

4SCIENCE

Share your knowledge

CRIS design and implementation

Best practice in an academic use case

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LINKING RESEARCH INFORMATION ACROSS DATA SPACES

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Who we are

4Science, an Itway Cybersecurity Group organisation, provides solutions for **research information & data management and for cultural heritage**.

Certified Partner of DSpace and a major contributor to DSpace, co-leading DSpace 7 development, our solutions include DSpace-CRIS, DSpace-GLAM, OJS and Dataverse, our services range from installation and configuration to hosting and maintenance, from system integration to customisation and consultancy. Our solutions support compliance with key international standards, from OpenAIRE to ORCID, from CERIF to IIF, and enable implementation of the transnationally important policies of Open Research, Research Impact and Digital Preservation.



What is it that makes a practice...*best*?

You probably know that a best
practice is identified as the most
effective and efficient process
to achieve
a certain result.





Overview

A challenge

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.

But what is the desired result in implementing a CRIS?

Our output was determined and can only be seen by some **main points of attention**;

- providing the university with a tool that would allow it to have a **single platform encompassing research activities and information (all research outputs) in a single ecosystem** (*all-inclusiveness*)
- be **integrated and cross-fed by existing systems** (*integrability*)
- rapidly deployable (*rapidity*)
- that would **satisfy the many requirements and needs of different stakeholders** (*completeness*)

The ECI approach

Summarizing our recommendations, we designed the ECI process, that mainly articulates as follows:

- Experience - several
- Collect - all
- Implement - one

The context

Map of the problematic



Several solutions on the market 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.

Assumptions and methodology



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 this presentation, along with the conclusions and learned lessons, as a useful use case for other institutions.



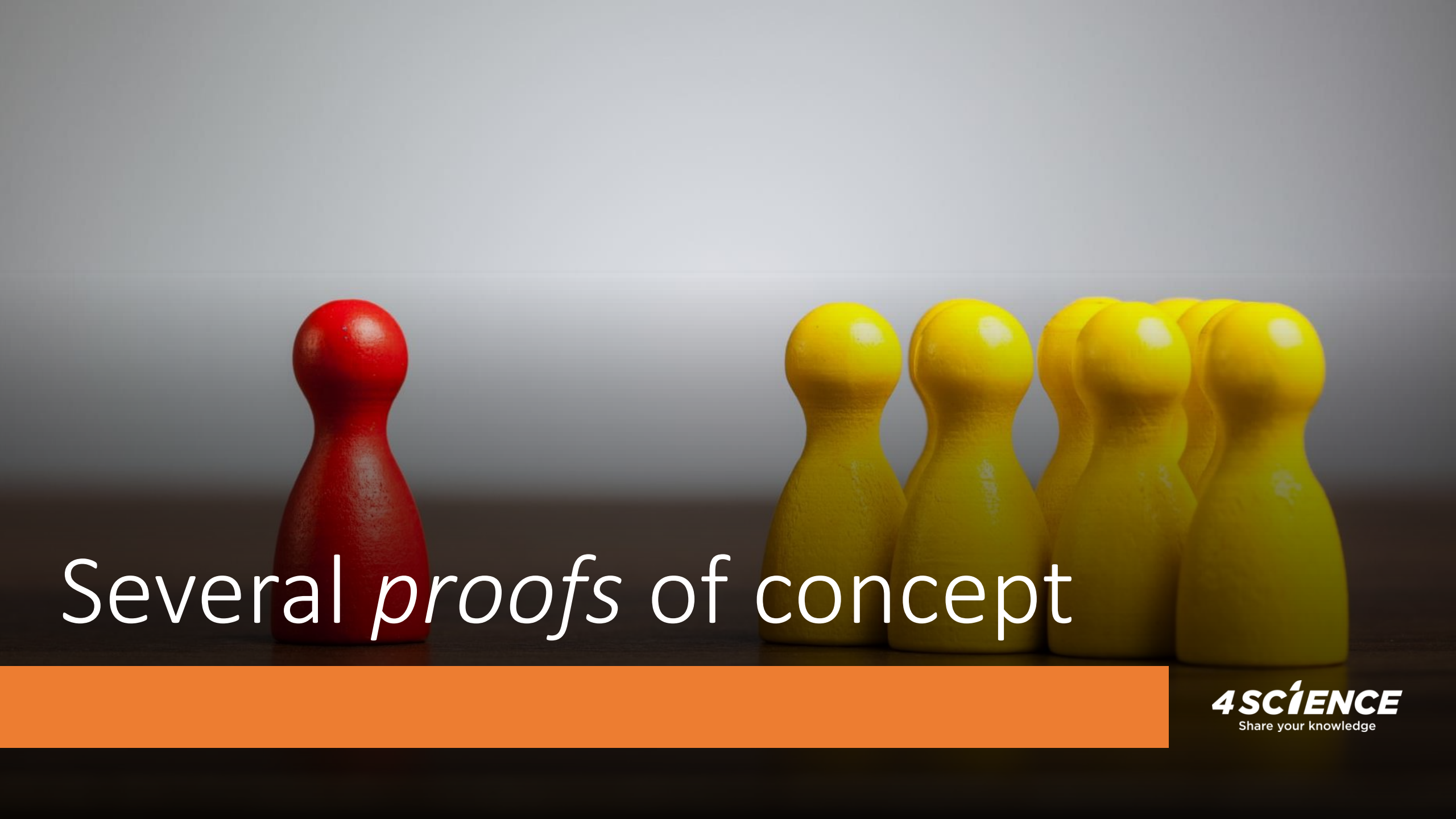
A holistic approach

The use case

Between the end of 2021 and the beginning of 2022, we suggested and depicted a method that was rigorously applied from the University to their important project over the course of 6 months and involved three distinct phases.

Phase 1 and 2 each took approximately two/three months.

- Phase 1: Proof of concept
- Phase 2: Gap Analysis
- Phase 3: Solution design

A single red pawn stands on the left, while a group of five yellow pawns stands on the right. They are on a dark surface against a light background. The text "Several *proofs* of concept" is overlaid on the image.

Several *proofs* of concept

Phase 1

The university asked to see several CRIS systems in action and to test them, together with an operational committee of internal stakeholders and a representative sample of users.

This phase was carried out in parallel with other solutions also under evaluation by the University.

- It is well established that an evaluation made on a raw or artfully constructed (not real) database would not allow to understand and evaluate the flexibility and true cost of implementing the solution.
- Even without a specific analysis on the requirements necessary for an exhaustive and correct presentation of the retrieved (publicly available) 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.

Right after Phase 1

After the Proof of Concept

Carefully evaluating the results of the respective POCs, the institution chose to implement the DSpace-CRIS solution, mainly because of its incredible flexibility and versatility in adapting to the needs expressed (customisation and personalisation of the software).



Phase 2: the gap analysis

Phase 2: Gap Analysis

After the POC, the Client expressed the intent to **deeply analyse the needs of its internal stakeholders and prioritise them**: the second objective of the project though was to initiate a **gap analysis between DSpace-CRIS solution presented out of the box and university's 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.



Right after Phase 2

The output of Phase 2: budget and time saving

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.



Lesson learned



Identify a sole project manager leading the final pre-requisites: not only their design, but also their implementation bullet points as agreed between the internal stakeholders.



Leave space for an AGILE methodology: this three-phases project doesn't mean withdraw from flexibility, because requisites can change or be detailed also after the 1° phase!



Phase 3: getting started

Phase 3: solution design

- The first aim was to **systematise the collection of information and data**, 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 offices 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 way 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

Together

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.



And an effective achievement

...thanks to the numerous workshops held, the **awareness of the whole organisation is maximised** and the **materials 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.

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