# Enhancing interoperability

## The Implementation of OpenAIRE guidelines and COAR NGR Recommendations in CRIS/RIMS

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**4SCIENCE**

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- OpenAIRE has been working for some years to produce guidelines on interoperability, which help repository managers expose publications, datasets and research information:

  https://guidelines.openaire.eu/

- The OpenAIRE Guidelines were established to support the Open Access strategy of the European Commission and to meet requirements of the OpenAIRE infrastructure.

The **OpenAIRE Guidelines for Literature Repository Managers 4.0** provide an overview of how to configure and use OAI-PMH for OpenAIRE metadata harvesting, and describe the metadata application profile.

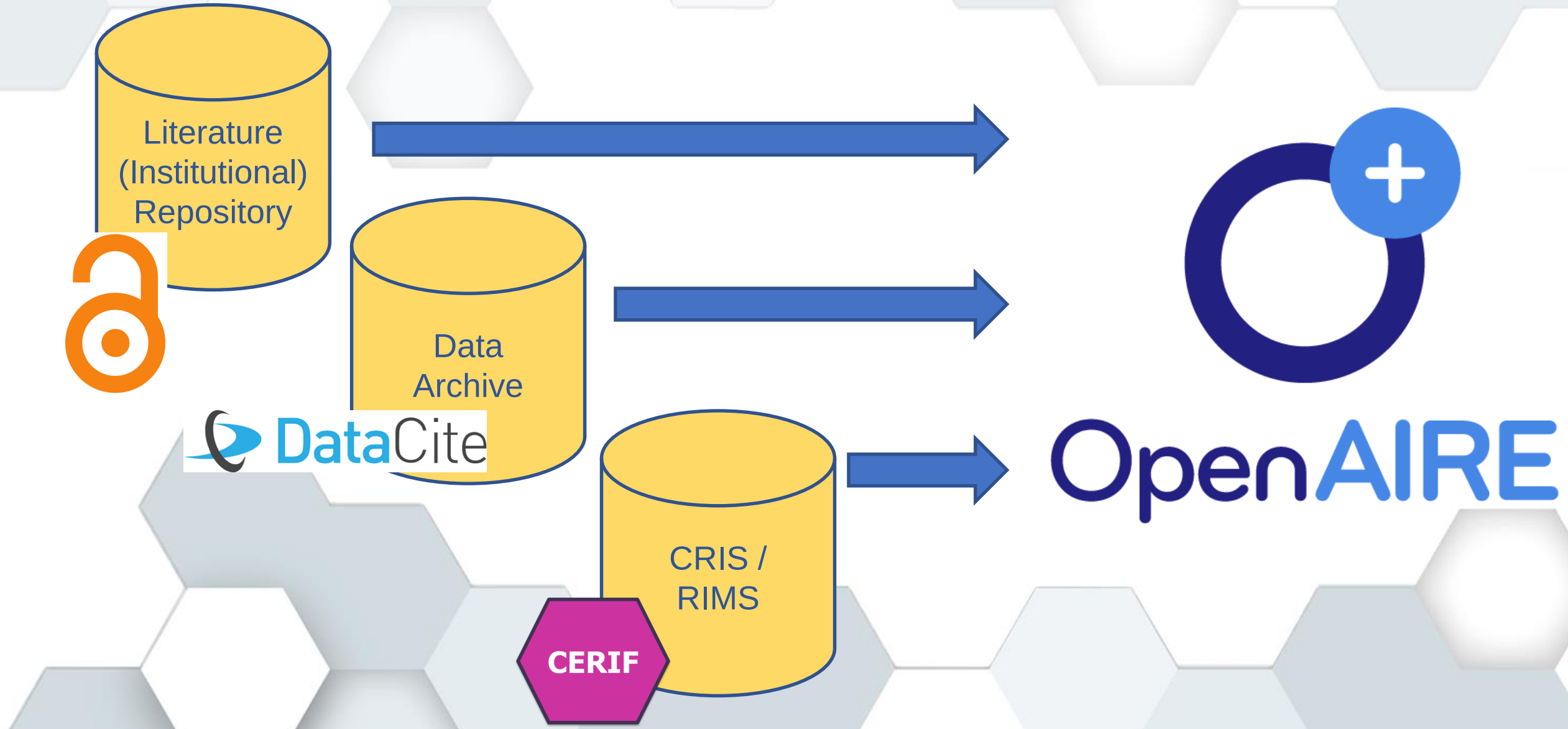
V. 4 introduces:

- an application profile and schema based on Dublin Core and DataCite including a new OAI-metadataPrefix
- support of identifier schemes for authors, organizations, funders, scholarly resources
- introduction of COAR Controlled Vocabularies
- compliance with the OpenAIRE Content Acquisition Policy


The **OpenAIRE Guidelines for Data Archive Managers 2.0** provide instruction for data archive managers to expose their metadata in a way that is compatible with the OpenAIRE infrastructure.

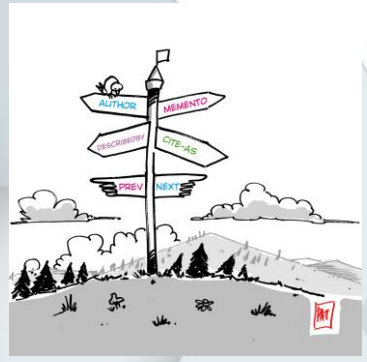
OpenAIRE expects metadata to be exposed via OAI-PMH and encoded in the DataCite metadata format.


The **OpenAIRE Guidelines for CRIS Managers** describe the CERIF-XML profile for CRIS managers to be compatible with OpenAIRE. Exchange of information between individual CRIS systems and the OpenAIRE infrastructure is an example of point-to-point data exchange between CRIS systems, since the OpenAIRE infrastructure is itself a CRIS system.

In November 2017, the **COAR Next Generation Repositories Working Group** published a report outlining new behaviours and technologies for repositories.
A web site was set up to describe the **11 behaviours** that were identified and link them to the related **technologies, protocols and standards** recommended for adoption to support each behaviour:
http://ngr.coar-repositories.org/behaviour/

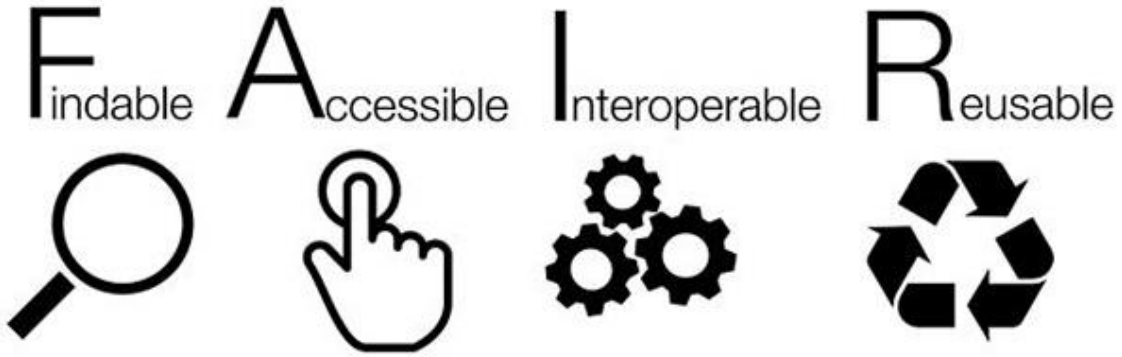


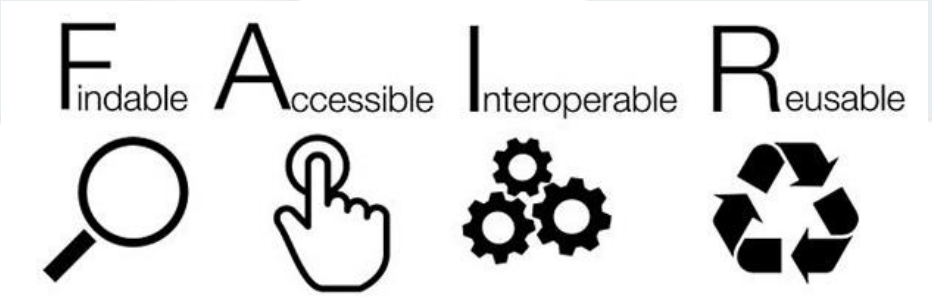




List of defined behaviours:

1. Exposing Identifiers
2. Declaring Licenses at the Resource Level
3. Discovery Through Navigation
4. Interacting with Resources (Annotation, Commentary, and Review)
5. Resource Transfer
6. Batch Discovery
7. Collecting and Exposing Activities
8. Identification of Users
9. Authentication of Users
10. Exposing Standardized Usage Metrics
11. Preserving Resources

In January 2019 the European Commission published a report:
"*Cost-benefit analysis for FAIR research data - Policy recommendations*":
https://ec.europa.eu/research/openscience/
It formulates 36 policy recommendations to make the model of FAIR data sustainable and to act for the practical implementation of FAIR principles






F1. (Meta)data are assigned a globally unique and persistent identifier
F2. Data are described with rich metadata (defined by R1 below)
F3. Metadata clearly and explicitly include the identifier of the data they describe
F4. (Meta)data are registered or indexed in a searchable resource
A1. (Meta)data are retrievable by their identifier using a standardised communications protocol
A1.1 The protocol is open, free, and universally implementable
A1.2 The protocol allows for an authentication and authorisation procedure, where necessary
A2. Metadata are accessible, even when the data are no longer available
I1. (Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
I2. (Meta)data use vocabularies that follow FAIR principles
I3. (Meta)data include qualified references to other (meta)data
R1. Meta(data) are richly described with a plurality of accurate and relevant attributes
R1.1. (Meta)data are released with a clear and accessible data usage license
R1.2. (Meta)data are associated with detailed provenance
R1.3. (Meta)data meet domain-relevant community standards

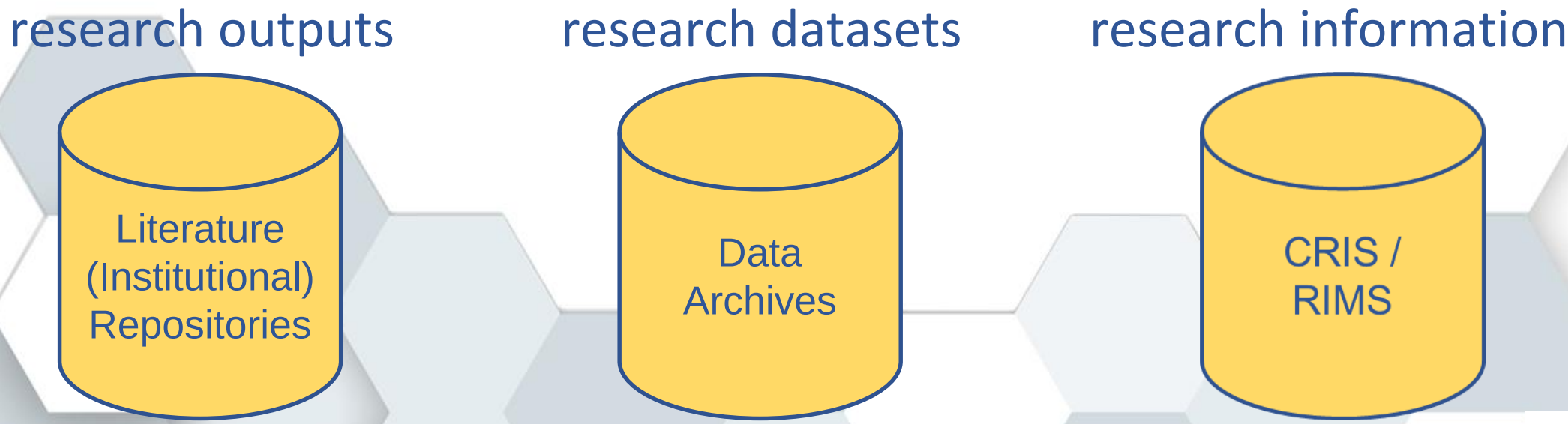
How are these concepts, recommendations, guidelines, and principles related to each other and to the CRIS/RIMS?

Last year, at the CRIS2018: 14th International Conference on Current Research Information Systems (Umeå, June 13-16, 2018), I introduced the concept that **RESEARCH INFORMATION** should be FAIR and how to do it:

“How to make research information FAIR”
https://dspacecris.eurocris.org/handle/11366/657

This year, I would also like to stress that **RESEARCH INFORMATION** can also be OpenAIRE-compliant and COAR-NGR-compliant.

Open protocols such as the OAI-PMH, open standards such as CERIF, persistent identifiers such as DOIs and ORCIDs, new technologies such as ResourceSync and Signposting, etc., challenge the platforms for:



# How to face these challenges?

Many of you already know that there a free open-source Research Information System, based on DSpace: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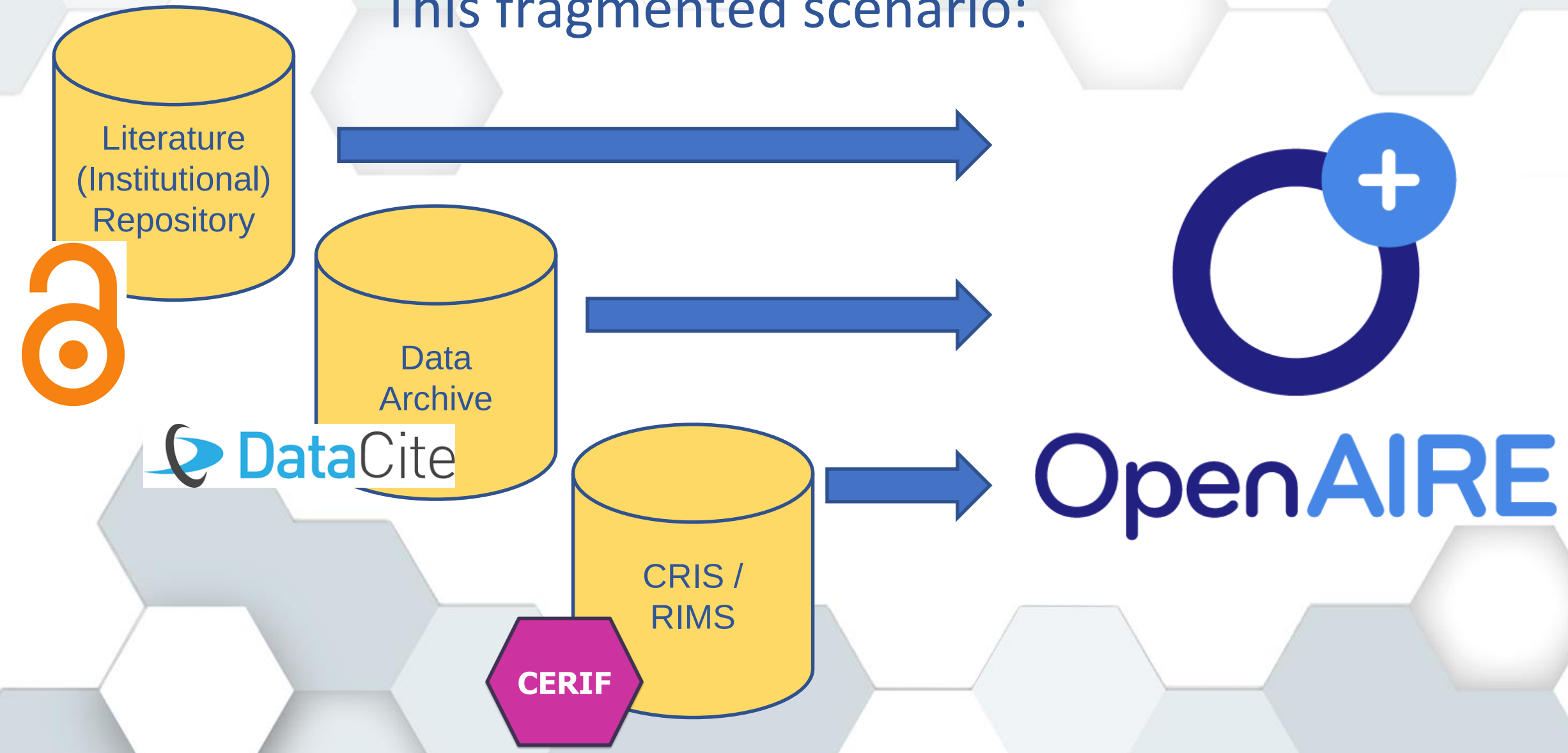
DSpace-CRIS implements OAI-PMH, persistent identifiers such as handles, DOIs, ORCIDs, new technologies such as ResourceSync and Signposting, RDM functionality, LTP functionality, and by November this year it will be compliant with the new OpenAIRE guidelines for CRIS managers thanks to dedicated funding:

https://www.openaire.eu/blogs/realizing-the-implementation-of-the-openaire-cris-cerif-guidelines-in-dspace-cris-1

# This fragmented scenario:



… can turn into a more consistent, sustainable, easier solution «to bring them all»

DSPACE CRIS

OpenAIRE

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https://wiki.duraspace.org/display/DSPACECRIS/DSpace-CRIS+Home

https://wiki.duraspace.org/display/DSPACECRIS/Product+Road Map

https://wiki.duraspace.org/display/DSPACECRIS/DSpace-CRIS+Users

Come to our presentation «Extending DSpace 7: DSpace-CRIS…» on Wed 9h-10h30 Track 5 (P3E) Lecture Hall M

# CRIS/RIMS are a chest of treasures

… to quote the words
of Ed Simons, President of
euroCRIS

Let’s make
research information
more relevant in the
research ecosystem

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Where to find us next:

- GARR 2019 Turin June 4-6 ✓
- Open Repositories 2019 Hamburg June 10-13 ✓
- COAR 2019 Lyon May 21-23 ✓
- OAI 11 2019 Geneva June 19-21
- Open Science Fair 2019 Porto September 16-18
- DSpace North American User Group 2019 Minneapolis Sept. 23-24
- Force 11 2019 Edinburgh October 16-17

# Thank you for your attention!

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