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Many networks, initiatives, and communities are investigating and addressing the key barriers to **Open Access to research data**. These organizations are typically heterogeneous and fragmented by discipline, location, sector (publishers, academics, data centers, etc.), as well as by other features. Besides, they often work in isolation, or with limited contacts with one another.

The **Policy RECommendations for Open Access to Research Data in Europe (RECODE)** project, which will conclude in May 2015, has scoped and addressed the challenges related to Open Access, dissemination and preservation of scientific data, leveraging the existing networks, initiatives, and communities. The overall objective of RECODE was to identify a series of targeted and over-arching policy recommendations for Open Access to European research data based on existing good practice.

RECODE has undertaken a review of the state of the art and examined **five case studies** in different scientific disciplines: **particle physics and astrophysics, clinical research, medicine and technical physiology** (bioengineering), **humanities** (archaeology), and **environmental sciences** (Earth Observation).

The **Global Earth Observation System of Systems (GEOSS)** has been an optimal test bed for investigating the importance of technical and multidisciplinary interoperability, and what the challenges are in sharing and providing Open Access to research data from a variety of sources, and in a variety of formats.

Policy RECommendations for Open Access to Research Data in Europe



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RECODE has identified five main technological and infrastructural challenges for four stakeholder categories. The resulting issues are interrelated and must be addressed holistically. At the same time, the specificities of the different disciplinary communities must be considered, including Public Sector Information stakeholders.

- **Heterogeneity** – relates to the variety of data at any level, e.g. format and encoding issues, but also high level issues;
- **Accessibility** – relates to the volume of data and to its impact on the infrastructure capabilities and architecture;
- **Sustainability** – relates to the long-term impact of maintaining and operating an open infrastructure for research data;
- **Quality** – relates to the technological support for the evaluation of data suitability and appropriateness;
- **Security** – relates to the restrictions on usage, access, and consultation of data and metadata and their technical enforcement.

	Creator	Disseminator / Curator	Funder	End user
Heterogeneity	standardization, encoding, semantics	interoperability, reuse, data cross-walk, internationalisation		standardization, encoding, semantics
Accessibility	bandwidth	standardization, storage, scalability, distribution		discoverability, storage, bandwidth
Sustainability	persistent identification	obsolescence, reuse, data migration, persistent identification	governance	obsolescence
Quality	provenance, training, fitness for use	provenance, training, completeness, peer review	certification	provenance, peer review, fitness for use
Security	authorization, attribution, licensing	authentication, authorization, accounting, privacy, obfuscation	licensing	authentication, privacy, trust

I&T recommendations

- **Promote a culture of standard**, both in education and research, reinforcing the importance of data and metadata standardisation;
- **Adopt System-of-Systems** approach;
- **Enforce persistent digital identifiers (PID)**, for both data and users, ensuring interoperability;
- **Promote culture of data management**, investigating new professional roles, especially in the Public Sector;
- **Resort to virtualization** technologies;
- **Enforce complete and accurate metadata**, in particular provenance ;
- **Promote the concept of fitness for use**, instead of inherent quality statements inherent, and integrate user feedback in the metadata;
- **Recognise different levels of Open Access**, with appropriate access control policies, automatically enforced.

 @RECODE_Project

<http://recodeproject.eu/>



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Abstr. no. EGU2015-12634 (R302)

European Geosciences Union
General Assembly 2015
Vienna, Austria, 12-17 April 2015



© 2015 RECODE Project

Funded by the European Union under the 7th Framework Programme

Project officer: Daniel Spichtinger

Grant agreement no: 321463

