the need for trustworthy and transparent evaluation criteria for innovative research outputs in the SSH.

During a validation workshop, in which the findings of the case study were scrutinised, the first version of an evaluation framework for SSH innovations was developed – a set of ten criteria designed to guide innovators towards the successful implementation of their ideas. The framework is currently being further developed as part of the GRAPHIA project.

The Accelerator was established as a direct outcome of the participatory case studies. Drawing on the challenges identified – particularly around output maintenance, visibility, and integration into existing scholarly practices – the Accelerator was proposed as an

operational mechanism to support the development, implementation, and scaling of strategically relevant projects, services, and infrastructure that may receive OPERAS support. Designed to function as a practical support mechanism, it aims to provide:

1. Support for teams at various points in their development journey:

Early-stage teams receive support to refine their concepts, develop strategies, and begin building their solutions.

Advanced teams are helped to test, validate, and prepare their solutions for scaling.

2. Hands-on mentorship.

Participating teams are matched with experienced mentors who understand both research contexts and innovation processes. These mentors offer guidance to help teams navigate challenges and identify efficient paths toward impact.

3. Access to resources and tools.

The Accelerator provides access to infrastructure, tools, and a broader community of experts and peers. This resource access enhances teams' ability to develop and test their solutions more effectively.

4. Networking and partnership opportunities.

Participants can connect with other innovators, potential funders, and key stakeholders. This networking helps broaden visibility and partnerships, which are often crucial for project growth and long-term sustainability.

5. Integration into the Lab's Portfolio.

Projects supported by the Accelerator can become part of the OPERAS Innovation Lab portfolio, linking them into a broader ecosystem of innovation initiatives and further opportunities for development and recognition. The Lab's point of intake is called the Bank of Ideas. It collects ideas and observes needs from all Lab activities – observation, research pilots, and service support – and structures them for evaluation.

The Lab is guided by the principle of building on existing OPERAS services and engaging with emerging pilots developed within ongoing projects, ensuring continuity between innovation, service evolution, and infrastructural integration. Through initiatives like the hybrid workshop "Mapping Cross-Project Functionalities – Towards a Service-Based Innovation Model", organised within the GRAPHIA and LUMEN projects, the Accelerator creates structured spaces for project teams to come together, identify shared functionalities, and explore integrative service bundles that go beyond individual project silos. By framing cross-project collaboration around common maps of tools and approaches – such as semantic platforms, knowledge graphs, multilingual discovery, and AI-driven assistants – the Accelerator helps align development trajectories, amplify interoperability mechanisms of representation, knowledge translation, and mutual learning. This ensures that innovations are both context-sensitive and scalable, and positions the Innovation Lab as a service developed from within and in close collaboration with the SSH community.

DISCUSSION AND CONCLUSIONS

Although SSH operates under conditions distinct from those in STEM, it remains attentive to insights from market- and economically driven innovation management. Digital transformation has further amplified these opportunities, enabling SSH – particularly the humanities – to innovate internally while contributing to broader societal and cross-disciplinary developments. The combination of conceptual reinterpretation and openness to practical application makes SSH not only inherently innovative but also a driver of innovation in other domains. The OPERAS Innovation Lab was established to leverage these unique characteristics, translating empirical, participatory research into an operational model that actively shapes innovation within the scholarly community. Its dual approach recognises both the value of market-oriented perspectives – tools, services, and workflows that respond to user needs and a humanities-rooted perspective, where innovation is guided by social, cultural, and epistemic considerations. The latter is ensured by the co-creation and co-design approach integrated into the Lab's methods of consulting and support, and the team's – SSH scholars themselves – own interest. This ensures that innovation in SSH is both practically effective and aligned with the field's core values.

While the Lab has so far operated primarily as a distributed, digitally mediated structure, its development is moving towards a phygital model, integrating digital collaboration with face-to-face support, and seeding pathways toward a more user-centred, service-based innovation ecosystem within OPERAS. Collaborative prototyping thus serves not only to explore new ideas, but also to connect, test, and innovate across established services, project pilots, and future experimental initiatives, including structured calls for pilots where appropriate. This evolution includes a more formalised selection model as well: ideas collected in the Bank of Ideas will pass through portfolio development, where they are evaluated against evidence and OPERAS strategy and either advanced or parked, before selected opportunities become new projects or extensions of OPERAS services.

A key output of the Lab's participatory process – and a bridge between the Observatory and the Accelerator – is the Evaluation Framework for Innovative Projects and Outputs (Maryl et al. 2024). Developed through the case study and validation workshop, this qualitative evaluation framework is designed to support and guide fair development and assessment of non-traditional scholarly outputs, including datasets, software, digital platforms, and multimedia publications. Rooted in the SSH principles of openness, equity, and bibliodiversity, the framework responds to limitations of traditional peer review and metrics by recognising diverse forms of value in digital and experimental scholarship (Gouzi, 2025).

The criteria emerging from this framework are now being integrated into the Accelerator's support pathways, informing decisions about which projects and outputs the Lab should prioritise for development and scaling.

By combining continuous observation, active acceleration, and co-creative evaluation, the OPERAS Innovation Lab establishes a sustainable model for supporting innovation across SSH. Its dual structure uses observation to guide improvements in the OPERAS infrastructure, while practical experimentation informs strategic implementation. This operational model supports a wide spectrum of innovations, from projects such as platforms, services, and infrastructures, to research outputs including datasets, software, protocols, multimedia resources, experimental formats, and training materials. Evaluation focuses on the innovative potential of the project as a whole, recognising that value in SSH often emerges not only from new products or tools, but also from novel workflows, governance models, and dissemination practices that contribute to the acceptance and sustainability of innovations, following Ghazinoory et al.'s model. The aim is to ensure that innovations are effectively implemented, valued by the community, and recognised through evaluation approaches that reflect SSH's societal, epistemic, and scholarly priorities. In this way, SSH is positioned not only as a field that generates transformative innovations but also as an enabler of innovation across broader research and societal contexts.

The Lab's transnational composition further enables the circulation of diverse epistemic perspectives and locally grounded practices across scholarly and cultural contexts. By embedding multi-level stakeholder collaboration structurally across governance boards, project consortia, and strategic initiatives, the Lab ensures collaboration and facilitates knowledge exchange. The aim is to establish innovation as a standing capability of the research infrastructure – SSH-native in its methods and values, open to partners beyond SSH, and sustained beyond individual funding cycles. Looking forward, the Lab will expand within the Poznań Supercomputing and Networking Centre (PCSS), leveraging high-performance computing, living labs, and collaborative hubs to provide targeted support. A two-track framework will guide its work: one track dedicated to scholarly communication services and another to enhancing the impact of SSH research beyond academia. Calls for engagement will connect researchers to resources for prototyping, data-driven analysis, and service design, continuing the Lab's participatory approach to co-creating and scaling innovative solutions. The phygital presence of the Lab will specifically support community-driven experimentation and exchange by combining the reach of transnational digital infrastructures with locally grounded contexts. In doing so, the Lab enables innovation practices that are both distributed and situated, ensuring diversity, relevance, and sustainability across SSH communities.

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CONFLICTS OF INTEREST

All authors were involved in the creation of the OPERAS Innovation Lab and are currently employed by institutions involved in its development and implementation within the OPERAS Research Infrastructure (OPERAS RI).

AI TOOLS USE

The authors consulted an AI language model to assist with text consistency and proofreading.

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