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

Susanna Mornati, Andrea Bollini  www.4science.it
At 4Science, in DSpace and OJS since 2003, in euroCRIS since 2010, we contribute to open source projects and participate in international communities, developing and promoting open standards that enable interoperability to make Open Science possible.
Open Access to scholarly literature is a concept that changed the paradigm of scholarly communication.
Open Archives Initiative

Open Archives Initiative -> Home

Standards for Web Content Interoperability

The Open Archives Initiative develops and promotes interoperability standards that aim to facilitate the efficient dissemination of content. OAI has its roots in the open access and institutional repository movements. Continued support of this work remains a cornerstone of the Open Archives program. Over time, however, the work of OAI has expanded to promote broad access to digital resources for eScholarship, eLearning, and eScience.

News from the OAI Community

  The ResourceSync Framework Specification v1.1 was approved as ANSI/NISO Z39.99-2017 on February 2, 2017. Approved by the American National Standards Institute (ANSI), this 1.1 revision improves a web standard that details various capabilities that a server can implement to allow third-party systems to remain synchronized with
More recently, a broader ideal of Open Science is being affirmed, applied to datasets and other resources besides publications.
The evolution and larger availability of infrastructures such as broadband, computer processing power, storage, is making Open Science possible.
Beyond the OAI-PMH and metadata: ResourceSync enables interoperability at resource level
“There is a need to share research information across countries[...] 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)” (*)

So far, research information is still mainly stored in systems that tend to be stand-alone, heterogeneous, incompatible with each other and of varying stages of maturity.
It is time to ask ourselves

**WHY**

RESEARCH INFORMATION is hidden behind the barriers of proprietary CRIS/RIMS and restrictive policies at (public) institutions
The answer is: for purely commercial reasons!

The research and academic institutions are progressively giving away the precious treasure of research outputs, results, data, information, knowledge, evaluation, strategy.
This is a message to public research and higher education institutions:

Take your power back!
Adopt open standards and open technologies to make your research FAIR

Findable  Accessible  Interoperable  Reusable
Why DSpace-CRIS?
DSpace-CRIS (the free open-source CRIS solution) provides a persistent identifier of the digital objects (handle/DOI) (F) and supports other PIDs, such as ORCID (I). A machine-readable (Signposting) landing page provides access to indexed and searchable (Solr, SEO, Microformat, Google Scholar metatags) metadata, data files, licenses, and version information (F, A, R).
DSpace-CRIS is integrated with CKAN: deposits can include metadata, data files, and any complementary files (such as documentation or code) needed to understand the data. Tabular data are exposed as open data for M2M interaction (R). Metadata can be public, even if the data are restricted (F, A).
Metadata are available at the resource and file levels, and domain-specific schemas and vocabularies can be adopted.

Metadata can be exposed through a variety of methods (OAI-PMH, ResourceSync) and formats (including CERIF).

(I, R)
DSpace-CRIS is integrated with CKAN for research data management, visualization and exploration.

DSpace-CRIS implements the guidelines of OpenAIRE and the recommendations of the Next Generation Repositories WG of COAR.
United Universities of Friuli Venezia Giulia

Il portale della ricerca della regione Friuli-Venezia Giulia è lo strumento per la conoscenza e la diffusione della ricerca fatta dalla SISSA, dall'Università di Trieste e dall'Università di Udine. Il portale include la produzione scientifica ad accesso aperto che consente accesso libero e senza restrizioni agli esiti delle attività finanziate con fondi pubblici.

The web portal of the research of the Friuli-Venezia Giulia region is a web gateway for searching and spreading the research data created by the SISSA, University of Trieste and University of Udine. The portal is also an open access repository that allows access without restrictions to the results of the activities financed by public funds.
### The HKU Scholars Hub 香港大學學術庫

#### Keyword
- 55 microtypes (1)
- abrupt climate change (1)
- acbp 3 (1)
- acid methyl ester (1)
- activation (1)
- acyltransferase (1)
- address paleontology (1)
- agent (1)
- allelic binding (1)
- animal cry (1)
- animal cries (1)

#### Subject
- 030459 (5)
- 040308 - palaeontology (incl) (1)
- pal...
- 080101 - analytical biochemistry ... (2)
- 080104 (50)
- 080106 (1)
- 080159 (2)
- 080206 - freshwater ecology (1)

#### Datasets

**Data from: Comparative Genomic Analysis Shows That Avian Pathogenic Escherichia coli Isolate IMT5155 (O2,K1:H5, ST Complex 95, ST140) Shares Close Relationship with ST95 APEC O1.K1 and Human ExPEC O18:K1 Strains**
- Ge, Xiangkai Zhu
- Jiang, Jingwei
- Pan, Zhaoh
- Hu, Lin
- Wang, Shaohui
- Wang, Haojun
- Leung, Frederick C.
- Dai, Jianjun
- Fan, Hongjie

**Data from: Differential Expression Profile of Chicken Embryo Fibroblast DF-1 Cells Infected with Cell-Adapted Infectious Bursal Disease Virus**
- Hui, Raymond K.
- Loang, Frederick C.

**Data from: Developing a Molecular Roadmap of Drug-Food Interactions**
- Jensen, Kasper
- Ni, Yueqiong
- Panaigotou, Glanni
- Kouskoumvekaki, Irene

**Data from: Laser-Stimulated Fluorescence in Paleontology**
- Kaye, Thomas G.
- Folk, Amanda R.
- Pittman, Michael
- Sereno, Paul C.
- Martin, Larry D.
- Burnham, David A.
- Gong, Enpu
- Xu, Xing
- Wang, Yinan
http://ktisis.cut.ac.cy/ (researcher profile)
Il primo Salone Europeo dell’Innovazione e della Ricerca Scientifica a Trieste, città che vuole guardare alle sue realtà scientifiche per diventare un polo atrattivo di eccellenza globale per il mondo della ricerca e dell’impresa. Una vetrina nazionale ed europea per far conoscere il “sistema Trieste”: un luogo dove sono nati e lavorano una ventina tra enti di ricerca, università e centri di alta formazione che realizzano diversi elementi fondamentali di esperienza per la città. Il Nordost tutto il nostro Paolo.
Evaluation of the HP3 to HP4 Rural Development Pathway
Don’t wait!
Thanks for your attention!

Susanna Mornati
susanna.mornati@4science.it
skype: susanna.mornati
linkedin: susannamornati
orcid: 0000-0001-9931-3637

Andrea Bollini
andrea.bollini@4science.it
skype: a.bollini
linkedin: andreabollini
orcid: 0000-0002-9029-1854

www.4science.it