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Development of National CRIS Systems in Latin America and the Caribbean: Case Studies 2023

Abstract

The development of CRIS/RIM systems on an institutional and national level in countries of Latin America and the Caribbean has had an important growth in the last few years, keeping a tendency, that more and more institutions and government agencies become interested in implementing this kind of systems for research management.

According to the results of a diagnostic survey on the development and characterization of CRIS systems in Latin America ¹, conducted between July and November 2011, a target group of 638 educational institutions from 21 countries of Latin America and the Caribbean, from 133 obtained answers and the analysis of a set of criteria, the following results were obtained (May 2022): A total of 65 CRIS systems were found (three national and the rest institutional), of which 48% corresponded to PURE, 31% to VIVO and 20% DSpace-CRIS; the countries with the highest number of CRIS systems were Peru and Mexico.

Currently (April 2024), a total of 39 CRIS systems are registered in the Directory of Research Information System (DRIS)², which contrasts with the 26 records that were in place until May 2022, which indicates an increase of 50% in two years. The number of registered national CRIS systems doubled, and in the case of institutional ones, there was an increase of 30.64%.

Peru tops the list of Latin American countries with the highest growth and number of institutional CRIS systems implemented, from 10 in 2022 to 23, which represents an increase of 56.5%. It should be noted that the additional 13 systems are implemented with the PURE platform.

In terms of software installations, there were also increases, the use of DSpace-CRIS increased by 20%, VIVO by 13.3%, and PURE by 56.52%.

The objective of this paper is to establish a general overview of the development of CRIS Systems (Current Research Information System) or RIM (Research Information System) of national scope in Latin American and Caribbean countries, identifying those who have a system of this type or a similar platform, and what its main characteristics are. To this end, a study was carried out in 2023 using the qualitative descriptive case study research method, which consisted of three stages: a) the search and retrieval of information from primary sources and official websites; b) the collection and validation of supplementary data through personal communications and the completion of a form by the contact personnel or the person responsible for each system; c) the analysis and description of each case study according to a set of established criteria.

Based on the results of the study and the update of information (April 2024), there are 5 national CRIS/RIM systems in the region (which define themselves as such) operating in Peru, Brazil, Ecuador, Panama, and Puerto Rico. Additionally, in Chile and Argentina, open systems and platforms with a

national scope have been implemented, for the management and evaluation of research and/or scientific production in their countries, which are also included in this work.

In the case of Peru, the National Council for Science, Technology and Technologic Innovation (CONCYTEC), started in 2018, the project known as #PerúCRIS, with the aim of establishing, developing, and operating the National Network of Information in Science, Technology and Innovation (CTI), in order to establish, consolidate and manage scientific and academic information from all over Peru, generate statistics to support the decision-making process and globally visualize the activities, capabilities and scientific production of Peruvian researchers ³. The project has been developed in stages, based on the design of their own model, in accordance with the principles of a CRIS system (hence its name). The digital platform that supports #PerúCRIS is based on the use of international standards of interoperability, open technologies, cloud services and open-source software, mainly DSpace-CRIS. It features an information portal, on which dissemination materials, training resources, statistics, publications and documentation related to the project development ⁴.

In Brazil, the BrCRIS project – Ecosystem of Brazilian Scientific Research, is an initiative from the IBICT (Brazilian Institute for Information in Science and Technology), that started in 2014 with a study process to create a National System of Research Information (CRIS) and culminated in 2020 with the launch of a research project for the development of a national Brazilian CRIS system, called BrCris ⁵. The architecture of the system was constructed based on their Portal OasisBr – Brazilian Website for Open Access to Scientific Information and other databases, as well as the experience of the PTCRIS Project – Open Ecosystem of Science and Technology of Portugal and the developments of LA Referencia (Latin American Network of Scientific Publications Repositories) of which the IBICT is the founding member ⁶. The BrCRIS technological platform is mainly supported by the software developed by LA Referencia, used for the integration and standardization of data coming from diverse heterogenic sources, and the open-source software VIVO, as an interface for the visualization and access to information. The CERIF standard and a semantic model based on the ontology of VIVO, among other interoperability standards, are also implemented ⁷.

Meanwhile, the National Secretariat of Science, Technology and Innovation (SENACYT) of Panama launched in September 2022, its CONECTO platform, a system of scientific and technological profiles of the Republic of Panama, which seeks to encourage collaboration among scientists, students, professors and the general public. Through this platform, users can create profiles, share information, publish research and collaborate in joint projects ⁸. This tool is part of an ecosystem of platforms that promote Open Science policies in Panama and the region, and it is also integrated into the set of services provided by the Platform for Access to Scientific Bibliography (ABC Platform) ⁹. CONECTO is implemented with the open-source VIVO software and it uses all the functionalities offered by this solution.

In the case of Ecuador, the Ecuadorian Corporation for the Development of Research and Academia (CEDIA), which is also the National Network of Ecuadorian Research and Education – RNIE, started in 2010 the development of an Ecuadorian Research Repository that culminated in 2022 as the National Research Repository based on CRIS, named REDI (Ecuador's Semantic Repository for Researchers) ¹⁰. The purpose of REDI is to provide information on authors, publications and knowledge areas of High Education Institutions (IES), members and non-members of CEDIA. REDI provides and presents information related to the research and scientific domain of the country, through a self-developed platform based on international standards, that integrates various technologies and software solutions (CERIF, DSpace/Dspace-CRIS, VIVO) for the collection, enrichment, storage, processing and visualization of national scientific production ¹¹.

The most recent of this type of national ecosystem in the region is the management system of researcher profiles of Puerto Rico, named BEACON, developed by the Trust for Science, Technology and Research of Puerto Rico, a private non-profit entity, responsible for the public policies regarding science, technology, research and development of Puerto Rico. The BEACON platform is supported by Digital Science's SYMPLECTIC software, designed for the implementation of a RIM (Research Information Management) ¹².

On the other hand, in Argentina, a national platform of researcher profiles (Cvar) and a management and evaluation system for calls (SIGEVA) have been developed. In the case of the former, the Ministry of Science, Technology and Productive Innovation (MINICYT) implemented in 2011 the Cvar platform (www.sicytar.mincyt.gob.ar) for the management of curricula vitae of researchers, which allows to keep the unified and normalized registers of curricular data from scientists and technologists from all institutions in the country ⁵. Meanwhile, since 2005, the National Council of Scientific and Technical Research (CONICET) has developed the SIGEVA system, which is a set of computer applications for the management of scholarships, projects, reports, admissions, teaching assessments, institutional memory and other aspects related to various calls. The system has several information and interoperability modules, and it is 100% compatible with the Cvar platform ¹³.

Lastly, the open access platform DATACIENCIA from Chile, was developed in 2014 by the Department of Knowledge Management, Monitoring and Prospection of the National Agency of Research and Development (ANID) that aims to represent, within its multiple dimensions, the Chilean scientific production, according to publications indexed since 2008 on WoS, Scopus and the SciELO Chile collection. Its main goal is to visualize and facilitate indicators of national scientific production free of charge. Among its multiple services stand out: indicators to a national, regional, disciplinary and genre scale; analysis by profiles of institutions and authors; analysis of publications and productive environment in regions and the implementation of metrics by national magazines, by topics and or by key words ¹⁴.

Among the main results and conclusions, the following stand out:

- The three countries with the highest number of CRIS systems are Peru with one national system and 24 institutional systems; Chile with 12 institutions and a national platform; and Mexico with 11 institutions.
- The most widely used software solution by countries in the region is PURE, with a total of 36 installations, followed by VIVO with 17, other solutions with 14, DSpace-CRIS with 12, and Symplectic with 2.
- The national CRIS systems with the greatest scope and development are #PerúCRIS from Peru and BrCRIS from Brazil. Both are implemented with open-source platforms, and open and interoperable technologies with their repositories, databases, journal portals, and external sources. They are designed with the vision of building scientific information ecosystems; CONCYTEC and IBICT are strategic partners of EuroCRIS and other important international organizations.
- With the exception of Puerto Rico, the rest of the countries with national CRIS systems use open-source software solutions (DSpace-CRIS and VIVO), open technologies, and the CERIF standard as part of their architecture.
- In all cases, each country has developed its own model, in an average time of 2 to 8 years, with different scopes and approaches, but with the common objective of integrating, managing, and giving visibility to the scientific production of their researchers and institutions, providing them with a set of services, indicators, and metrics.

Keywords: National research information infrastructures; national current research information systems; Latin-American case studies; research information exchange.

References

1. Vázquez R. Development and characterisation of CRIS systems in Latin America: Preliminary results of diagnostic survey. *Procedia Computer Science*. 2022 Jan 1;211(C):267–76.
2. DRIS - Directory of Research Information System | EuroCRIS [Internet]. [cited 2024 Feb 10]. Available from: <https://dspacecris.eurocris.org/cris/explore/drisc>
3. #PeruCRIS | CONCYTEC [Internet]. [cited 2024 Feb 3]. Available from: <https://perucris.concytec.gob.pe/>
4. #PeruCRIS | CONCYTEC [Internet]. [cited 2024 Feb 3]. Available from: <https://www.perucris.pe/home>
5. Amaro B, Barrios C, Cadenas LE, Cetrangolo F, Ciuffo L, Mayo-García R, Matas L, Navaus P, Núñez L, Segundo WLR. El Ecosistema Digital de Ciencia Abierta de América Latina y el Caribe [Internet]. Santiago de Chile: RedCLARA; 2022. [cited 2024 January 15]. Available from: https://redclara.net/images/docs/El_Ecosistema_Digital_de_Ciencia_Abierta_de_America_Latina_y_el_Caribe-26-08-2022.pdf
6. Luiz Pinto A, de Carvalho Segundo WLR, Dias TMR, Vivian Santos Silva, Gomes JC, Quoniam L. Brazil Developing Current Research Information Systems (BrCRIS) as data sources for studies of research. *Iberoamerican Journal of Science Measurement and Communication*. 2022 Jun 29;2(1).
7. Silva VS, Matas L, Moreira T, Segundo WC. An ETL strategy for integrating the LA Referencia platform and VIVO for the Brazilian CRIS. *Procedia Computer Science*. 2022 Jan 1;211(C):111–7.
8. CONECTO | SENACYT [Internet]. [cited 2023 Nov 26]. Available from: <http://conecto.senacyt.gob.pa/conecto/>
9. SENACYT [Internet]. [cited 2023 Nov 26]. Available from: <https://www.senacyt.gob.pa/plataforma-conecto-de-la-senacyt-fue-galardonada-por-los-connecta-awards-2022>
10. TNC22 [Internet]. [cited 2023 Oct 18]. Available from: <https://indico.geant.org/event/1/contributions/81/attachments/26/228/REDI%2B%20Toward%20an%20Ecuadorian%20Research%20Repository%20based%20in%20CRIS.pdf>
11. REDI-Red de Investigadores | CEDIA [Internet]. [cited 2023 Dec 9]. Available from: <https://redi.cedia.edu.ec/>
12. BEACON | Puerto Rico Science, Technology & Research Trust [Internet]. [cited 2024 Feb 2]. Available from: <https://prsciencetrust.org/beaconplatform/>
13. SIGEVA | CONICET [Internet]. [cited 2023 Nov 7]. Available from: <https://sigeva.conicet.gov.ar/>
14. DATACIENCIA | ANID [Internet]. [cited 2024 Jan 28]. Available from: <https://dataciencia.anid.cl/>