



reSEArch-EU



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101017454



reSEArch-EU

# Design of the Open Research Data System

Deliverable 5.3

(due to M36, Dec 2023)



reSEArch-EU



U3O  
Université de Bretagne Occidentale

CIAU  
Kiel University  
Christian-Albrechts-Universität zu Kiel



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101017454

# Contents

1. INTRODUCTION
2. DEVELOPMENT OF WORK
  - 2.1 Identification of repositories implemented by SEA-EU partner universities
  - 2.2 Chronology of activities
3. DETAILED DESCRIPTION OF RESULTS
  - 3.1 Version of the design
  - 3.2 Financial estimates
4. RECOMMENDATIONS AND FOLLOW-UP
  - 4.1 Identification of funding
  - 4.2 Implementation of design

# 1. Deliverable identification

Deliverable No. and Title	D5.3. Design of the Open Research Data System
Leader	Mr. Kevin J. Ellul
Related task(s)	Task 5.1 and 5.2
Authors	reSEArch-EU Open Research Data Officers
Dissemination level	Public
Due submission date	30/11/2023
Submission	15/11/2023
Project number	101017454
Start date of project	01/01/2021
Duration	36 months
<p>This task concerns the design of an Open Research Data System that proposes tangible organisational frameworks and common procedures and practices, to be agreed and implemented across the reSEArch-EU member universities, serving to build compatible and consolidated institutional platforms for the uploading of data sets. This provides a common base across the six universities for agreed homogeneity of data quality and standards, interoperable data formats, and common schemes for data management and metadata descriptions.</p>	

## 2. Versions and contributions history

1. Version	Date	Modified by	Reason
First draft of the deliverable report	19 <sup>th</sup> October 2023	Open Science Data Officers and Technical Managers	Review by individual partners
Second draft of the deliverable report	12 <sup>th</sup> November 2023	Godfrey Baldacchino	Internal review
Final draft	28 <sup>th</sup> October 2023	Prepared by Kevin Ellul and Josianne Vella	Final version
Final version	12 <sup>th</sup> November 2023	Godfrey Baldacchino	Internal review
Final version	17 <sup>th</sup> November 2023	Kevin Ellul, Josianne Vella, Godfrey Baldacchino and Aldo Drago	Completion and submission

### 1. INTRODUCTION

A design for an Open Research Data (ORD) System was prepared in order to enhance the visibility and consolidate research generated by SEA-EU partner universities engaged in reSEArch-EU. The intent of this design is to integrate the research repositories pertaining to research publications and research data, and provide one common interface for the SEA-EU institutions.

### 2. DEVELOPMENT OF THE WORK

#### 2.1 Identification of repositories implemented by SEA-EU partner universities

To facilitate interoperability of the SEA-EU repositories and create a common SEA-EU Open Research Data System, data was gathered to establish which platforms are currently being utilised by the SEA-EU Universities and whether the various SEA-EU repositories are OpenAIRE compliant.

To this effect, a questionnaire was disseminated amongst the six reSEArch-EU partners and specifications pertaining to the repositories being used and whether such repositories are OpenAire compliant were identified. It transpired that all six universities engaged in reSEArch-EU have designated repositories for research publications. Nevertheless, when it comes to data repositories, some institutions are: (1) in the process of implementing their repositories; (2) are

uploading their research data on the repository used for publications; or (3) are using national infrastructures.

It was determined that CAU, UM and UNIST are currently catering for the curation of research data by using open source platforms. CAU uses MyCoRe,, UM uses DSpace and Zenodo whereas UNIST uses Islandora 7. For CAU, MyCoRe was selected as a standards-compliant repository software funded by the German Research Foundation (DFG) with a strong regional user community. The software, which has been used as an institutional repository at CAU for some time, was adapted to the requirements of data publication. The repository has been set up especially for long-tail data, since in Germany good scientific practice is to publish in subject-specific repositories that will be cumulated in the National Research Data Infrastructure. For UM, the reasons behind the choice of software for data curation rely on the fact that DSpace was implemented in 2014 as an Institutional Repository for the uploading of UM's research publications. Over the years, and despite its limitations, its use was extended to support the uploading of basic datasets. Subsequently, the UM is currently in the process of implementing FigShare as a repository specifically for research data. For UNIST, Islandora 7 is part of the national infrastructure: management and storage of data during the research phase can be done through the Puh platform which is based on the open source software Nextcloud.

UBO, UCA and UG do not (yet) have an infrastructure that specifically caters for research data. UBO and UG recommend the use of free-of-charge external services. Zenodo, Repod and Bridge Data solutions were mentioned as free external services. However, all three Universities have indicated the use of subject-specific repositories, such as MX-RDR and PANGAEA.

CAU stated that, in Germany, a National Research Data Infrastructure is currently being implemented. This infrastructure will bring together existing services whilst filling subject-specific gaps.

UCA is not recommending a free-of-charge external service, but they are planning to implement their own infrastructure.

It was also concluded that all repositories in existence or being planned in the six founding SEA-EU partner universities are OpenAIRE compliant. This facilitates the integration of the various repositories via the OAI-PMH protocol.

## 2.2 Chronology of activities

UM was responsible for identifying a solution that integrates all the SEA-EU research publications and data repositories of the SEA-EU universities. To this effect, a literature review was conducted, and OpenAIRE-Connect was recommended as an ideal solution. OpenAIRE-Connect is a gateway that links a community's open research output via four collaborative phases:

- identification of needs
- development of a pilot project
- testing and validation
- launching of the community gateway

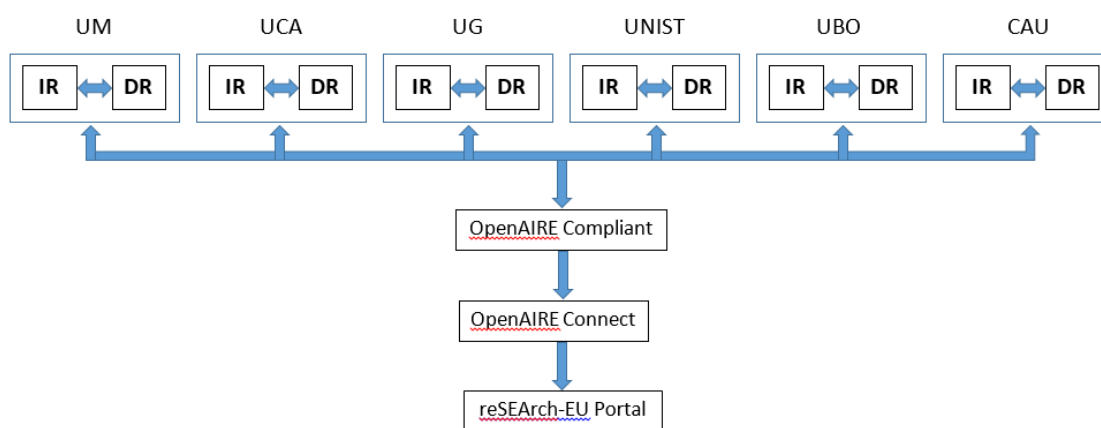
Subsequently, various meetings were held with OpenAIRE whereby the requirements needed by the SEA-EU universities to design a common portal were communicated: mainly, to facilitate interoperability and to achieve harmonisation of metadata. Moreover, an initial demonstration of the OpenAIRE-Connect portal was delivered. Additionally, an OpenAIRE-Connect representative was also invited (virtually) to the SEA-EU Open Research Data Staff Week organised in Cadiz in March 2023. A presentation entitled **Linking Open Research Data Infrastructures across the SEA-EU Alliance with OpenAIRE Connect** was delivered remotely.

### 3. DETAILED DESCRIPTION OF RESULTS

#### 3.1 Version of the design

Subsequent to communication with OpenAIRE, as well as after internal discussions with the SEA-EU Open Research Data Officers, the following design for an Open Research Data System for the SEA-EU Universities was proposed.

#### Proposed Infrastructure for SEA-EU Portal



IR= Institutional Repository      DR+ Data Repository

As featured in the above design, the data repositories (DR), as well as the repositories for research publications (IR) of the SEA-EU Universities, being OpenAIRE Compliant, are integrated together via OpenAIRE Connect. This is a service supported by OpenAIRE. OpenAIRE is an open scholarly communication infrastructure which creates and operates services for Open Science.

OpenAIRE Connect is a platform that will support SEA-EU Universities to build a single common portal that federates and links all research output, and can be customised according to the needs and requirements of the SEA-EU Alliance. This is done by harvesting all metadata of research outputs deposited on the various SEA-EU repositories by making use of the OAI-PMH protocol. This platform helps unlock the full potential of the SEA-EU research community. Moreover, OpenAIRE Connect provides a neutral space where the SEA-EU research community can come together to develop and adopt an infrastructure that promotes data sharing and data driven research. As of October 2023, 40 research communities, including university alliances and research initiatives, have implemented OpenAIRE Connect to develop and implement their

common portal. Some examples include: DARIAH-EU, European Biological Resource Centre, Research Data Alliance (RDA) and the FORTHEM 'European University' Alliance.

Content harvested by OpenAIRE Connect can be accessed by conducting a search either through the SEA-EU website ([www.sea-eu.org](http://www.sea-eu.org)) or directly via the OpenAIRE Connect portal. Also, all research content harvested can be retrieved via Google Scholar. Content can be searched by title, author/creator, type of content (publications, research data, research products, etc.), year, discipline, research community and funder.

### 3.2 Financial Estimates

To implement OpenAIRE-Connect as an Open Research Data System, the following approximate financial allocations are required by the SEA-EU Alliance. (The estimate is based on current costs.):

- One-time implementation fee: Eur12,000
- Annual licence fee: Eur3,500

## 4. RECOMMENDATIONS AND FOLLOW-UP

### 4.1 Identification of Funding

Since working with OpenAIRE-Connect incurs an annual financial cost, the SEA-EU Alliance would need to allocate the necessary regular funding for the implementation of a common Open Research Data System.

### 4.2 Implementation of Design

If the necessary funds are secured, a pilot will be developed whereby OpenAIRE will define the basic configuration of the SEA-EU common portal. Testing and validation will follow so as to ensure that all workflows are in place and the quality of data meets SEA-EU quality standards. Finally, the portal is rolled out and researchers can engage with this service via the SEA-EU website. Training and support will also be provided by OpenAIRE.