

RAD-on: A research and higher education information system in Poland

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Introduction

The Current Research Information System (CRIS) is an information system that stores, manages, and exchanges contextual metadata for research activity¹. The Higher Education Information Management System (HEMIS) is a data system that collects, monitors, manages, analyses, and disseminates information about education inputs, processes, and outcomes².

The majority of such systems are developed for specific institutions or their associates. This article presents RAD-on: Reports, Analyses and Data on Higher Education and Science, a nationwide IT system that was first implemented in Poland in 2019. The system is an analytical platform that provides official data on science and higher education in Poland. It is available to the public at radon.nauka.gov.pl in the Polish and English languages. RAD-on represents the next stage in the development of the CRIS and HEMIS systems, as it supports policy-making processes and sciencemetrics analyses. This article outlines RAD-on's applications in decision-making processes at research institutions, as well as governmental and nongovernmental institutions. The special role and innovation of RAD-on in the science and higher education sector are illustrated using examples of its practical use.

RAD-on in relation to other national CRISs

The RAD-on system relies heavily on the OGD, FAIR, and data-driven policy concepts. It integrates data on science and higher education in Poland that originates from autonomous databases. One such database is POL-on (Michajłowicz et al., 2019), a system that gathers data on all students, graduates, PhD candidates, and employees of research institutions in Poland and their scholarly activities. The data is collected in the form of information on projects, investments, and patents, among others. The Polish Scholarly Bibliography (*Polska Bibliografia Naukowa*, PBN) is a national system that gathers metadata of scholarly publications, similar to CRISTIN³. The National Repository of Theses (*Ogólnopolskie Repozytorium Pisemnych Prac Dyplomowych*, ORPPD) stores the bachelor's and master's theses of Polish graduates. The Polish Graduate Tracking System (*Ekonomiczne Losy Absolwentów*, ELA) provides data on the earnings of graduates of higher education institutions⁴. Currently, RAD-on offers information from all of the systems described above that is not personal or highly sensitive⁵.

To our knowledge, RAD-on is a unique system of its type. In comparison to systems developed in other European countries, RAD-on stands out in terms of: (1) its comprehensive range of official data—RAD-on integrates information on didactics and research conducted by research institutions in Poland, collected in accordance with legal regulations; (2) its high degree of data disaggregation and interoperability; and (3) its extensive portfolio of services.

Many countries are developing nationwide research information systems that collect data on scholars and their research, and facilitate the sharing of this information between services to support, for example, the equitable distribution of research funds. According to EuroCRIS presentations and publications, such systems have been or are being developed by at least thirty countries⁶. One of the most recent projects is Research Portal Denmark⁷, which was launched in 2022. It contains data on science from various sources, including from research funding institutions, but it lacks data on higher education. Unlike other nationwide EuroCRIS systems, RAD-on provides access to a comprehensive selection of official data: it integrates information on research conducted in Poland, as well as data on the didactic activity of universities.

¹ <https://www.eunis.org/wp-content/uploads/2016/03/cris-report-ED.pdf>

² https://elibrary.worldbank.org/doi/10.1596/978-1-4648-1099-2_ch1

³ <https://www.cristin.no>

⁴ <https://ela.nauka.gov.pl/en>

⁵ According to Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

⁶ <https://dSPACECRIS.eurocris.org> (last accessed: 9 November, 2022).

⁷ <https://forskningportal.dk> (last accessed: 9 November, 2022).

Data-driven policy making using RAD-on

Reports and analyses published on the RAD-on platform enable the monitoring of processes in the science and higher education sectors, and reach a wide public, including representatives of ministries and higher education institutions. Its key contributions include periodic analyses of the internationalisation of higher education in Poland prepared for education and business foundations, reports and analyses on the circumstances of graduates on the labour market by sector, and analyses of scientists and their publications in different fields of research. RAD-on data is also used to create national rankings of Polish higher education institutions and university programmes, including information on their research excellence metrics. The overview of the analytical platform developed by us specifically for the purposes of displaying complex descriptive statistics is presented below. By building this tool we were able to provide business intelligence services for the science sector, without incurring licensing fees.



Figure 1. Results of the 2017—2021 evaluation of scientific activity in Poland presented at RAD-on: https://radon.nauka.gov.pl/raporty/ewaluacja_kategorie_naukowe [20.02.2024]

The analytical platform helps users discover nationwide trends, compare higher education institutions, and monitor phenomena that influence the science and business sectors. The module is user-friendly for those who lack experience with business intelligence tools, and is designed chiefly for journalists, scholars, and civil servants.

Conclusion

To our knowledge RAD-on is currently the largest (in terms of collected and shared data) national IT system in the domain of science and higher education in Europe. The system can be considered an analytical platform that presents official statistics, adheres to the concepts of OGD and FAIR, and contributes to the establishment of data-driven political and managerial processes. RAD-on evolves continuously, currently our focus is on sciencemetrics reports and analyses.

RAD-on was implemented to make the data on science and higher education collected in Poland available to universities and institutional authorities that are responsible for research and development, public administration staff, representatives of NGOs, scientists, journalists and other groups of individuals and entities interested in science and higher education, such as innovative enterprises.

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