The role of standardization of CRIS systems in building Open Science Infrastructure - an example of Polish Medical Platform

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Abstract

In this presentation we will describe the Polish landscape of CRIS-related infrastructure. The CRIS adoption in Poland, after more than 10 years of constant development, is currently at a very mature level. It includes wide adoption of institutional CRISes, intensive cooperation between universities on the data standardization, national CRIS interoperable with institutional CRISes and the emerging domain CRIS platforms, such as Polish Platform of Medical Research. This joint effort supported by international partners, such as EuroCris allows us to face challenges coming from both local legislation changes and global open science trends.

OMEGA-PISR Community in Poland

CRISIFication in Poland has started about 10 years ago. At this time Knowledge Base of Warsaw University of Technology was founded with the primary objective to promote university research achievement worldwide. At the same time the national CRIS – PolON v1. was created for the purpose of evaluating Polish universities, which is realized every 4 years. PolON is being developed by National Information Processing Institute – OPI. The first such evaluation was performed for the 2013-2016 period with the help of PolON 1.0. PolOn 1.0 was not quite full-fledged CRIS system. It concentrated on bibliographic data, projects an patents, however data were collected in a form of disjoint evaluation events not full bibliographic records. It means that every authorship of every publication was reported as a separate evaluation event, also all resources were not linked to each other but only to the organization. The poor information schema was caused by the fact that PolOn was created solely the purpose of evaluation regulations in Poland. This schema, and the lack of stability in the Polish law have resulted in lack of interest from the Polish universities for using POL-ON as a real CRIS.

For that reason Warsaw University of Technology decided to extend the objectives of Knowledge Base to serve both promotion and evaluation purposes. From this time all the scientific achievements were registerd in University Knowledge base and then a subset of information was exported to PolOn system. Soon afterward, it was decided to incorporate Institutional Repository(IR) and open access services as well. As other universities faced the same problems and the software was already quite robust, it was decided to upgrade the university knowledge base to OMEGA-PSIR – a universal solution for building CRIS/IR/RPS-based knowledge bases. Soon it became widely adopted by other universities.

In the years 2013-2016 OMEGA-PISR was adopted in a couple of Universities and help them in evaluation process. In October 2018 new regulations for the universities in Poland introduced a

new approach to evaluating the universities research performance, focusing on predefined research disciplines instead of faculties. This change highly influenced the organizational structure of universities and management. In some universities it caused closing the Faculties and introducing a new ones so the organizational structures matched the research disciplines. The most adopted approach was however, to build Research Discipline Councils within Universities that are orthogonal to organizational faculty-based structure. The role of the Councils were to assure consistent research performance and reporting within Institutes and Faculties.

This situation forced OPI to start working on a new system (PolOn 2.0) with a completely new information schema design, hence the OMEGA-PSIR team has decided to adapt the system to the new reality. In this time a close cooperation between PolOn and OMEGA-PSIR with regards to information exchange begun that brought a lot of benefits. Coordinated efforts of PolOn, OMEGA-PSIR and universities result in the situation that on the day before evaluation (December 2021) the Omega-PSIR was already deployed at 37 universities, was perfectly integrated with Polon2.0 system, which at the same time become a true national CRIS system with proper identification of researchers, organizations etc.

This wasn't be possible without commitment of universities using Omega-PSIR. Since the beginning of OMEGA-PSIR project the close cooperation between universities was running under the umbrella of OMEGA-PSIR users group community. Every year the community is organizing the conference – the last one - The 8th Seminar of University Knowledge Bases was held online 07-10 March 2022. This conference built a space for exchanging ideas form both local and international partners. We believe that regular participation of OPI and euroCRIS caused that new PolON was highly inspired by best practices. At the same conference the user group meeting is being held, where all the future plans are discussed. The member-universities are also cooperating on data standardization. Recently a reference installation of OMEGA-PSIR was launched at the Warsaw University of Technology where editors from various universities are working on common databases and dictionaries like Journal List. The resources are peer reviewed and then distributed to local OMEGA-PSIR instances. This data standardization helps reuse reports and support data exchange with PolON platform.

As on Polish soil the main incentive for adapting CRIS at the universities was the obligation to report to the Polish Ministry responsible for Science and Higher Education. However many universities in Poland reached a certain maturity level where CIRS is being used for research promotion research project management and administration, employee evaluation in wider scope than required for ministry.

The other approach, that is not a mainstream one, is based on recognizing the potential of CRIS in using the collected data primarily to build the visibility and reputation of the University and provide information services to the researchers.

Such an approach was adopted by the Warsaw University of Technology that is a founder of Omega-PSIR software in the original idea of a system for promoting scientific research, open access and collaboration. The initial deployment included already the obligation to deposit full-text even if they cannot be fully open-accessed but at least for internal purposes. The functionalities that allows finding expert or a team suitable for cooperation in research grants, robust, public researcher profiles and many other.

Currently the system collects and displayed among other : Publications, Research Datasets, Projects, Project Proposals, PhD, Diplomas, Patents, Licenses, Expertise's, Deployments, Artistic Works, Laboratories, Equipment, Social Media Activities, Professional Activities, Awards, Events, Press/Media and many other.

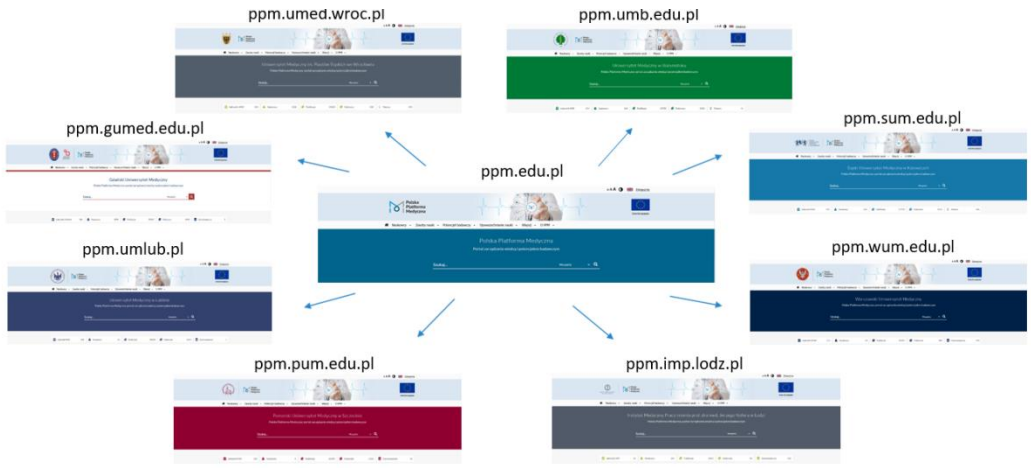
The most spectacular (in Poland as well in the world) example of this scenario is the Polish Medical Platform which aggregated 7 Medical Universities and 1 Institute (4 more institutions will join the platform soon), deposited many research outputs in open access, together with WCAG-compliant version of PDFs. Promoted many research-oriented services like customised alerts, automatic grant call suggestions and many other.

Polish Platform of Medical Research

In this part of the presentation we will present the ***Polish Platform of Medical Research*** *as a successful approach in building open science ecosystem for medicine in Poland.*

A good example of domain-specific CRIS is the Polish Platform of Medical Research (PPM). It is a unique project – it has involved several institutional OMEGA- PSIR implementations at medical universities and research institutes. Each institution has deployed a local version of OMEGA-PSIR, additionally a central database has been implemented in order to integrate all the information resources from the local systems.

The Project has been started as a result of a joint initiative of seven medical universities and one research institute: Wroclaw Medical University – the project leader, Medical University of Bialystok, Medical University of Gdańsk, Medical University of Silesia, Medical University of Lublin, Pomeranian Medical University in Szczecin, Medical University of Warsaw, Nofer Institute of Occupational Medicine in Łódź. At the time of writing of this paper two more Medical institutions – Medical University of Łódź and Jagiellonian University- Collegium Medicum also using OMEGA-PISR are being prepared to join the Platform.



The project was co-financed by European Union within the Operational Programme of Digital Poland. According to the project document: "The main goal of a project was to build a platform for the purpose of presenting and promoting scientific achievements and research potential of medical research institutions"

The subgoals referring to the traditional paradigms of Open Science could be seen as requirements for each local system, as well as the ones for the central platform. Some of them mainly referred to the IR functionality:

• ensuring open access to the medical document resources (repository of scientific publications, grey literature, theses, teaching material),

• ensuring open access to research data (repository of research data and other literature documents),

Additionally, a number of subgoals that were specified, could be classified as more specific to the CRIS and RPS functionalities:

• aggregating all research-related information in one platform (scientific achievements, research potential, research outputs etc),

• creating a database of experts in various fields of medicine (scientists' profiles),

• increasing the accessibility of resources collected by Project Partners for the visually and hearing impaired by adapting and digitally presenting data in accordance with WCAG 2.0 standards (currently WCAG 2.1),

• improving the openness of shared resources by increasing their availability according to the five Star Open Data scale.

The resources collected and shared via Polish Medical Platform are among others

- *Information on publications (journal articles, chapters from monographs), doctorates and research data,*
- *research potential (patents, projects, grants and grant applications, research equipment, laboratories),*
- *information about events, awards and distinctions, activities, multimedia*
- *full texts including WCAG-compliant versions*

Polish Platform of Medical Research - Implementation

The IT part of the project has been performed by the consortium of Warsaw University of Technology and SAGES. As a result, within the first phase eight local CRIS installations based on OMEGA-PSIR software have been launched. In the second phase all the local-CRISes were connected to a central aggregation CRIS system, also powered by OMEGA-PSIR software.

The main problems were with filling the system with data, which were stored in various institutional databases, usually different from the site to site. Yet another problem was the scale of the project, as in a very short period all the installations should have been working. This required an extra effort, but on the other hand it has shown positive sides of the OMEGA-PSIR software.

The idea of integrating all the information resources of the institutional CRIS systems under one central platform was quite a challenging task. Yet another very important, though very difficult problem was a variety of the standards for categorization of data. As all the data were planned to be loaded to a central database, it was necessary to set a common categorization scheme. To this end a decision was taken to prepare a top-level categorization, leaving the local categorizations almost unchanged.

Having implemented 8 local CRIS installations, the work on the central platform has been started. In this case the main challenge was to design and implement a dedicated functionality that enables the OMEGA-PSIR instances to communicate each other and exchange the data in both directions:

- *from the institutional sites to the central one to send in order to send new records*
- *from the central site to the institutional ones to send necessary changing data about partnering institutions (e.g. nee researchers), so that the cooperation information could be up-to-date*

Summary CRIS infrastructure in Poland:

As described in this paper the Polish landscape consists of mature installations of institutional CRISes, reference CRIS for local systems, national CRIS and domain-specific CRISES. All the instances have their role and purpose and are effetely communicating witch each other. Polish vibrant community with help of international partners help these projects to move forward.