The Institute of Archaeology Repository RAI and eNauka: Administrator and Research Editor Experiences with the Analysis of Researcher Experiences

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ABSTRACT: This paper presents the institutional repository of the Institute of Archaeology - RAI and its initial implementation, as well as the new registry of researchers and scientific research organizations of the Republic of Serbia - eNauka. Both databases are examined from the perspective of the administrator, i.e., the NIO editor, who also serves as the librarian of the Institute. Additionally, the paper presents the results of a questionnaire on the use of this repository and eNauka, conducted among the researchers of the Institute of Archaeology. Collectively, these insights contribute to a more comprehensive understanding of practical experience, highlighting both the advantages and the challenges faced by researchers and the administrator/NIO editor.

KEYWORDS: institutional repository, Institute of Archaeology RAI repository, eNauka, practice

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Sanja Nikić
s.slankamenac@ai.ac.rs
ORCID: 0000-0002-1264-7958
Institute of Archaeology
Belgrade, Serbia

1 Introduction

The library of the Institute of Archaeology was established shortly after the Institute's founding in 1947 (Никић and Миловановић 2023). From the very beginning to the present day, the library has always had a single employed librarian. The duties and responsibilities of the librarian have evolved in response to the needs of researchers and associates, continuously adapting to innovations and developments in the field. As technology evolved, changes

in business methods became more frequent and visible. Business processes expanded and became more complex. As the last librarian shift due to retirement occurred just before the onset of the COVID-19 pandemic, organizing remote work for the new librarian became a period of familiarization with the previous mode of operation and devising a vision for the development of a vision for future operations. The adjusted work regime lasted slightly longer than a year and a half (from March 2020 to the second half of 2021). In the following period, efforts were made to create conditions for the introduction of new programs. Consequently, 2022 was a particularly significant year in the history of the Library of the Institute of Archaeology.

2 RAI

At the end of May 2022, the Library of the Institute of Archaeology joined the COBISS mutual cataloguing system and acquired the RAI digital repository.[1] This represented a major step towards enhancing the visibility of the collection, which had previously been managed in the local electronic database WINISIS and the overall scientific work of the Institute of Archaeology researchers.

An institutional repository is a structured collection of diverse digital objects that ensures broad visibility and open access to scientific results while also guaranteeing their long-term preservation.[2] Storing digitized or originally digital works in the repository enables their continuous availability by assigning a persistent identifier that remains unaffected by changes in physical location. Additionally, each deposited object is accompanied by organized metadata that defines who can access it and under what conditions. This minimizes the risk of unauthorized downloading from the internet (Абадић 2014). Accordingly, the institutional repository is intended for both researchers and the general public.

In 2018, the Ministry of Education, Science, and Technological Development adopted the "Open Science Platform". This document stipulates "that an electronic copy of the final, published version (when the publisher allows it) or the peer-reviewed version (accepted for publication) of a scientific publication be available in open access".[3] This initiated the so-called

1. For more information about the COBISS system, visit the following address https://sr.cobiss.net/cobiss.htm

2. Computer Center of the University of Belgrade, retrieved November 26, 2024

3. Open Science Platform, retrieved November 20, 2024

repositoryization[4], i.e., the establishment of institutional repositories in accordance with the clear guidelines set forth by the aforementioned Platform, which include "compliance with the international protocol for the collection and exchange of metadata OAI-PMH (Open Archive Initiative Protocol for Metadata Harvesting) and structured metadata in accordance by the Dublin Core standard."[5] One of the leading centers in the field of developing digital infrastructure for science is the Computer Center of the University of Belgrade (RCUB), which has developed repositories on the open-source software platform *Dspace* (Rajović, Kosanović, and Ševkušić 2018). In addition, it has developed additional tools for the better functioning of the repositories themselves: *Authors*, *Projects publications*; *Ellena*; *NomadLite* and *Report-Maker* (Đorđević 2021). The repository of the Institute of Archaeology is the 37th institutional repository established by RCUB, which continues to maintain it to this day.

During the establishment of the RAI, metadata were imported from available databases such as DOAJ[6], Unpaywall[7], and others, and the first step after launching the system and training the administrator was to supplement the retrieved records with keywords, abstracts, and missing PDF files. The process of editing records progressed more slowly than expected due to new, additional responsibilities related to the COBISS system alongside regular operations. Following the good practice of adopting regulations for the implementation of the Open Science Platform, which many institutes and faculties had followed, the Institute of Archaeology adopted the Open Science Regulation on December 25, 2022, which, among other things, defined the rights and obligations of the Institute's researchers and the RAI administrator, and the training for researchers was held on February 20, 2023. The training was conducted by Ljiljana Radisavljević, librarian of the Institute for Vegetable Crops Smederevska Palanka and administrator of the RIVeC repository[8], and MA Sanja Nikić, librarian of the Institute of Archaeology and administrator of the RAI repository.

Researchers were provided with a recording of the training along with a detailed written and illustrated guide, after which they could begin en-

4. Computer Center of the University of Belgrade, retrieved November 20, 2024

5. Open Science Platform, retrieved November 20, 2024

6. DOAJ (Directory of Open Access Journals) –) is a service for finding journals published in open access

7. Unpaywall is a database that harvests scientific articles in open access and can be installed as a tool or extension on the Google browser.

8. Repository of the Institute for Vegetable Crops

tering works into the RAI, priorityzing to more recent works and ensuring compliance with copyright laws. There are four collections into which papers can be deposited: Researcher's Papers, Publications of the Institute of Archaeology, Doctoral Dissertation[9], and Posters[10]. Researchers are allowed to deposit papers only in the first and the last collection. After selecting the collection to which the digital object being entered belongs, the researcher follows the steps, entering the necessary metadata into designated fields[11]. Once the deposit process is completed, the administrator reviews, possibly corrects, and approves the entry. If paper needs to belong to two collections (most commonly Researcher's papers and Publications of the Institute of Archaeology), the administrator maps or marks the entered record so that it appears in both collections.

During the following period, while the researchers were on fieldwork, the administrator deposited some of the Institute's publications.

3 eNauka

In recent years, several attempts have been made to establish a national CRIS[12] system aimed at digitizing the scientific research sector for a high-quality and efficient scientific research system. Some of the CRIS systems include IRIS, cris-NS, KNR-Vojvodina, Dositej, E-CRIS.SR, RIS, BeOpen (Kosanović 2024). Unfortunately, none of them met the criteria for quality and completeness of data. There was a need for a new registry of researchers and scientific research organizations in the Republic of Serbia. Therefore, in 2021, within the framework of the Strategy for Scientific and Technological Development of the Republic of Serbia for the period 2021-2025, "The Power of Knowledge"[13], the Office for Information Technologies

9. Defended doctoral dissertation.

10. Posters from scientific conferences.

11. On the DSpace platform, on which RAI was established, the repository of the Faculty of Chemistry, University of Belgrade, Cherry, was also set up, which is described in (Đorđević 2021). As part of the third section, data on the fields that the user fills in when depositing papers are provided.

12. CRIS (Current Research Information System) – is an information system on research activities.

13. Strategy for Scientific and Technological Development of the Republic of Serbia for the period 2021-2025 "The Power of Knowledge" ("Official Gazette of the RS", No. 10/2021), retrieved December 1, 2024

and Electronic Government issued a public call for the creation of a new national CRIS system. This led to the formation of eNauka (Kosanović 2024). This portal consists of two parts: administrative and scientific. The administrative part is not publicly visible as it contains detailed administrative data about scientific research organizations (abbreviated as NIO) and researchers. This part is managed by so-called NIO referents. The second part, accessible to the public, is managed by the NIO editor and researchers and serves to provide insights into the scientific results of the NIO and its researchers, which are used in the accreditation process and in the election process for an academic ranks[14]. eNauka defines an NIO referent as "a person authorized by the NIO, responsible for managing basic data about the NIO and associated researchers" and an NIO editor is "a person authorized by the NIO, responsible for managing the public profile of the NIO and verifying data about the scientific results of researchers (with the possibility of modifying or supplementing this data, but not entering it)".[15][16] NIO editors were presented with a test version of eNauka, and their comments and suggestions could influence its development until the final version.

Before the portal was launched, it was necessary to organize the references imported into eNauka from various databases: old researcher registries, repositories, and index databases (Web of Science, Scopus, etc.). Since there was no adequate control over the entry of references into the old researcher registries, a very large number of errors and duplicates were identified. Every reference had to be checked, and duplicates had to be removed.

A significant challenge was placed before the RAI administrator and the NIO editor, and in a way, before the entire Institute. In a short time, the papers of 61 researchers had to be retroactively deposited in RAI, reviewed, corrected and approved, and then verified in eNauka. This proved to be highly demanding task for all participants in this workflow.

eNauka was officially launched and become operational on July 3, 2023. At that time, most researchers at the Institute of Archaeology were either conducting excavations at archaeological sites or on annual leave. The news about the new researcher registry was met with scepticism regarding the longevity of the new database, as well as dissatisfaction over the need to re-enter bibliographic references that had already been added to previous

14. eNauka, retrieved December 1, 2024

15. eNauka. Basic Information, retrieved February 6, 2025.

16. For NIO referents of the Archaeological Institute, Branislava Elez and Nina Miljković, the secretary and general affairs officer, were appointed, while librarian Sanja Nikić wasappointed as the NIO editor.

registries. Many researchers logged into eNauka using their ORCID number only after completing their field research and from that point onward, actively began depositing papers in RAI. Simultaneously, following the received instructions, they worked on populating the repository and updating their ORCID profiles. This process was accelerated by the announced selection of distinguished researchers, regulated by the *Decree on Amendments and Supplements to the Regulation on Norms and Standards for the Distribution of Funds to Accredited Scientific Research Organizations*[17], which came into force on November 2, 2023. During November alone, 432 papers were deposited, out of a total of 709 new records in 2023. For this procedure, the papers of research associates and senior research associates published between 2018 and 2022, as well as those of research advisors published between 2013 and 2022, were deposited and reviewed in eNauka. After the selection process was completed, researchers continued to deposit their papers, including those published before 2018.

4 From the Researchers' Perspective

For the purposes of this study, an anonymous survey on RAI and eNauka was conducted, with a response rate of 56% out of 64 researchers from the Institute of Archaeology. Of the 36 responses received, four respondents were between 26 and 35 years old, sixteen were between 36 and 46 years old, ten were between 46 and 55 years old, and six were over 56 years old (Figure 1). The first set of questions focused on the repository, while the second addressed eNauka. Out of the total number of respondents, three-quarters (27 individuals) attended the RAI training, while the rest either watched the recording (5 individuals) or relied solely on the written instructions (4 individuals). Given the number of questions directed to the administrator from the time of training until the writing of this paper, it is unsurprising that only 19 individuals rated the deposition instructions with the highest score (5). Twelve individuals rated the instructions as mostly clear, four as sufficiently clear, while one respondent indicated that the instructions were unclear. There were no negative ratings. The repository interface received

17. Decree on Amendments and Supplements to the Decree on Norms and Standards for the Distribution of Funds to Accredited Scientific Research Organizations ("Службени гласник РС", бр. 96/2023). At the time of writing this paper, the Decree on Norms and Standards for the Distribution of Funds to Accredited Scientific Research Organizations is in force (90/2019-8, 96/2023-35, 110/2023-7, 16/2024-8), retrieved December 3, 2024.

similar evaluations regarding its usability. The survey revealed that for three respondents, a colleague deposits their papers. The number of individuals who deposited both their own and others' papers was twice as high—six people, while the remaining 27 respondents deposited only their own papers (Figure 2).

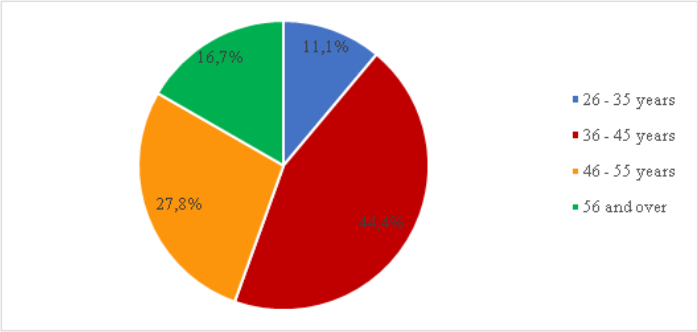

Figure 1. Responses to the question "Which age group do you belong to?"

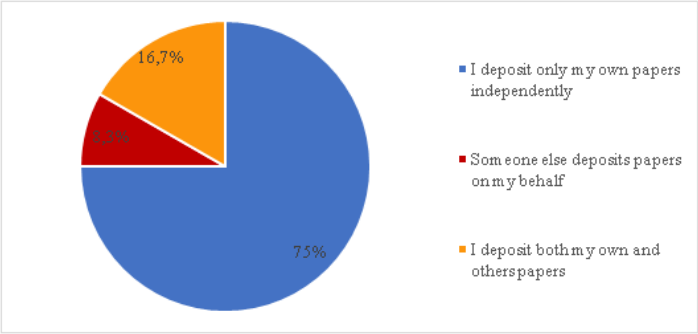

Figure 2. Responses to the question "How do you deposit papers?"

Respondents who selected the answer indicating that they do not deposit papers were not given the option to answer the next four questions regarding the regularity of depositing, challenges in the depositing process, the return of deposited papers, and the verification of approved records. These questions were analyzed based on 33 responses. An equal number of researchers

(13 each) reported that they deposit regularly, paper by paper, and those who deposit only after accumulating several published papers. For four researchers, deposit reminders sent by the administrator several times a year were important, while three researchers deposited at the end of the year, just before writing their annual reports (Figure 3). The biggest challenge was understanding usage rights ("All rights reserved", CC licenses). To a lesser extent, difficulties were reported in entering basic data (authors, editors, title, publisher, identifiers...) and selecting access options (open, closed, embargoed, or password-protected access). Four respondents indicated that they had difficulties entering abstracts and keywords. It is assumed that these cases involve book chapters in monographs and other works where abstracts and keywords are not inherently part of the text.

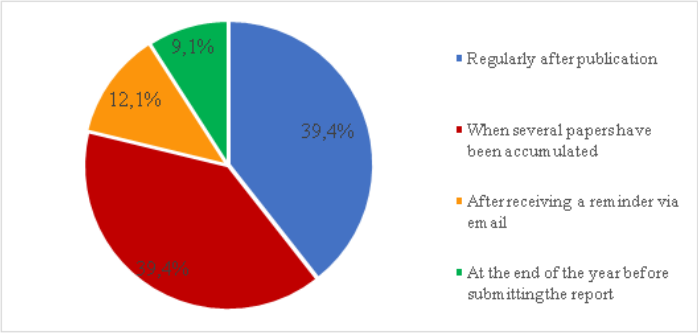

Figure 3. Responses to the question "When do you deposit papers?"

Although it was expected that the most common reason for returning papers would be that the paper had already been deposited, only 15 percent of respondents selected this reason. Only four respondents forgot to attach a PDF file to their record, while the majority of records were returned due to incomplete entry of the required metadata. One-third of respondents indicated that none of their papers had been returned (Figure 4). Half of the respondents generally review their records after approval, while one-third do so to a lesser extent. Meanwhile, twenty percent never revisit their records at all (Figure 5).

Of all respondents, 80 percent stated that they were unfamiliar with the external application *Authors, Projects, Publications*, suggesting that researchers had not thoroughly read the instructions, which include an intro-

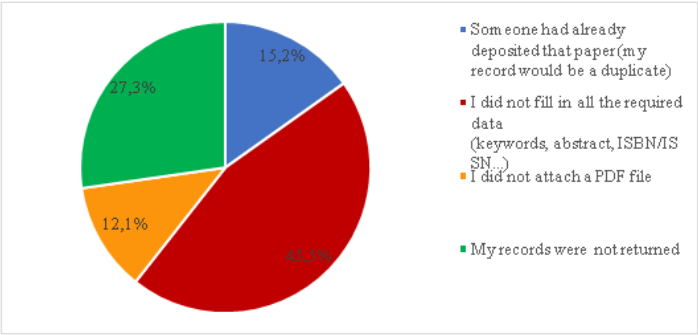

Figure 4. Responses to the question "Why were your records rejected?"

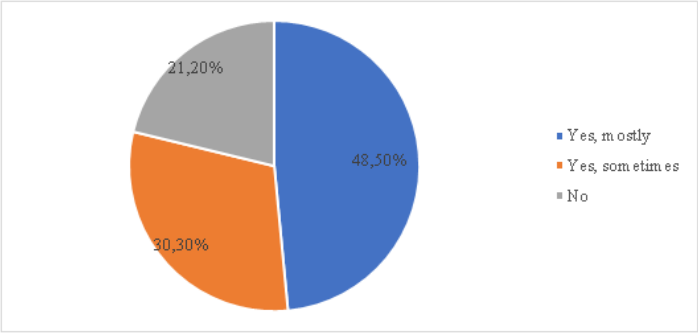

Figure 5. Responses to the question "Do you review records after approval?"

duction of this external application. The majority of comments written in response to the next question, which concerned the functionality of RAI, reflected uncertainties that were already addressed in the instructions or were due to limitations of the DSpace platform. Some of the comments included: "The listing of an individual author's papers is not well-structured, making it difficult to track which papers have already been added and which have not", "The classification of publication types should be organized according to M categories [M categories] to prevent later confusion in eNauka", "The interface needs modernization. [...] In general, the site needs better structuring, data grouping, and greater clarity. There is too much fragmentation", and "I think it would be useful to consolidate all references into a single group when searching for authors. [...] Currently, some papers can only be found if searched in Cyrillic script and vice versa. Foreign users do not know Cyrillic."

The first question related to eNauka concerned access to the portal. Two respondents had never used ORCID before, despite it being required for logging into eNauka. Just under 20 percent of researchers needed assistance from colleagues or video tutorials during the login process, while the majority found the login process straightforward (Figure 6). The next question offered multiple-choice answers as well as an option for respondents to provide their own input. Only three respondents stated that they never check their references in eNauka, nine check only before applying for a higher academic rank, while the majority check multiple times per year. One researcher verifies every reference immediately after publishing a paper or entering it into RAI. Comments written in response to the third question indicate that researchers want a faster and more accurate classification of papers (currently, only journal articles are automatically categorized based on ISSN, while other references take a long time for someone to assign a category; papers from the same Collected papers often have different classifications). Respondents also suggested better synchronization between eNauka, repositories, and ORCID (though they did not specify what exactly should be improved), proposed adding an h-index for citations, and requested clarification on the purpose of the "Network" feature, as its function in the current development phase remains unclear.

In the end, respondents had the opportunity to leave comments on the work of the RAI administrator and the NIO editor, with the aim of improving collaboration between the administrators and researchers.

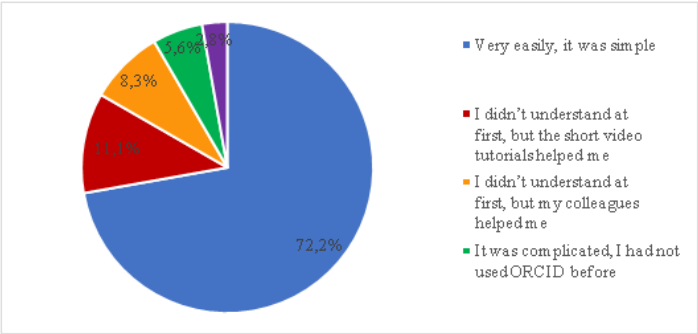

Figure 6. Responses to the question "How did you log into eNauka?"

5 Conclusion

The establishment of the repository and the transition from RIS to eNauka marked the beginning of a new chapter. For both researchers and the librarian, this was a new and priority task added to their already existing workload.

According to data from RCUB's SPIRA List of Implemented Repositories, as of June 1, 2023, the RAI repository contained a total of 464 records, of which 343 were open access while 121 were closed or restricted access papers. This number included 333 articles in journals, 79 books and theses, and 52 papers categorized as "other".[18] As of today, December 16, 2024, RAI contains 1791 records: 1523 papers are open access, 258 are available only to logged-in users, and four papers are in closed access. Six papers will become publicly available after the embargo period expires. The repository contains 642 journal articles, 501 chapters in monographs, 397 conference contributions, 131 books and doctoral theses, while 120 records fall into other categories.

eNauka currently contains 3,304 references associated with researchers employed at the Institute of Archaeology. The process of organizing and resolving duplicates is still ongoing, as eNauka is an aggregator that harvests new data on a weekly basis.

There remains a belief that both RAI and eNauka will bring benefits to all: improved access to scientific results, increased citation of papers, greater transparency, clarity, and reliability of data, as well as the automation of processes. Timely deposition of papers in RAI, in accordance with the guidelines

18. Spira – List of Implemented Repositories, retrieved December 16, 2024.

for entering metadata, responsible administration of the repository, up-to-date technical support for RAI and eNauka, and finally, reference control, form a chain that begins and ends with the researchers. Accordingly, effective communication and collaboration among all participants, as well as conscientiousness and perseverance in carrying out new responsibilities, represent not only potential challenges but also essential factors for the long-term and successful functioning of the system. Whether the existing challenges will be overcome and how they will affect other work processes in science and libraries as supporting scientific work, remains to be seen.

References

Đorđević, Ana. 2021. "Digital Repository of the University of Belgrade – Faculty of Chemistry." Преузето 20. 11. 2024. *Инфотека –часопис за дигиталну хуманистику* 20 (1-2). https://doi.org/10.18485/infotheca.2020.20.1_2.8.

Kosanović, Biljana. 2024. "eNauka – CRIS in Serbia." Преузето 28. 11. 2024. *Инфотека – часопис за дигиталну хуманистику* 23 (2). https://doi.org/10.18485/infotheca.2023.23.2.5..

Rajović, Vasilije, Biljana Kosanović, and Milica Ševkušić. 2018. "DSpace–institutional repositories–dissemination of research results: A local case study." Преузето 27. 11. 2024. *Primena slobodnog softvera i otvorenog hardvera PSSOH 2018: Zbornik prve nacionalne konferencije sa međunarodnim učešćem,* 10–10. https://zenodo.org/records/1411159.

Абадић, Весна. 2014. "Успостављање и развој универзитетских репозиторијума на универзитетима у Србији." Преузето 27. 11. 2024. *Високошколске библиотеке,* no. 1, https://zbus.rs/visokoskolske-biblioteke/2014-2/broj-jedan-2014/%5C#ftn101.

Никић, Сања З., and Милан Б. Миловановић. 2023. "Историјски ход Библиотеке Археолошког института у Београду кроз рад библиотекара." *Читалиште: научни часопис за теорију и праксу библиотекарства,* no. 42, https://doi.org/10.19090/cit.2023.42.45-53.