Collaborating for reproducibility: Workshop report

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INTRODUCTION

To address growing concerns about research integrity (e.g. the practices which underpin good research practice and ethical conduct) and reproducibility (e.g. obtaining consistent results when repeating research studies, or parts of studies), stakeholders across the research ecosystem — including institutions, publishers, funders, researchers, and others — must collaborate more effectively across disciplines, regions, and contexts. Urgent issues include lack of transparency in reporting/data/analysis, lack of replication studies, publication bias, and questionable research practices. These are collective problems, requiring concerted responses across the research system from a variety of actors. How can institutions, publishers, funders, researchers and others collaborate better on these issues, across disciplines, regions and stakeholder contexts?

As part of our ongoing collaborative efforts on reproducibility, on 27th November 2024 Taylor & Francis and the EC-funded TIER2 convened a workshop as part of the programme for the 19th Munin Conference on Scholarly Publishing, held in Tromsø, Norway. The workshop, titled "Collaborating for reproducibility: How can we work together better?", aimed to stimulate open dialogue on cross-stakeholder action, individual roles and responsibilities, and current bottlenecks where further collaboration is needed. It aimed to foster insights into practical steps and collaborative strategies that could be implemented in funding, research, and publishing workflows.

Our 14 workshop participants, encompassing publishers, librarians, policy-makers, researchers and research data managers, self-selected into groups to work on one of three thematic areas: (1) Infrastructure, tools and practices, (2) Awareness, training, and community-building, (3) Incentives, evaluation, and assessment. Once in groups, the participants first brainstormed common collaboration challenges and worked to prioritise the challenges according to their importance and level of difficulty in solving, sorting the issues into "quick wins" and "major projects". They then worked to propose solutions to chosen challenges.

In this brief report, we give an overview of the issues identified and solutions proposed by workshop participants.

INFRASTRUCTURE, TOOLS AND PRACTICES

CHALLENGES

Participants identified several critical challenges that hinder effective collaboration and research transparency. Time pressures remain a significant barrier, limiting researchers' ability to engage in thorough and reproducible practices. Cultural differences across institutions and regions add complexity to establishing consistent research standards. A lack of institutional accountability and clear guidelines contributes to inconsistent practices and reduced transparency. Additionally, uncertainty surrounding intellectual property (IP) rights — particularly regarding data ownership — creates confusion and can discourage data sharing and collaboration. These challenges highlight the need for clearer standards, stronger institutional policies, and more effective time management strategies within the research ecosystem.

SOLUTIONS

Equity in data re-use (Major project): As the most important, yet most difficult to resolve issue, Group 1 identified "Equity in data re-use". They identified that global inequities in data access and usage limit the ability of diverse communities to fully benefit from research insights. The group's proposed solutions include establishing shared protocols for acknowledging data creators (along the lines of, e.g., the ICMJE Vancouver Convention guidelines),[1] ensuring transparency and the option to opt out, providing robust technical support (tools, infrastructure, policies) for all stakeholders, implementing persistent identifiers for data and creators, extending these efforts beyond Europe, and focusing on metadata.

Strengthening data standards (Quick win): As a quick win, Group 1 identified what they see as a current "Lack of data standards", arguing that different interpretations of, or lack of standardisation across, data standards make reproducibility difficult and hinder datasets from being consistently findable and machine-readable. This creates significant inefficiencies, wastes time and money, and exacerbates global inequities. The proposed solution involves coordinated research and funding to define clear, standardized protocols (including pilot projects across disciplines), ultimately ensuring that data is fully FAIR and consistently usable worldwide.

AWARNESS, TRAINING AND COMMUNITY-BUILDING

CHALLENGES

Participants identified several key challenges impacting collaboration. Time and funding constraints often limit the capacity of researchers and support staff to engage in open research practices. Additionally, there is a pervasive fear of data misuse and potential verification or audits, particularly if mistakes are discovered. Short-term contracts contribute to job insecurity, reducing the incentive to invest in long-term open practices. A lack of training exacerbates these issues, leaving researchers ill-equipped to handle data management and sharing effectively. Finally, limited information on how much data is actually reused in new research projects makes it difficult to demonstrate the tangible benefits of data sharing, hindering broader adoption of open data practices.

SOLUTIONS

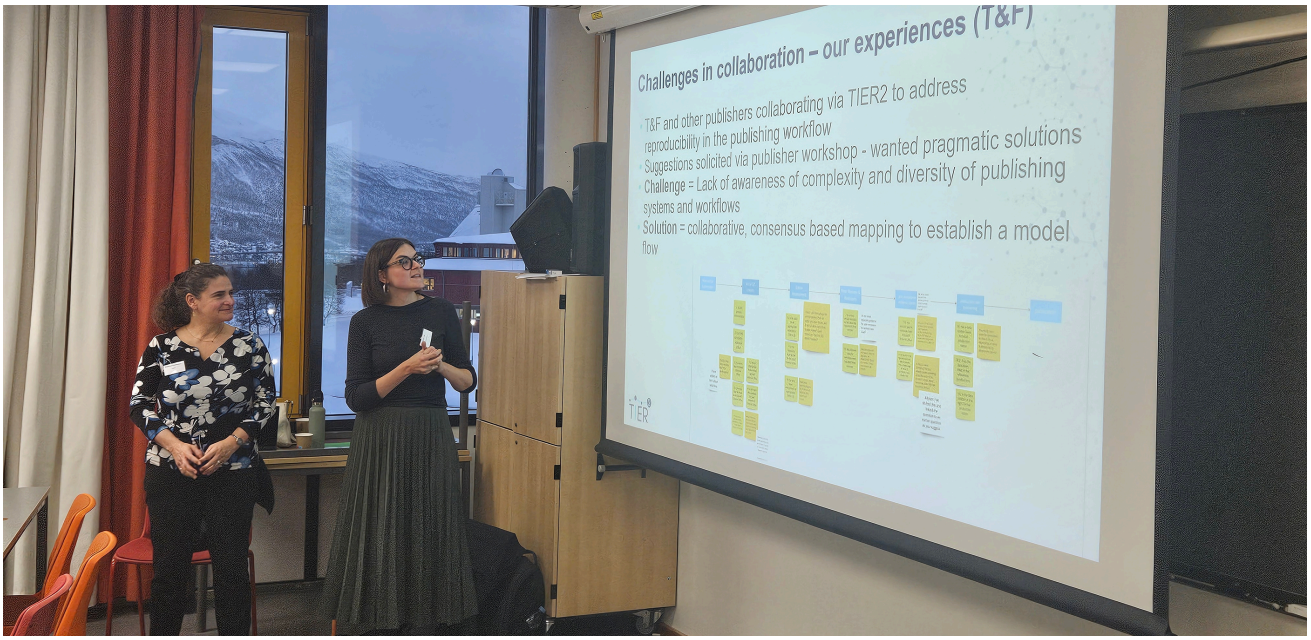
Time and money (Major project): Group 2 identified inadequate time for open research practices across all stakeholders, leading to low skill levels, incomplete datasets, and reduced transparency in methods and results. These pressures foster resistance to change among established researchers, ultimately undermining the quality and reproducibility of research. Addressing this issue requires bolstering research support staff and implementing meaningful incentives to encourage the adoption of open practices.

Data reuse (Quick win): The problem here was seen to be that researchers, funders, and publishers currently lack clear information on how often and effectively datasets are reused in new research, making it difficult to demonstrate the benefits of data sharing. To address this, our participants felt that stakeholders need to systematically track and cite datasets, highlight reuse opportunities through publisher outreach, and incorporate training for researchers on best practices. By incentivizing reuse and gathering reliable metrics (e.g., repository download data), we can foster greater data sharing and build evidence of its value in advancing science.

INCENTIVES, EVALUATION, AND POLICY

CHALLENGES

Participants identified challenges related to peer review and research practices. A critical issue is the lack of credit and recognition for peer reviewers, coupled with time constraints that limit the quality and consistency of reviews. The prevailing "publish or perish" culture further exacerbates this problem, pushing researchers to prioritize quantity over quality in their publications. Additionally, considerable variation in research practices across disciplines and institutions leads to inconsistencies in research quality, transparency, and reproducibility. These factors contribute to a fragmented research ecosystem where peer review standards and research practices are not universally aligned.



SOLUTIONS

Publish or perish (Major project): Participants identified the perennial issue that the current system pushes researchers to “publish as much as possible” which incentivizes quantity over quality, resulting in an overabundance of papers and undervaluing negative results. This culture is perpetuated by academics, publishing, and funding bodies that prioritize publication metrics (e.g., Impact Factor) over substantive research contributions. Changing national PhD policies, scrapping IF-based evaluations, and broadening the criteria used for hiring and funding decisions are essential steps to foster quality, transparency, and diversity in research.

Peer review sustainability (Quick win): Finally, Group 3 identified a lack of credit, clear standards, and a sufficiently large pool of reviewers, resulting in inconsistent and sometimes biased peer review reports. This undermines trust in research outputs, as there is limited recognition for reviewers and few opportunities for skill development. To address these issues, stakeholders must establish universal peer review standards, provide training and formal recognition for reviewers, adopt reproducibility checklists, and broaden the pool of reviewers through open and inclusive practices.

CONCLUSIONS

During this workshop, diverse stakeholders identified critical barriers to collaboration to improve reproducibility — such as inequities in data use, insufficient time for open practices, and the 'publish or perish' mindset — and proposed both ambitious and quick-win solutions. Key strategies include strengthening data standards, enhancing recognition for reviewers, incentivizing data reuse, and reforming publishing metrics and policies. By coordinating efforts across funding, research, and publishing workflows, the research ecosystem can achieve more transparent, equitable, and reproducible science.