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TOWARDS A DIGITAL RESEARCH ECOSYSTEM IN UKRAINE: COMMUNITY-DRIVEN MODELS FOR OPEN SCIENCE INFRASTRUCTURE

ABSTRACT. *Open science (OS) is reshaping the way researchers produce and share knowledge, fostering transparency and collaboration. Given the wartime challenges Ukraine is facing and future post-war recovery, OS is not only a strategic goal but a chance to rebuild its research system on more open and participatory foundations. The paper examines how transitioning from institution-centered to community-led principles can facilitate this transformation. It focuses on the Publish-Review-Curate (PRC) approach, which connects all stages of scholarly communication through open access to manuscripts, peer reviews, and other materials. Drawing on recent policy frameworks from COAR, UNESCO, and Ukraine's National OS Plan, as well as studies and case examples such as Octopus, Lifecycle Journal, and Peer Community In (PCI), the paper identifies priorities for advancing OS in Ukraine. These include developing interoperable digital platforms, strengthening research communities, and using artificial intelligence (AI) and multilingual tools to broaden participation. The proposed vision outlines a distributed yet coherent digital research ecosystem that enhances Ukraine's scientific resilience and integration into the global OS landscape as an active co-creator.*

KEYWORDS: *Open Science, scientific communication, Ukraine.*

INTRODUCTION. Ukraine's participation in the European Research Area (ERA) has created both the momentum and the need to update its research ecosystem in line with OS principles. The National OS Plan (2022) defines objectives of transparency, accessibility, and cooperation; however, achieving them largely depends on the active involvement of research communities that generate, evaluate, and share knowledge. Recognized as a promising alternative to traditional (closed) peer-review models (COAR, 2023), the PRC approach can support Ukraine's move toward a digital, community-based infrastructure that enhances both national resilience and global engagement.

MATERIALS AND METHODS. This study draws on recent Ukrainian and international policy documents, OS initiatives, and scholarly publications issued during 2022–2025:

- Policy/institutional sources: UNESCO Open Science Outlook 2023, Ukraine's National OS Plan (2022), and COAR statements on the PRC model (2023–2024).
- Peer-reviewed literature: conceptual and empirical studies on open research ecosystems and infrastructure development.
- Case studies: Octopus, Lifecycle Journal, and Peer Community In (PCI) as examples of community-led publishing.

The analysis combines document comparison, synthesis of existing OS frameworks, and conceptual mapping of community-oriented infrastructure design principles.

RESEARCH RESULTS

OS must evolve beyond open access to publications and datasets and become a truly collaborative, community-based research system (Thibault et al., 2023). For Ukraine, this is particularly relevant, since current digital infrastructures in higher education remain fragmented and inconsistently supported (Drach et al., 2024). Strengthening research communities could bridge these gaps, promote shared governance, and lead to a more integrated culture of openness.

The PRC model offers a practical pathway for such change. By separating and linking each stage of scholarly communication, PRC makes the research process more transparent and reproducible. This model envisions a “living scholarly record” that supports “modular” publishing, allowing the sharing and citation of individual research components, such as hypotheses and methods, independently (COAR, 2023).

Community initiatives like PCI show how expert groups can review and curate preprints outside conventional journal systems, providing discipline-based layers of validation. Successful adoption of PRC depends on parallel progress in two areas: the creation of interoperable platforms for review and curation, and the development of active online communities that sustain these platforms. Both are vital for embedding openness in everyday research culture (COAR, 2023; UNESCO, 2023).

Recent studies have highlighted that multilingual access and the use of AI tools are playing an increasingly important role in improving discovery and accessibility within future OS infrastructures (Hosseini et al., 2024). Research on community-based ecosystems also highlights the importance of resilience and equity frameworks in fostering sustainable, long-term collaboration (Shemshad et al., 2025).

Ukraine’s developing OS infrastructure could become a practical setting for testing these ideas. A digital ecosystem based on PRC principles, integrating repositories, interoperable metadata, and community-led review and curation, would help promote transparency and cooperation in and beyond academia. With the addition of multilingual access and AI tools, such a system could provide a cohesive environment that reinforces Ukraine’s scientific resilience and deepens its integration into the global OS landscape.

CONCLUSIONS. OS offers Ukraine a clear path to strengthen its research capacity, improve transparency, and take an active role in the global exchange of knowledge. Real progress, however, depends on the participation and leadership of research communities rather than on institutional directives alone. Applying the PRC model within a community-focused digital ecosystem can help Ukraine build an inclusive, resilient, and innovative research environment. This way, the nation will be able to co-shape the worldwide OS evolution.

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НА ШЛЯХУ ЕКОСИСТЕМИ ЦИФРОВИХ ДОСЛІДЖЕНЬ В УКРАЇНІ: МОДЕЛІ ІНФРАСТРУКТУРИ ВІДКРИТОЇ НАУКИ, КЕРОВАНІ ГРОМАДИ

АНОТАЦІЯ. Відкрита наука (ВН) змінює спосіб, у який дослідники створюють та діляться знаннями, сприяючи прозорості та співпраці. З огляду на виклики воєнного часу, з якими стикається Україна, та майбутнє післявоєнне відновлення, ВН є не лише стратегічною метою, а й шансом перебудувати свою дослідницьку систему на більш відкритих та партисипативних засадах. У статті розглядається, як перехід від інституційно-орієнтованих до громадсько-орієнтованих принципів може сприяти цій трансформації. Вона зосереджена на підході «Публікація-Рецензування-Кураторство» (PRC), який поєднує всі етапи наукової комунікації через відкритий доступ до рукописів, рецензій та інших матеріалів. Спираючись на нещодавні політичні рамки COAR, ЮНЕСКО та Національного плану ВН в Україні, а також на дослідження та приклади, такі як Ostopus, Lifecycle Journal та Peer Community In (PCI), у статті визначено пріоритети для розвитку ВН в Україні. До них належать розробка сумісних цифрових платформ, зміцнення дослідницьких спільнот та використання штучного інтелекту та багатомовних інструментів для розширення участі. Запропоноване бачення окреслює розподілену, але цілісну екосистему цифрових досліджень, яка підвищує наукову стійкість України та інтеграцію її в глобальний ландшафт ВН як активного співтворця.

КЛЮЧОВІ СЛОВА: Відкрита наука, наукова комунікація, Україна.