

## **CRIS2018 Paper Submission**

**“Fairness of research information”–14th International Conference on Current Research Information Systems, Umeå, Sweden - June 13 – 16, 2018**

### **Title**

How to make research information FAIR: DSpace-CRIS and best practices in open research information

### **Submission Type**

Business/technical submission – full paper

### **Keywords**

CRIS, RIMS, DSpace-CRIS, FAIR, research information management

### **Extended abstract**

In 2014, a group of scientists and stakeholder in the Data Science community created the FAIR Data Publishing Group<sup>1</sup> in the context of Force11 (a community of scholars, librarians, archivists, publishers and research funders that facilitates the change toward improved knowledge creation and sharing), to debate about how to enhance the ecosystem of research data. The output was a set of guiding principles and practices to make users able to more easily discover, access, interoperate, and reuse, the vast amount of data generated by research. These principles should enable implementation of compliant tools that support FAIRness of data management.

Since the publication of these principles in 2016<sup>2</sup>, initiatives have multiplied to define what FAIR (Findable, Accessible, Interoperable, Reusable) means in a variety of contexts<sup>3</sup>, for human interpretation and machine-to-machine action, particularly in the repositories ecosystem, representing the place where research data should be deposited, indexed, preserved and made available to the scholarly community.

Research information is an extended concept, including information related to research stakeholders such as researchers, organizations, funders, to activities such as projects, collaborations, contracts, awards, to outputs such as publications, patents, datasets.

Systems like CRIS (Current Research Information Systems) aka RIMS (Research Information Management Systems) collect research information for evaluation, resource allocation, governance and strategic decision making at large. This information is often scattered through different legacy systems at each institution, ranging from the HR careers management system where researchers and

---

<sup>1</sup> FAIR Data Publishing group, <https://www.force11.org/group/fairgroup>

<sup>2</sup> Wilkinson, M. D., et al. (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data*, 3, 160018. doi:10.1038/sdata.2016.18.

<sup>3</sup> The FAIR facets are detailed here: <https://www.force11.org/fairprinciples>.

organizational units are managed, to the institutional repository where publications are collected. Some information is not collected until a CRIS is implemented.

Research information is modelled by CERIF<sup>4</sup>, (the Common European Research Information Format), which provides a concept, a description, and a formalization of research entities and their relationships. CERIF was created with the purpose to make research information interoperable among systems, as *“there is a need to share research information across countries, or even between different funding agencies in the same country. The information is used by researchers (to find partners, to track competitors, to form collaborations); research managers (to assess performance and research outputs and to find reviewers for research proposals); research strategists (to decide on priorities and resourcing compared with other countries); publication editors (to find reviewers and potential authors); intermediaries/brokers (to find research products and ideas that can - with knowledge transfer - be transformed to wealth-creation); the media (to communicate the results of R&D in a socio-economic context) and the general public (for interest).”*<sup>5</sup>

Notwithstanding the increasing availability of application platforms for research information management, CERIF is still underexploited and research information largely unavailable, hidden behind closed databases and proprietary applications. A significant amount of information is being collected that is not shared outside the institution, thus not contributing to visibility, impact and reuse.

*“Open Science represents a new approach to the scientific process based on cooperative work and new ways of diffusing knowledge by using digital technologies and new collaborative tools (European Commission, 2016b:33). [...] Open Science is about extending the principles of openness to the whole research cycle (see figure 1), fostering sharing and collaboration as early as possible thus entailing a systemic change to the way science and research is done.”*<sup>6</sup> Open Science obviously involves making knowledge available, mainly regarding research output, namely datasets and publication of results. Nonetheless, the benefits of making research information FAIR are undoubted: exposing information about researchers’ expertise, project details, research topics, and the like, increases collaboration opportunities, interdisciplinary conversation, funders awareness, public engagement.

In 2009, the Hong Kong University decided to design an open CRIS, that would have the features of a CRIS but at the same time be able to expose, disseminate and enhance the visibility of research information at the institution and on the web. Together with the team now at 4Science, a new CRIS was developed starting from DSpace, and was called DSpace-CRIS<sup>7</sup>.

This paper will show how DSpace-CRIS is the only free open-source CRIS platform that makes research information FAIR, fulfilling all requirements of Findability, Accessibility, Interoperability

---

<sup>4</sup> <https://www.eurocris.org/cerif/main-features-cerif>. CERIF is a recommendation developed with the support of the European Commission (EC) in 1987-1999. Since 2002, it is maintained by euroCRIS, a not-for-profit organization dedicated to the promotion of CRIS.

<sup>5</sup> Keith Jeffery on <https://ercim-news.ercim.eu/en68/european-scene-qsupport-of-the-research-processq/cerif-the-common-european-research-information-format>.

<sup>6</sup> Definition of the FOSTER project: <https://www.fosteropenscience.eu/content/what-open-science-introduction>.

<sup>7</sup> Palmer, D.T., et al. (2014). DSpace-CRIS@HKU: Achieving visibility with a CERIF compliant open source system. The 12th International Conference on Current Research Information Systems (CRIS 2014), Rome, Italy, 13-15 May 2014. In *Procedia Computer Science*, 2014, v. 33 p. 118-123. doi: 10.1016/j.procs.2014.06.019. Palmer, D.T., et al. (2015). The once & future repository, HKU's Scholars Hub. Open Repositories 2015, 10th International Conference on Open Repositories, Indianapolis, Indiana, 8-11 June 2015. <http://hdl.handle.net/10722/210397>.

and Reusability. DSpace-CRIS is compliant with CERIF and is able to collect, preserve, and disseminate publications and datasets, implementing Open Access and Open Data. Besides a description of how DSpace-CRIS achieves these results, the paper will present some significant showcases of CRIS implemented in a variety of HE and research institutions in different countries.