



CRIS design & implementation: best practice in an academic use case

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Scancarello, Immacolata; Bollini, Andrea; Buso, Irene; Fazio, Riccardo; Mornati, Susanna.

4Science s.r.l.

Overview

The implementation of a Research Information Management System (aka CRIS/RIMS) at any University is challenging from the administrative, organisational, technical points of view, not to mention the economics. There are several solutions on the market that claim to address all the University needs with different points of strength and weakness that are hard to understand without a deep dive into the solution. Costs of some of these solutions can be hidden and unfortunately commercial strategies can be used to lock the adopting university in a path that only at its end will show the real costs.

After years and hundreds successful projects at different scales conducted by the staff in 4Science, we elaborated a method that allows conscientious institutions to make a solid comparison of the different solutions and run a cost-predictive successful project.

The methodology follows three steps, which will be illustrated in detail by the paper, along with the conclusions and learnt lessons, as a useful use case for other institutions.

The use case

Between the end of 2021 and the beginning of 2022, the described methodology was rigorously applied from 4Science to a project with an important European university over the course of 6 months and involved three distinct phases, each of which took approximately two months.

- Phase 1: Proof of Concept (POC)

After a 2-month pilot project exploring the potential of various CRIS solutions, the university can decide which tool to adopt for managing research information and data. In our use-case, after a pilot with DSpace-CRIS and another popular commercial solution, DSpace-CRIS was chosen.

During the Proof of Concept (POC), in order to enrich the DSpace-CRIS pilot with the contents of the University, a scraping of the public data available on the web was carried out to show the potential offered by the application. Even without a specific analysis on the requirements necessary for an exhaustive and correct presentation of the retrieved data, 4Science managed to expose consistent indications on the university research lines and departments, including research outputs and projects related to each researcher. The potential of the native integration of DSpace-CRIS with ORCID was also highlighted. The commercial competitor did not show any of the university data but only sample fake data.

- Phase 2: Gap Analysis

Since the institution, after the pilot, expressed the intent to deeply analyse the needs of internal stakeholders and prioritise them, the second objective of the project was to initiate a gap analysis between DSpace-CRIS and current practices and legacy systems.

A preliminary feasibility study organised in several thematic workshops was then carried out to produce structured requirements that made it possible to customise DSpace-CRIS to the University's specific needs. These thematic workshops were targeted at several university components: faculties, research officers, librarians, IT staff. Information and data collection was thoroughly investigated, collection and validation workflows analysed, dissemination, preservation and reporting needs were brought out.



Each workshop was characterised by a preparation phase by the product analysts, a requirements gathering phase, discussion and modelling of possible configurations, and a consolidation phase for the expected solution.

Following the results of this gap analysis, the CRIS can be implemented according to the precise needs expressed by the university stakeholders in a traceable, orderly and interactive manner.

- Phase 3: Solution Design

The gap analysis phase revealed some criticalities in the collection and availability of research information at the university level, which reinforced the idea of the need to structure this information in a CRIS.

The first aim was to systematise the collection, starting with the design of a data model, adhering to the CERIF standard, able to represent all the entities of the research domain within the university, their attributes and their relationships. The design of the data model is a crucial activity, because the effectiveness and efficiency of the whole system depends on it.

The design of the data model led the university to rethink the collection phase by identifying those responsible for the various processes, from the initial collection of information, entrusted mainly to the active components of research, namely the researchers, to identifying the services that support and validate the data, from the research offices to the library, up to the directors of the various organisational units (institutes and departments).

The design went as far as defining the methods of information and data storage, the opportunities for dissemination, which -thanks to the adoption of DSpace-CRIS - can be defined in a granular fashion with visibility rules at the level of the individual metadata value, and finally the reports necessary for the university to measure performance, allocate resources and report to higher entities, such as the Ministry of Research and University.

Conclusions

The path followed by the University with 4Science demonstrates how productive a holistic approach to gathering requirements can be, where it is advisable to seek input from all stakeholders from the outset before implementing a CRIS, so that a clear picture can be obtained of the activities and configurations that are truly optimal and appropriate to the size and organisation of the institution. In addition, thanks to the numerous workshops



held, the awareness of the whole organisation is maximised and the material and concepts of the subsequent training are already explored and known within the university, thus enabling a widespread, fast, efficient and effective implementation.

The practice of reserving an adequate effort for the collection and processing of requirements also leads to a proper predictability of the economic effort, because the implementation will not have any surprises in unexplored areas.