

Academic libraries' support for open science in the European Research Area Erasmus+ Staff Training days at the University of Ljubljana, May 2017

The University of Ljubljana offered [a training to the Erasmus+ network on the support of academic libraries for open science](#) in May 2017. It was attended by 21 participants from 11 European countries. Prior to this, the University organized [a national \(OpenAIRE\) workshop for researchers on open science in the European Research Area \(ERA\)](#) in November 2016 (together with the Ministry of Education, Science and Sport), and included a provision in [the new Statutes of the University](#) on designing and implementing the education and research according to the principles of open science (Article 6 in Chapter II. on the autonomy of the university; came into force on 11 February 2017).

According to the reflections in [Europe's Future: Open Innovation, Open Science, Open to the World](#) (2017, p. 61) open science means at least fair open access to scientific peer reviewed publications, open access to data and metadata, open sources and open notebooks. The four major goals are public accessibility and full transparency of scientific communication, public availability and reusability of scientific data, transparency in experimental methodology, observation, and collection of data, and complete scientific collaboration. The four essential needs are to strengthen dialogue between science and society, linking scientists to science policy making, developing proper e-infrastructures, digital tools and services for open science, and changing legal tools and policy requirements for open science. In order to build the new structure of open science people skilled in openness are needed and research integrity is demanded from researchers.

Academic libraries can offer support to researchers mostly regarding open access to publications and research data and in building and managing certain open science infrastructures. Some support activities are presented further on in this report.

Open science in the European Research Area and the Slovenian national open access strategy

In ERA, out of aforementioned components of open science, [open access](#) is mandatory for peer-reviewed articles from projects, co-funded by Horizon 2020 Framework Programme for Research and Innovation, where [a pilot](#) is being carried out on open research data which should be FAIR (Findable, Accessible, Interoperable, Re-usable). [The National Strategy of Open Access to Scientific Publications and Research Data in Slovenia 2015-2020](#) is fully aligned with open access mandate in Horizon 2020 (i.e., mandatory open access to peer-reviewed articles, open research data pilot). This will enable Slovenian researchers to comply with the mandates in the same way.

The European Commission uses [OpenAIRE services](#) for monitoring compliance with the open access mandate. The services are also available to national research funders in ERA and beyond. Bibliographic

and funding metadata of open access publications and research datasets from Horizon 2020 and national co-funding are aggregated at the [OpenAIRE portal](#).

Changes in research evaluation and copyright, and transformation of scientific communication business model from subscription to paying for open access will stimulate researchers to embrace open science with more affection.

Infrastructure for open science in Slovenia

The information research infrastructures, processes and policies in Slovenia are traditionally established and managed at the national level ([COBISS.SI](#), [SICRIS](#), consortia for electronic resources – [here](#) and [here](#), [co-funding of purchase of international scientific journals](#), the National Point of Reference for access to and preservation of scientific information, [the national open access strategy](#)). Open access infrastructures are also envisaged at the national level. The national information portal on open access ([openaccess.si](#)) and national portal for access to full-texts that harvests metadata from repositories and other digital archives ([openscience.si](#)) are in operation. Still the (national) infrastructure for open research data, the portal of scientific and professional journals published by Slovenian organizations, the (national) helpdesk, and curation as well as preservation of open publications and research data need to be established.

Support of academic libraries for open access to publications

Academic libraries can support deposit and making the publications available to the public via the repository, where also final works of studies and journals as well as other publications, published by the university, can be collected. Academic libraries can disseminate information and advise regarding different aspects of open access and research evaluation, and can support the university publishing. Most common researchers' concerns are about citations of their open access articles, possible breaches of copyright transfer agreements and about predatory journals.

Support of academic libraries regarding predatory journals

Predatory publishers are abusing the open access business model where author pays for the publication of article in a journal that is later freely available to anyone with internet connection. For predatory scientific publishing, misleading claims about the journal and its publishing process are typical, as well as fast acceptance of article for publication with little or no peer review. Possible predatory nature of the publisher or journal can be verified at different portals and webpages. Academic libraries are qualified for the support to researchers regarding predatory journals because of their familiarity with scholarly publishing.

Analysis of open access articles and article processing charges

Such analyses show the situation and enable planning of further support for researchers. In the analysis, data was obtained about open access articles of Slovenian researchers, published in 2015, and respective Article Processing Charges (APCs). In Scopus, out of 5,062 articles with publication year 2015 with at least one author from Slovenia, 1,065 articles were openly accessible as publisher's versions (out of these 864 were published in open access journals and 201 in hybrid journals). Irregardless of the type of journal, the average net APC was 1,609 EUR (1,324 EUR in open access journals and 2,219 EUR in hybrid journals). Public open access funds were not established in Slovenia.

Open access to scientific articles and medical researchers

The analysis indicated that medical researchers at the University of Ljubljana are familiar with open access to publications and also with predatory journals. They believe that the advantages of open access are higher citations and visibility of articles, the disadvantages are Article Processing Charges. The most important criteria of medical researchers when choosing the journal to publish research results are journal impact factor, publisher's reputation and time, needed for peer-review and article publication. The medical researchers expect library support when searching for the open access literature, when choosing the relevant open access journal, they need the latest information on open access and other support. One of the possibilities to convey information to researchers is open access guide in LibGuides.

The role of academic librarians in the research data lifecycle

[Social Science Data Archives](#) analysed the situation and needs regarding preservation and accessibility of research data in Slovenia in [the Open Data project](#) (2010-2013) and prepared recommendations for the design of policies and infrastructures. New profiles of experts are needed (data librarian, data journalist, data analyst, data engineer, data steward, data archivist). Academic librarians can convey information on open access mandates for research data and ways for complying as well as about data sources, centres and archives. They can assist in the preparation of data management plans.

Preservation of scientific information

According to ISO 14721 standard on Open Archival Information System (OAIS) the main functions of digital preservation are collection of digital objects, preservation and curation as well as access. The selection of preservation strategy depends on what is considered to be important to preserve. Important aspects for preserving access to digital information are archival master files, metadata, unique identifiers and trustworthy repositories. The academic libraries must consider the preservation requirements already during the development of the digital archive.

Conclusions

The goals of the European Commission and the Government of the Republic of Slovenia are 100 percent open access by 2020 and 100 percent openness of publications, published in 2020, in 2021. The two policy makers and funders are carrying out or planning the open research data pilot. The European Commission is also carrying out other activities for the establishment of the open science environment in the European Research Area. In the middle of 2017, a part of needed (national) infrastructures and processes for supporting Slovenian researchers in open science is established and working. A lot of work still needs to be done to attain the open access goals and Slovenian academic libraries can take part. Similarly, in other ERA countries, academic libraries can offer support for different components of open science and to different stakeholders.

Mojca Kotar
University of Ljubljana
University Office of Library Services

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