



CRIS 2014

Scientific Outputs: Integration and Unification of Catalan CRIS Information Systems

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Abstract

Society increasingly demands quickly, easily and a homogeneous access to the information. Access to Internet, mobile devices, social networks as Facebook or ResearchGate, which create links between people to share data reaching anywhere in the world within seconds or the increase commitment for the cloud, where access from any device and place allowing the access to the own documents, videos, photos, music, etc. keeping the own customized environment or applications to share documents as Google Drive or Dropbox, which allows to agile data access are examples of agility in the flow of information and is something that nowadays is needed and is no longer questioned.

This paradigm transferred in the scope of research, knowing that universities, their affiliated research centers and researchers have the aim on spending time doing research, getting funds for their research or teaching and the moment to feel the need to transfer or enter the results into an information system that do not report short-term progress or improvement in their day to day of research never arrives. Faced with this situation takes more relevance offer systems that provide the flexibility and immediacy of access to scientific publications generated. In this regard already exists commercial databases as Web Of Science, PubMed, Dialnet, Scopus, Google Scholar, etc. that provides it.

On the other hand, SIGMA Gestión Universitaria, which is a not-for-profit consortium established in 1996 by a group of 8 top level Spanish Public Universities to provide technological solutions to their needs for managing academic, learning, research and organization processes aligning its ARGOS Research Project Solution with the ERA requirements.

SIGMA and their universities have made great efforts to promote competitiveness, mobility, create synergies and improve the research quality in-house, regionally, nationally and internationally. This has allowed great progress in all areas, researcher's mobility, creating synergies with shared resource centers between different institutions and improving the research visibility generated.

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But in an autonomic scenario there is still a long way to go in order to offer a homogeneous research information system to the world. In May 2012, the Catalan Government and public universities agreed establish the new University Services Consortium of Catalonia (CSUC). The objective of the CSUC is to share academic services, scientific and management of associated companies for strengthening synergies and economies of scale to improve its effectiveness and efficiency. Among its main objectives in research scope, there are:

- Institutional Repository of Open Access Documents
- Management research Systems
- Storage of scientific data
- Access to Digital Library of Catalonia called CERCA for research centers
- Public Research Portal with all the scientific activities done on Catalan Public Universities

In order to accomplish these objectives CSUC have to deal with the different CRIS systems among Catalan public universities, providing some mechanisms to integrate information from the different CRIS into a unique central database which facilitate the information flow, avoiding problems such as information duplication and providing services to the community.

SIGMA which provides a CRIS solution for three Catalan public universities is working with CSUC on the interoperability of the research information.

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1. About SIGMA: Aims and Activities of the Organization

(SIGMA Gestión Universitaria)¹ is a not-for-profit consortium established in 1996 by a group of 8 top level Spanish Public Universities to provide technological solutions for students, learning and research management processes.

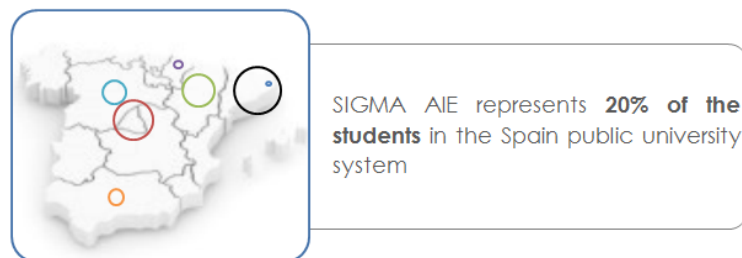


Fig. 1 SIGMA AIE representation in Spain

- **Mission:** Providing innovative technology solutions to Higher Education institutions and offering services that enhance the value of those solutions.
- **Vision:** Being functional and technological benchmark in the field of Higher Education, both at Spanish and European market, with the aim to improve the way it manages the University Teaching and Research.

The SIGMA consortium's objective has evolved towards the continuous technological modernization of university management through the development of IT solutions aimed at automating the administrative processes and, as a result, guaranteeing their effectiveness.

SIGMA focuses the development and support of two main suites of best of breed solutions:

- **SIGMA SIS - Student Information System**

The European Higher Education Area (EHEA) was created to construct the Europe of Knowledge and place it at the international forefront, in order to benefit mobility and employment opportunities, and also to unify higher education studies in the EU. Since then, one of the main priorities of SIGMA has been the adaptation of its products and services to the requirements of the EHEA, thus assisting the universities in the group as they go through this important transformation process.

- **SIGMA CRIS - Research Information System**

The European Research Area (ERA) was created to facilitate the mobility of researchers, attract the best world researchers and coordinate the national and regional programs. Since then, SIGMA has incorporated in its products adaptations and new functionalities to support the scientific activity as well as its promotion, and has aligned its ARGOS Research Project with the ERA requirements.

SIGMA CRIS covers mainly the management and promotion of the institutions scientific production: Library or researcher data entry and validation, Import from main repositories, Research Activity Publication, Researcher Curriculum, Institution Annual Report, Knowledge Transfer, Grants and project management.

Moreover, it provides the CVN Normalized Curriculum Vitae for integration and exchange of researcher's curriculum information in Spain, collaborating with the *FECYT Spanish Foundation for Science and Technology* which is in charge of communicating and promoting scientific and technological advancements, transferring knowledge to business enterprises and society and defining and integrating R+D+I metrics.

Technology and Innovation are the backbone of the services and solutions provided, based on a highly open source development and deployment platform for J2EE5 certified application servers compliant on a multi-tier and high performance proven open architecture.

Lately SIGMA has open new strategic areas of interest such as **S**ocial and **M**obile solutions, **A**nalytics (BI & Data Quality) and **C**loud (SaaS). Therefore, the complete portfolio of SIGMA is now provided in a full SaaS model, becoming leaders in Spain offering HE solutions in the cloud.

2. Scientific Outputs: Integration and Unification of Catalan CRIS Information System

Promotion and dissemination among research community and society are as important as research. Any researcher wants their work to be recognized and make it known, so publication of a scientific output increases the chances of being cited and thus its impact.

The universities have made great efforts to promote competitiveness, mobility, create synergies and improve the research quality in-house, regionally, nationally and internationally during the past few years. This has allowed great progress in all areas, researcher's mobility, creating synergies with shared resource centers between different institutions and improving the research visibility generated, but there is still a long way to go.

How scientific outputs are promoted and disseminated?

- **Institutional Web Sites:** Universities and research centers have they own portals and CRIS systems. SIGMA provides CRIS to two Public Catalan Universities.

- **Research Results Transfer Offices (OTRI):** There is an OTRI in almost all the universities and national public research centres, as well as in the university-business foundations and in many technological centres. The OTRI has played a major role as part of the efforts made by the Spanish universities to bring their activities into line with society's needs.
- **Databases of indexed journals:** WoS, Scopus, Dialnet, PubMed are examples of database of indexed journals, where all contributions (articles, editorials, letters, reviews, discussions, etc...) that may publish on journals are collected. Those databases may be general in scope or cover a specific academic discipline and a significant number of them are still proprietary, available by licensing agreement from vendors.
- **Open Access Repositories:** the open access movement was formalized in the Budapest Declaration, in February 2002, which established that the results of scientific work should be free access, free of charge and without most copyright and licensing restrictions. Recolecta (www.recolecta.net), Recercat (www.recercat.cat), Raco (www.raco.cat) or TDR (www.tdx.cat) are examples of research open access repositories.

The main advantages for researchers and institutions for the promotion and dissemination of scientific outputs are:

- Acquire global visibility.
- Promotes the prestige of the authors and institutions.
- Encourages contact between researchers working on the same research scope from any part of the world.
- Facilitate the transference of these results to the companies.
- Promote the participation of the university community in R&D projects.

On this scenario where there is an emerging culture of cooperation between public science and technology and the productive and after over a decade of research policies characterized by a marked stability and increasing public funding, Catalonia faces the current crisis with the challenge to consolidate its model system of R&D. The Catalan map research institutions is composed of 12 public and private universities (36 university research institutes) and 47 research centers linked to the Generalitat of Catalonia. Accordingly, in May 2012, the Generalitat of Catalonia and public universities agreed to establish a new Consortium Services University of Catalonia, called CSUC, which has been constituted on 2014. (CSUC)² wants to help universities and research centers to share knowledge, experiences, services and supporting infrastructure through consorting or pooling goods and services. And on this way it will create a unique and common Research Portal of Catalonia (CSUC, 2011)³.

This Research Portal of Catalonia will bring together all the scientific outputs, information of researchers and general information of the organizations (University, departments, centers, units, groups) from Catalan CRIS, Digital Repositories and UNEIX. And it will be open to companies, funding organizations and to the world. To achieve this, there is a Work Commission with members of all the Public Catalan Universities and CSUC members to draft the elements and information that will be on each section of this new portal, define the protocols to capture information from Universities CRIS and Digital Repositories, determine how to unify data between IR and CRIS, encourage quality data entry from IR and CRIS and last but not least the construction of the Research Portal of Catalonia (Puig & Anglada, 2013)⁴.

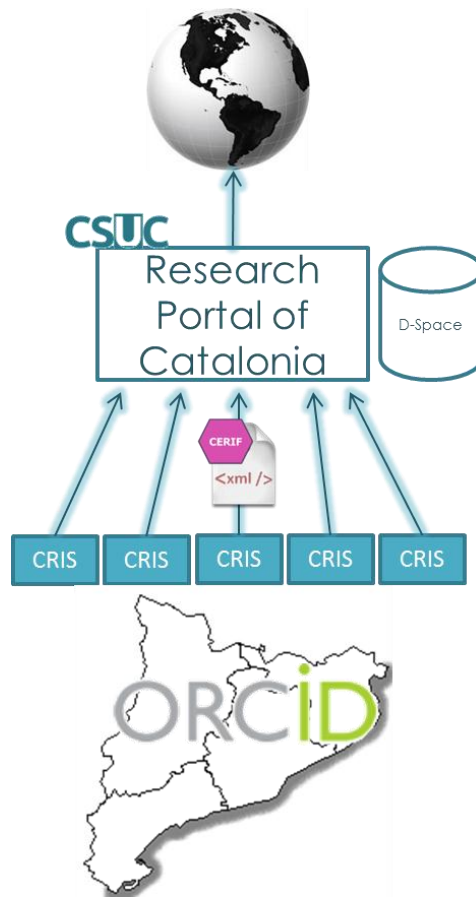


Fig. 2 Research Portal of Catalonia

One of the first steps to solve is the author name disambiguation. A right researcher identification is important in order to improve the scientific discovery processes, make the collaboration easier among the research community and guarantee a right interaction among the existing research information systems, such as bibliographic database, this is the challenge of ORCID.

SIGMA CRIS manage ORCID which links research activities of the same author indexed to different information systems, and this is adopted as standard researcher identifier among all universities of the consortium (Haak, 2013)⁵ which will allow the aggregate query to the research which is produced at these universities and recollected from different systems. Since the launch of ORCID a year ago, there was a very strong campaign to encourage the creation of this identifier, placing Spain within the top five countries in the ranking use.

In order to unify data from IR and CRIS, DOI (Digital Object Identifier) is the alternative to locate and identifier scientific outputs (articles, chapters, etc...) as ORCID identifier is for researchers. Both identifiers are managed on SIGMA CRIS.

Having analyzed several alternatives for standard exchanging data from CRIS Universities to the central repository, XML-CERIF is the alternative adopted by the consortium. This interoperability will be reach by calling Web Services using OAI-PMH protocol.

And finally, on this 2014 the first prototype of the Research Portal of Catalonia will be presented on April-May.

SIGMA, which provides research solution for two out of seven public universities from the consortium is working on the interoperability of the research outputs information.

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