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1) **"The Barcelona Declaration at the University of Milan: how to enable Open Research Information with free open tools such as DSpace-CRIS"**

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Abstract:

With the release of the **Barcelona Declaration on Open Science**, the **euroCRIS** community has a leading role in promoting **open research information** worldwide. This is realized through the support to the Declaration and its implementation, the adoption of **open policies**—such as those implemented by the University of Milan—and the use **open platforms**, like **AIR@UNIMI** https://air.unimi.it/ , powered by **IRIS** and built on **DSpace-CRIS**. For nearly two decades, **the University of Milan** has adhered to these principles, positioning itself as a leader in advancing open research information in parallel to **open access** to scholarly outputs, while the global community continues to work toward similar goals.

The University of Milan's commitment:

In the first part, this presentation will explore the University of Milan's role as one of the early signatories of the **Barcelona Declaration** and the core principles that guided their commitment to open science. It will also outline their alignment with **COARA** (Coalition for Advancing Research Assessment), whose key principle is the use of **non-proprietary tools** for research evaluation and monitoring. This approach ensures that research information remains openly accessible and under institutional control, avoiding dependence on proprietary solutions.

The University's **IRIS system**, built on **DSpace-CRIS** https://wiki.lyrasis.org/display/DSPACECRIS/DSpace-CRIS+Home , serves as a cornerstone in managing the institution's research information. With a wealth of structured data on research outputs, the University not only manages this data internally but also publishes it as **open data** on the **Regione Lombardia's portal**, demonstrating a strong commitment to transparency. These open research information systems enable institutions to develop **verifiable indicators**—for example, tracking the proportion of open access publications—which contribute to a **transparent and accountable research environment**.

The **Barcelona Declaration** advocates for openness, transparency, and the democratization of research information, enabling science policy decisions based on **open and inclusive data**. The University of Milan's commitment to these values, supported by their use of **non-proprietary tools**, ensures that their processes for

research evaluation are aligned with the most progressive and **open science** standards available today. This enables the institution to remain at the forefront of the **open science** movement, with **DSpace-CRIS** and **IRIS** playing a vital role.

4Science's Contributions and Future Integration Plans:

As a dedicated supporter of the **Barcelona Declaration**, **4Science** has been at the forefront of continuously developing and enhancing **DSpace-CRIS**, the only **free and open-source platform** fully aligned with the Declaration's principles. DSpace-CRIS equips institutions like the University of Milan with the tools needed to ensure **compliance** with the Declaration by enabling the publication of **open** and **FAIR** research information, thereby advancing both transparency and accessibility. 4Science has already given the compliance with CERIF and the integration with the OpenAIRE graph to the DSpace community, enhancing the availability of rich research information worldwide.

Looking forward, 4Science is actively working on future integrations of **OpenAlex**, an open and comprehensive catalogue of scholarly research, with **DSpace(-CRIS)**. This forthcoming integration will allow institutions to import and connect relevant metadata from **OpenAlex's open API**, enhancing the **accuracy and completeness** of their research records and integrating bibliometric information. By automating this process, the integration will streamline workflows for research output management and reporting, ensuring that institutions can operate more efficiently and focus on the quality of their research. The integration will also leverage the **CERIF-compliant** metadata structures, enabling **interoperability** and alignment with international standards promoted by **euroCRIS**.

In addition to **OpenAlex**, 4Science's roadmap includes integrations with **OpenCitations** and **Open Peer Review**. These services will allow institutions to benefit from **transparent citation data** and **open peer review** systems, providing deeper insight into the relationships between research outputs, citations, and peer evaluations. By supporting the **CERIF model**, these integrations will enhance the capabilities of institutional repositories, making them key tools for fostering an **open and accountable research ecosystem** that meets the highest global standards.

Technical Roadmap and Challenges:

This presentation, moreover, will provide a comprehensive **technical roadmap** for these future developments, including the integration of **OpenAlex**, **OpenCitations**, and **Open Peer Review**. It will address the following key areas:

- Developing **robust APIs** for seamless real-time communication and metadata exchange between **DSpace-CRIS** and open services.
- Ensuring **full compliance** with the **CERIF data model**, which provides the necessary structured metadata for the accurate and interoperable representation of research outputs.
- Automating workflows for **metadata ingestion**, reducing the administrative burden on institutions while ensuring the **quality and consistency** of data.
- Overcoming challenges related to **metadata alignment** between different standards, ensuring that institutional research outputs are accurately represented and **searchable** across various open platforms.

- Testing for **interoperability** with national and international research infrastructures to ensure that **DSpace-CRIS** can function as a key component of the global **open science ecosystem**.

By embracing these technical developments, 4Science continues to make **DSpace-CRIS** a leader in **open-source platforms** for research management, already adopted by hundreds of institutions. These future integrations will enhance the functionality of **institutional repositories**, positioning them as vital tools for advancing **open research practices and making them a unified tool with the public CRIS**.

Conclusions:

Along with the **University of Milan**, with whom it also implemented Dataverse for open research data **https://dataverse.unimi.it/** , 4Science remains committed to building a **sustainable, transparent**, and globally recognized infrastructure for **open research**. By aligning **DSpace-CRIS** with **open services** and ensuring compliance with the **CERIF data model**, we are fostering an ecosystem where institutions can manage, share, and disseminate research outputs effectively. This will enable a **truly open research environment** that is both FAIR and interoperable, in full support of the principles laid out by the **Barcelona Declaration** and **euroCRIS**.