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Research Lifecycle Management technologies for Earth Science Communities and Copernicus users in EOSC

Research enabling services for EOSC in support of Open Science

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Reliance overview

• RELIANCE is contributing to the EOSC Exchange with a set of advanced research enabling services for:
  • the open, efficient, and cross-disciplinary management of the research lifecycle in support of FAIR and Open Science

• RELIANCE services aim to:
  • enhance the discovery of and access to research data, including large EO datasets (Copernicus)
  • extract relevant knowledge from scientific text
  • manage the research lifecycle as a first-class entity

• RELIANCE services are being demonstrated via multiple Earth Science communities
**Research Objects - overview**

**Goal**: Account, describe and share *everything* about your research, including how those things are related.

An integrated view over fragmented resources using PIDs and metadata.

The RO has its own metadata, can be managed and evolved in its own right, and it can be packaged, deposited, transferred, accessed, and reproduced if appropriate.

http://www.researchobject.org
**ROHub platform - overview**

- Holistic solution for RO management, enabling
  - storage, lifecycle mgmt. & preservation of scientific outcomes
  - share and makes these resources available to others
  - publish and release them through a DOI
  - discover and reuse pre-existing scientific knowledge.
- Features include:
  - Connect fragmented resources (physically or by reference); Track RO impact, assess RO quality and FAIRness; Collaboration and monitor RO activity; Generate and publish RO snapshots/archives; Reuse and Fork ROs; Enrich RO metadata; Execute/visualize notebooks and DCs in native apps

- Reference RO platform
  - implements natively the RO model and paradigm
  - support different stakeholders, with the primary focus on scientists, researchers, students and enthusiasts
  - provides the backbone to a wealth of RO-centric applications and interfaces across different scientific communities

[https://reliance.rohub.org/](https://reliance.rohub.org/)
ADAM Platform - overview

Infrastructure layer
Interoperability and federation between multiple centers

Data layer
Data remain at their own location (multiple data centers) with the original data format

Data(cube) layer
The deployment of DAS in front of each data source enables effective access services

Presentation layer
Standardised data access interfaces allow connecting a wide range of user interfaces

Web based GUI
(including third-party applications)

Jupyter Notebook

CLI / API / PLUGINS

Mission-specific data
Thematic data
Other geospatial data

https://reliance.adamplatform.eu/
Text mining services - overview

**Enrichment**
Extract semantic metadata from research object content

**Search**
Keyword and faceted search of research objects

**Recommendation**
Content-based research object recommendation

New experimental services

A huge amount of multibeam backscatter data has been acquired from the east to the west side of the southern Adriatic Sea in the last 15 years and covering by CNR ISMAR, from the continental shelf down to the basin floor, from the west to east side of the Adriatic Basin. These data have been used for geological, biological and habitat mapping purposes, but a single and consistent interpretation of all the acquired backscatter data has never been carried out. Here, we aimed at coherently interpreting the seafloor reflectivity datasets in order to produce a seabed and benthic habitat maps of the southern Adriatic Sea showing the spatial distribution of substrate and sediment type and grain size within the basin. The methodology here applied consists of a sem-
RELIANCE connections with EOSC Core and other Exchange services

- All RELIANCE services are onboarded in EOSC marketplace
- RELIANCE services integrates and rely on different EOSC core and other EOSC Exchange services
Use cases and early adopters materials

- Reference multidisciplinary use case
  - De-Impacts on Coastal Environments during the lockdown
- Vertical use cases
  - Sea pollution
  - Loss of Biodiversity and Sustainability
  - Extreme weather events and climate
  - Reducing the consequences of large volcanic eruptions
- EoI for DIH Business Pilots
  - 2 pilots (in 2nd) and 2 pilots (3rd)
- Open call
  - Three clusters in Earth Science
- Horizon project as a early adopters
- Early adopters materials: training videos, user manuals, tutorials

https://www.reliance-project.eu/adopters/
Thanks!

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