Enhancing Research Reproducibility: TIER2's Contributions to the European Open Science Cloud (EOSC)

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DOI: 10.17605/OSF.IO/JBQE5

Funded by the European Union

Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the EU nor REA can be held responsible for them.

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1. INTRODUCTION

TIER2 is a three-year international project jointly funded by the European Union (Horizon Europe) and UKRI. The project systematically investigates reproducibility across different research contexts, examining epistemological, social, and technical factors. To address these challenges, TIER2 develops and tests new tools and interventions through eight pilot activities. The project aims to bridge knowledge gaps, implement innovative solutions for managing digital objects across their full lifecycle, from data collection and research processes through to publication and preservation. The project also works to foster research communities, and influence policy to enhance reproducibility and research quality. Through co-creation methods, TIER2 actively collaborates with researchers, funders, and publishers to ensure practical and impactful outcomes.

In recent years, research reproducibility has become a critical policy priority for governments, funders, and research institutions. Poor reproducibility often results from a lack of transparency in data, code, and research materials, as well as systemic challenges such as insufficient replication studies, publication bias, and questionable research practices. Addressing these issues requires a multi-faceted approach that builds on grassroots researcher-led initiatives, such as national Reproducibility Networks, alongside policy-driven efforts in Open Science, FAIR data, Research Integrity, and responsible research assessment. Investments in research infrastructures, training programs, and incentive structures further support these reforms.

One of the most significant investments in this space is the European Open Science Cloud (EOSC), which has been under development since 2015. [1] EOSC aims to create a Web of FAIR Data and Services to support scientific research across Europe. While EOSC has primarily focused on enhancing data reusability, its role in facilitating research reproducibility is becoming increasingly relevant. By providing a unified infrastructure for FAIR (Findable, Accessible, Interoperable, Reusable) data and services, EOSC strengthens transparency and the sharing of digital research outputs.

From its inception, TIER2 has recognized that effective reproducibility reforms require coordinated efforts across stakeholders and research domains. Many existing initiatives focus on specific disciplines or operate in isolation, leading to fragmented progress. To scale reproducibility efforts, we need intuitive tools for digital object management, engaged communities, revised incentive structures, and supportive policies. While significant progress has been made across these areas, further integration is needed.

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[1] https://eosc.eu/eosc-about/

One key focus of TIER2 is bridging grassroots reproducibility movements with large-scale infrastructure initiatives like EOSC. To achieve this, we structured our consortium to include both leading meta researchers and major EOSC infrastructure providers and services, such as OpenAIRE, FAIRsharing (via Oxford University), GESIS, and Athena Research Center. Through targeted networking and workshops, we have facilitated collaboration between OpenAIRE National Open Access Desks and national Reproducibility Networks.

Now, as TIER2 enters its final phase, our pilot activities are reaching maturity. This briefing highlights how these pilots contribute to EOSC and how our tools, methodologies, and findings align with EOSC's mission to enhance open and reproducible science across Europe.

2. TIER2'S OUTCOMES AND RELEVANCE TO EOSC

Through its series of eight pilot activities, TIER2 is developing eight innovative solutions that enhance the management, sharing, and preservation of digital research objects, with seamless integration into existing EOSC infrastructures. These novel tools, services and interventions address the needs of key EOSC stakeholders including researchers, infrastructure providers, publishers and funders. The following sections describe each pilot by examining target audiences, demonstrated and potential impacts, development progress, and implementation guidelines. For quick reference, Appendix 1 provides an overview table mapping these new tools and services to EOSC stakeholder needs.

2.1 DECISION AID TOOL

Research Planning | Decision Support

The Decision Aid is a prototype tool that aims to guide users through a structured evaluation of whether reproducibility as a practice or evaluative criterion is actually feasible for the research at hand. In cases where reproducibility is relevant it assesses feasibility considering factors like uncertainty related to methods and the nature of the subject of investigation. The output is a rating that indicates high/low feasibility, helping users make informed decisions and prevent demands for replicability or related evaluative criteria in cases where they are unfeasible.

WHO IT IS FOR

The construction of the tool is exploratory. At the moment, the tool is targeted towards research funders. The idea is that applicants should assess the feasibility of reproducibility in proposals where the funders have decided the reproducibility is relevant.

IMPACT

By providing a systematic way to assess the feasibility of reproducibility this tool encourages diversity in research practices. The idea is that funders can use it to assess what can be expected of a proposal considering characteristics that influence the feasibility of reproducibility in the given context.

IMPACT FOR EOSC

If the development of the Decision Aid tool comes out satisfactory, it may complement EOSC's infrastructure by creating a bridge between reproducibility assessment and actionable solutions. When researchers use the tool, its feasibility evaluations automatically highlight which EOSC services could address their reproducibility challenges - whether that's recommending specific workflow preservation tools for complex studies or suggesting training resources when documentation gaps are identified. The machine-readable outputs feed directly into EOSC's metadata ecosystem, enriching the Knowledge Graph with standardized reproducibility metrics. As adoption grows, these assessments will provide valuable data to shape future EOSC service development, ensuring the infrastructure evolves to meet researchers' most pressing reproducibility needs. The tool essentially acts as both a guide and feedback mechanism, helping researchers navigate EOSC while simultaneously improving the system itself.

STATUS

The tool was initially developed in Qualtrics and underwent cognitive testing with local researchers at Aarhus University. The Python-based online app was released in late 2024 and has since undergone several iterations based on stakeholder feedback. The tool has been continuously refined based on user input and real-world implementation. Progress continues to be documented at https://osf.io/3ahrt/, and the latest version of the online app is available for public use at https://cfa-research.au.dk/tier2/. While current resource constraints may limit full implementation, the theoretical framework developed in TIER2 provides valuable guidance for addressing reproducibility in the context of epistemic diversity.

HOW IT CAN BE USED

- **Funders** can integrate it into grant reviews to assess feasibility of reproducibility requirements.
- **Researchers** can therefore self-evaluate their proposals during submission and defend against inappropriate reproducibility demands.
- **EOSC Providers** could link future versions with EOSC services, enabling more deliberate and nuanced consideration and assessment of reproducibility across the diverse types of research covered by the providers.

2.2 REPRODUCIBILITY MANAGEMENT PLANS (RMPS)

Research Planning | Decision Support

The RMP framework represents a significant evolution of traditional Data Management Plans. It systematically incorporates reproducibility considerations from the earliest stages of research planning, including detailed requirements for digital object preservation, computational environment documentation, and verification protocols. Currently piloted through the ARGOS platform, the tool offers domain-specific adaptations to ensure relevance across various research fields while maintaining standardized core elements. Its machine-actionable format enables seamless integration with other research workflow systems.

WHO IT IS FOR

Designed for research funders strengthening grant requirements, principal investigators planning reproducible studies, and institutions implementing open science policies. Domain-specific adaptations make it valuable across disciplines, from life sciences to computational humanities.

IMPACT

The implementation of RMPs creates transformative opportunities for the research community. For funding organizations, it provides a mechanism to elevate reproducibility standards across funded projects. Researchers gain clear, practical guidance that helps them meet these standards efficiently through the ARGOS platform's automated features. By making reproducibility planning more accessible and systematic, the tool reduces compliance burdens while increasing research quality and transparency.

IMPACT FOR EOSC

RMPs serve as a key building block for EOSC's reproducible research infrastructure. Their integration enhances EOSC's capabilities in several ways: through its machine-actionable format, RMPs enable seamless compatibility across different platforms, while also allowing automated collection of metadata for the EOSC Knowledge Graph. Additionally, RMPs help create a more cohesive research ecosystem by connecting the planning phase with actual workflow execution within EOSC.

STATUS

The RMP framework is currently in active development and pilot testing. Key milestones include successful integration with the ARGOS platform and ongoing refinement based on user feedback from participating research groups and funding organizations (report at https://osf.io/pn27g). Development efforts are currently focused on enhancing the machine-actionable capabilities and expanding domain-specific adaptations to cover a broader range of research fields.

HOW IT CAN BE USED

The RMP tool offers versatile applications across the research lifecycle.

- **Funders** can incorporate it into their grant application processes to standardize reproducibility requirements.
- **Research teams** can use the ARGOS platform to generate compliant RMPs efficiently, with the system guiding them through all necessary components.
- **Institutions** may integrate the framework into their research support services to help investigators meet funder mandates.
- **EOSC providers** can leverage the machine-actionable version for automated compliance checks and integration with research management systems.

2.3 REPRODUCIBLE WORKFLOWS PLATFORM

Workflow Enhancement | Quality Assurance

The Reproducible Workflows platform, powered by SCHEMA, is an open-source solution designed specifically for life scientists and computer scientists to streamline their computational analyses across different computing environments. By integrating containerization, experiment packaging, and advanced workflow management capabilities, it provides researchers with a robust framework for ensuring their work is reproducible and transparent.

WHO IT IS FOR

This platform serves researchers in the scientific community. It is particularly designed for life scientists seeking reliable and transparent computational workflows, and computer scientists working on transparent and reusable machine learning workflows. Users can benefit from comprehensive task management features that enable monitoring, submission, and control of computational workflows.

IMPACT

The platform enhances reproducibility in computational workflows for both life and computer sciences. Growing user numbers, increased workflow executions, and expanded GitHub contributions demonstrate its rising adoption. Continuous improvements in user satisfaction metrics indicate that SCHEMA successfully addresses the distinct needs of life scientists and computer scientists, providing an accessible environment for reproducible research. The platform's successful integration of reproducibility best practices, including standardized workflow descriptions and experiment packaging, enhances its credibility and reliability within the research community.

IMPACT FOR EOSC

The platform can strengthen EOSC's infrastructure by providing a robust, user-friendly environment for managing computational workflows. It promotes collaborative and interoperable open science practices, aligning with EOSC principles and enhancing the quality and reliability of digital objects in research.

STATUS

The first version of SCHEMA lab is available at https://lab.hypatia-comp.athenarc.gr/. Users can currently monitor computational tasks, submit new ones, and cancel running tasks. Workflow support functionality is under active development.

HOW IT CAN BE USED

Researchers can use SCHEMA to:

- Submit and manage computational tasks
- Track and monitor ongoing analyses
- Implement standardized workflow descriptions (e.g., CWL)
- Package experiments using specifications like RO-crate

EOSC providers can implement robust workflow management systems that align with EOSC principles and support open science initiatives.

2.4 REPRODUCIBILITY CHECKLISTS FOR COMPUTATIONAL SOCIAL SCIENCE

Workflow Enhancement | Quality Assurance

Reproducibility Checklists are structured guidelines designed to help computational social scientists ensure their research is reproducible across all phases - from planning and data collection to analysis and archiving. These checklists provide specific criteria tailored to the unique needs of computational methods in social sciences.

WHO IT IS FOR

The primary audience is computational social scientists, both as research producers and consumers. The checklists are particularly valuable for researchers working with computational methods who need to ensure their data and code meet reproducibility standards.

IMPACT

The checklists help build trust and authority in the social science research community by promoting uniformity in research resource standards. They encourage best practices in data and code management while providing clear guidelines for reviewing reproducibility at each stage of research.

IMPACT FOR EOSC

Through structured guidelines, these reproducibility checklists enhance metadata quality for computational methods and data, while promoting standardized documentation practices that facilitate cross-disciplinary research across social science domains. The checklists also advance FAIR principles by improving how computational social science outputs are documented, shared, and preserved. Additionally, they enable automated quality checks within EOSC services, helping maintain consistently high standards of reproducible research across the platform.

STATUS

The checklists have been developed and are currently in the testing phase with real-world applications. User feedback is being actively collected and incorporated to improve their effectiveness. Initial versions and user study feedback are available at https://osf.io/9fsz5/.

HOW IT CAN BE USED

- **Researchers** can apply these checklists during three key research phases: planning and data collection phase, processing and analysis phase, sharing and archiving research resources.
- **Funders** can promote reproducibility checklists to ensure research outputs remain reusable and impactful. This enhances accountability, maximizes return on investment, and aligns funding practices with global open science standards.
- **Infrastructure providers** can integrate these checklists into platforms like MethodsHub, SCHEMA, or EOSC to improve research output quality. This integration enhances interoperability and discoverability while reducing the burden of ensuring reproducibility across the research ecosystem.

2.5 REPRODUCIBILITY PROMOTION PLANS FOR FUNDERS

Monitoring | Policy Implementation

The Reproducibility Promotion Plan for Funders (RPP) is a policy template designed to help funders implement evidence-based improvements in research quality. Co-created and developed through close collaboration with funders in dedicated workshops, these plans provide a customizable framework that funding organizations can adapt to their specific needs. They provide structured guidelines for both internal funding processes and external reproducibility standards. The plans serve as a framework, offering specific recommendations and key themes that funders can use to promote reproducible practices among researchers while meeting their organizational objectives.

WHO IT IS FOR

RPP is designed for research funders and governmental institutions who want to promote and implement reproducibility practices in their funding processes and among their beneficiaries.

IMPACT

Implementing these plans allows funders to establish clear reproducibility standards, create measurable compliance benchmarks, and develop evidence-based policies that enhance research quality. Through these structured guidelines, funders can effectively foster a cultural shift towards more reproducible practices within the research community, ensuring better outcomes and more reliable scientific output.

IMPACT FOR EOSC

By establishing standardized reproducibility guidelines at the funder level, RPP helps ensure that research entering the EOSC ecosystem maintains high reproducibility standards. The plans facilitate validation of research outputs against funder-defined criteria, improve metadata through standardized documentation requirements across EOSC services, and establish measurable benchmarks for assessing reproducibility compliance across different research domains.

STATUS

The Reproducibility Promotion Plan for Funders underwent comprehensive development in 2024, featuring two co-creation workshops and a validation workshop with funders to identify key themes and elements. The first draft is currently being piloted by participating funders. A one-page overview is available at https://osf.io/t4npc/, and the first draft of the RPP is available at https://osf.io/49gfw

HOW IT CAN BE USED

- **Funders** can implement RPP to strengthen their internal funding processes and establish clear reproducibility requirements for grant recipients.
- **Researchers** can use RPP as clear guidelines to ensure their funding applications, and subsequent research outputs meet reproducibility standards.

2.6 REPRODUCIBILITY MONITORING DASHBOARD

Monitoring | Decision Support

The Reproducibility Monitoring Dashboard tracks the reproducibility and reusability of research outcomes across various topics, fields, projects, and funding calls. The dashboard generates automated reports to assess and quantify the impact of data-sharing and code-sharing policies. This tool provides funders with insights to make informed decisions, allocate resources effectively, and enhance transparency and accountability in their funded projects.

WHO IT IS FOR

The Reproducibility Monitoring Dashboard serves three key stakeholder groups: funders who need to assess policy impact and optimize resources, researchers seeking access to reliable and well-documented research artifacts, and infrastructure providers who can leverage it to enhance the accessibility of digital objects that adhere to reproducibility standards.

IMPACT

The dashboard monitors and analyzes research artifacts across scientific disciplines using specialized metrics: the Field-Weighted Reusability Index, FAIR Index, and Reproducibility Confidence Index. These measure reuse patterns, documentation quality, and citation impact. Through automated reports, it facilitates the evaluation of data and code sharing policy effectiveness, providing a comprehensive framework for assessing and improving research reproducibility.

IMPACT FOR EOSC

The dashboard serves as a comprehensive monitoring system for research reproducibility across the EOSC infrastructure, combining key metrics to ensure quality and guide policy. The Field-Weighted Reusability Index tracks the frequency of research artifact reuse, the FAIR Index assesses metadata completeness, the Reproducibility Composite Confidence Index provides a holistic assessment of research outputs. This integrated approach generates valuable data to inform evidence-based policy decisions on research data management and helps maintain quality standards for EOSC-stored artifacts.

STATUS

The dashboard prototype has been developed and received stakeholder feedback during a workshop in late 2024. Detailed information about the development stage and stakeholder input can be found in the documentation at https://osf.io/wnvtx/. The system will be deployed in OpenAIRE, with a pilot testing phase planned for selected stakeholders.

HOW IT CAN BE USED

- **Funders** can generate compliance reports and make data-driven decisions about research funding allocation based on reproducibility metrics.
- **Researchers** can access the dashboard to search for reproducible research artifacts, check their own research impact, and identify exemplary reproducibility practices in their field.
- As a key **EOSC provider**, OpenAIRE will implement the dashboard to provide detailed analytics, easy-to-read charts for monitoring research reproducibility, and customized reports on research impact and policy compliance across projects.

2.7 EDITORIAL WORKFLOWS TO INCREASE DATA SHARING

Publishing | Documentation Guidelines

Editorial Workflows is an intervention study that aims to improve data sharing in research publications by enhancing Data Availability Statements (DAS). It addresses the problem of low data-sharing rates and vague "available upon request" statements. The study collaborates with publishers to evaluate standardized editorial processes that promote data sharing through clear, direct access pathways, ultimately enhancing research reproducibility.

WHO IT IS FOR

This study primarily serves publishers and journal editors seeking to enhance data sharing in scientific publications. It provides researchers with clearer data sharing guidelines while helping infrastructure providers facilitate broader access to published research data.

IMPACT

By enhancing Data Availability Statements and implementing standardized editorial processes, this intervention aims to significantly increase data sharing rates in published research, moving away from vague "available upon request" statements toward direct access pathways.

IMPACT FOR EOSC

Better editorial workflows support EOSC's mission by ensuring more research data becomes available through proper data repositories, enhancing the overall ecosystem of open and accessible scientific data.

STATUS

The intervention study protocol is registered and available at https://doi.org/10.17605/OSF.IO/D9V47. Outcomes and recommendations will be shared in collaboration with participating publishers and made available on the TIER2 website.

HOW IT CAN BE USED

- **Publishers** can implement these editorial workflow interventions alongside their peer-review processes to encourage better data sharing practices.

2.8 EDITORIAL REFERENCE HANDBOOK

Publishing | Documentation Guidelines | Decision Support

The Handbook defines and operationalise a core set of checks that are fundamental to ensure data underpinning publications is shared in a FAIR manner, and is reproducible in principle. Co-created with representatives of major scholarly publishers (Taylor&Francis, Cambridge University Press, Oxford University Press, Wiley, EMBO Press, GigaScience Press, PLOS, The Lancet, Cell Press, Elsevier, American Phycological Association, Springer Nature), the Handbook is both a practical as well as an educational resource, placing the checks on an ideal internal manuscript submission workflow, which suggests how, when and by whom these checks should be done.

WHO IT IS FOR

The handbook primarily targets in-house editorial staff managing manuscripts, by making these fundamental checks and requirements clear and understandable, and assist their journals with the implementation of data sharing policies. In addition, it also while also benefiting reviewers, authors, and service providers making requirements transparent.

IMPACT

The Handbook implements a consensus priority defined by major publishers during the TIER2-organized workshop in May 2023 (https://doi.org/10.17605/OSF.IO/TGUXZ). Training in-house editorial staff to use a small number of feasible and achievable checks, and strengthening and incrementally aligning journals' data policies, will improve the availability of data underpinning publications, and foster good practices for sharing data, ultimately advancing open research. The Handbook complements existing work and fills a gap, because no common guidance existed on the practical implementation of these checks across a complex publishing workflow and the variety of individuals and teams who handle a manuscript.

IMPACT FOR EOSC

The handbook actively supports EOSC's mission by establishing standardized practices for reproducibility and FAIRness in scientific publishing Informing and assisting journals to operationalize a small set of checks that fostera good sharing data practices is a very practical step in ensuring publishers do their part and contribute to the quality and reproducibility of research outputs within the EOSC framework. Furthermore, the operationalization of the checks, and the improvement of their data policies is actioned via the FAIRsharing service (https://fairsharing.org), a RDA-adopted output also part of the EOSC ecosystem.

STATUS

The handbook is available at publishers.fairassist.org, with a 2-page overview at https://doi.org/10.17605/OSF.IO/UWFJB. The use of the Handbook is being piloted by a number of journals, and the ongoing intervention (set to end summer 2025) aims to document what may need to change or improve to successfully implement these checks in terms of in-house capability (e.g., needing more knowledge about how to run them), opportunity (e.g., needing support to apply them), and motivation (e.g., needing to prioritise them).

HOW IT CAN BE USED

The handbook includes three main components: comprehensive guidance on the website (also indicating which checks can be automatised and how), a downloadable checklist spreadsheet, and a flowchart visualization.

- **Editorial staff** and journal managers learn and put the checks into actions, as well as align their actions with the requirement of their data sharing policies to authors.
- **Reviewers** and **authors** can use the checklist template and consult the guidance documentation to understand their expected requirements.
- **Service providers** can utilize all components to identify requirements and tune their tools and services to the needs of the publishers.

3. CONCLUSIONS

As TIER2 advances towards its final phase, its suite of pilot interventions demonstrates tangible contributions to the broader EOSC ecosystem. By addressing key challenges in research planning, workflow management, policy monitoring, and publishing, these tools create a more robust, transparent, and reproducible research environment. Through strategic integration with existing EOSC infrastructures, such as OpenAIRE, and direct engagement with researchers, funders, and infrastructure providers, TIER2 ensures that its outcomes are not only impactful but also sustainable. Looking ahead, the insights gained from these pilots will serve as a foundation for further scaling and adoption across Europe, reinforcing the role of reproducibility in raising trust, integrity and efficiency in research.

4. APPENDIX 1

Table 1: Mapping of tools and services that address EOSC stakeholder needs

Pilots	Description	Impact on Digital Objects for FUNDERS	Impact on Digital Objects for RESEARCHERS	Impact on Digital Objects for INFRASTRUCTURE PROVIDERS
1. Decision Aid	A prototype decision aid tool that surveys users in relation to potential relevance and then feasibility of "redoing" a study. Results come out as either high or low feasibility when relevant.	Assess the reproducibility aspects of research programmes, proposals or funded projects. It can further aid funders in assessing how relevant and feasible demands for reproducibility are for different types of proposals. The decision aid is being piloted with funders to investigate these aspects.	The decision aid tool could eventually help researchers evaluate the relevance and feasibility of reproducibility for their research. This could encourage researchers to consider how their digital objects can be better prepared for reproduction and to think more critically about how they document and preserve these objects for future use.	In the future, the decision aid could possibly be integrated with other EOSC elements for reproducible workflows.

Pilots	Description	Impact on Digital Objects for FUNDERS	Impact on Digital Objects for RESEARCHERS	Impact on Digital Objects for INFRASTRUCTURE PROVIDERS
2. Reproducibility Management Plans	A prototype template that extends Data Management Plans (DMPs) to include additional reproducibility-related information regarding the planned research; adaptable to different research domains. Piloted via integration into the ARGOS platform.	Provides a tool that supports research funders' policies by including more robust requirements for the reproducible management of digital objects in funded research projects.	Gives researchers more robust guidelines for managing digital objects and incorporating reproducibility aspects from the planning stage of their research. This tool facilitates researchers' compliance with funders' mandates while making the process easier to follow and complete with automations supported in the ARGOS platform.	The RMP can be incorporated into existing Data Management Plan templates and adapted to different research domains. In addition, the ARGOS platform onboards a machine actionable version of the RMP which can integrate with other services to enable automations in writing and publishing the RMPs.

Pilots	Description	Impact on Digital Objects for FUNDERS	Impact on Digital Objects for RESEARCHERS	Impact on Digital Objects for INFRASTRUCTURE PROVIDERS
3. Reproducible Workflows	Open-source platform facilitating execution and reproducibility of computational analysis on heterogeneous clusters, leveraging containerization, experiment packaging, workflow management, and machine learning technologies.		The tool offers comprehensive task management features, allowing researchers to monitor, submit, and control computational tasks easily. These improvements aim to make research workflows more reproducible and manageable, enhancing the quality and reliability of digital objects used in life sciences and computer sciences.	The SCHEMA Lab platform aims to create a more robust and user-friendly infrastructure for managing computational workflows. By enabling the efficient execution of computational tasks and the management of computational workflows, the platform strengthens the alignment with EOSC principles, fostering a collaborative and interoperable environment for open science.

Pilots	Description	Impact on Digital Objects for FUNDERS	Impact on Digital Objects for RESEARCHERS	Impact on Digital Objects for INFRASTRUCTURE PROVIDERS
4. Reproducibility checklists	Reproducibility Checklist and templates aim at guiding researchers through best practices tailored to computational methods in social sciences	By promoting reproducibility checklists, funders ensure research outputs remain reusable and impactful, enhancing accountability and investment returns. These initiatives also align funding with global open science standards.	Computational social scientists will receive tested checklists to improve code and workflow reproducibility. Integrated into the upcoming GESIS MethodsHub platform, these tools enhance documentation, usability, and transparency, fostering collaboration and trust in research.	By embedding checklists into platforms like MethodsHub, SCHEMA, or EOSC, infrastructure providers can enhance the interoperability, discoverability, and reusability of computational research outputs. This not only aligns with open science principles but also reduces the operational burden of ensuring reproducibility, fostering a more robust and reliable research ecosystem.

Pilots	Description	Impact on Digital Objects for FUNDERS	Impact on Digital Objects for RESEARCHERS	Impact on Digital Objects for INFRASTRUCTURE PROVIDERS
5. Reproducibility Promotion Plans for Funders	Practical advice for funders on how to create "Reproducibility Promotion Plans" (RPP), developed through a close collaboration with funders.	Policy template with recommendations for funders to foster reproducible practices in the research they fund and in their internal practices.	Researchers will have more robust standards for making their work reproducible.	
6. Reproducibility Monitoring Dashboard	A monitoring dashboard that tracks reproducibility practices and provides actionable insights for funders.	The dashboard assesses the impacts of policies related to data and code sharing. It provides insights necessary for funders to make informed decisions, allocate resources more effectively, and enhance transparency and accountability in funded projects.	Researchers can use the dashboard to access well-documented, more cited and reused research artifacts in their specific fields	The dashboard will be deployed and made available through OpenAIRE. By monitoring the reusability of research artifacts, it aims to enhance the accessibility of digital objects adhering to reproducibility standards.

Pilots	Description	Impact on Digital Objects for FUNDERS	Impact on Digital Objects for RESEARCHERS	Impact on Digital Objects for INFRASTRUCTURE PROVIDERS
7. Editorial Workflows to Increase Data Sharing	Intervention study aimed at enhancing the quality and transparency of Data Availability Statements (DAS) in research publications.		Expected increase of data sharing practices among researchers	Increasing data sharing in published work (indirect impact).
8. Editorial Reference Handbook	An Editorial Reference Handbook offering guidance for reproducibility and FAIR practices in publishing, aimed at ensuring standardized processes across journals. It is integrated with FAIRsharing for actionable checks.	Although targeted to publishers, the Handbook and the checks could be seen by the funders as the minimal core set of requirements or recommendations they make in their guidance to their awardees and in their data policies.	Research authors can use the handbook/checks to understand journal requirements, prior submission. In addition, researcher reviewers can use the handbook/checks in their review process.	Tool developers and service providers can use the handbook to identify requirements to drive their service provisions, and benefit from the FAIRsharing API to access actionable content to power the checks.