ENVRI: Data and Services interoperation Framework in the Environmental Cluster
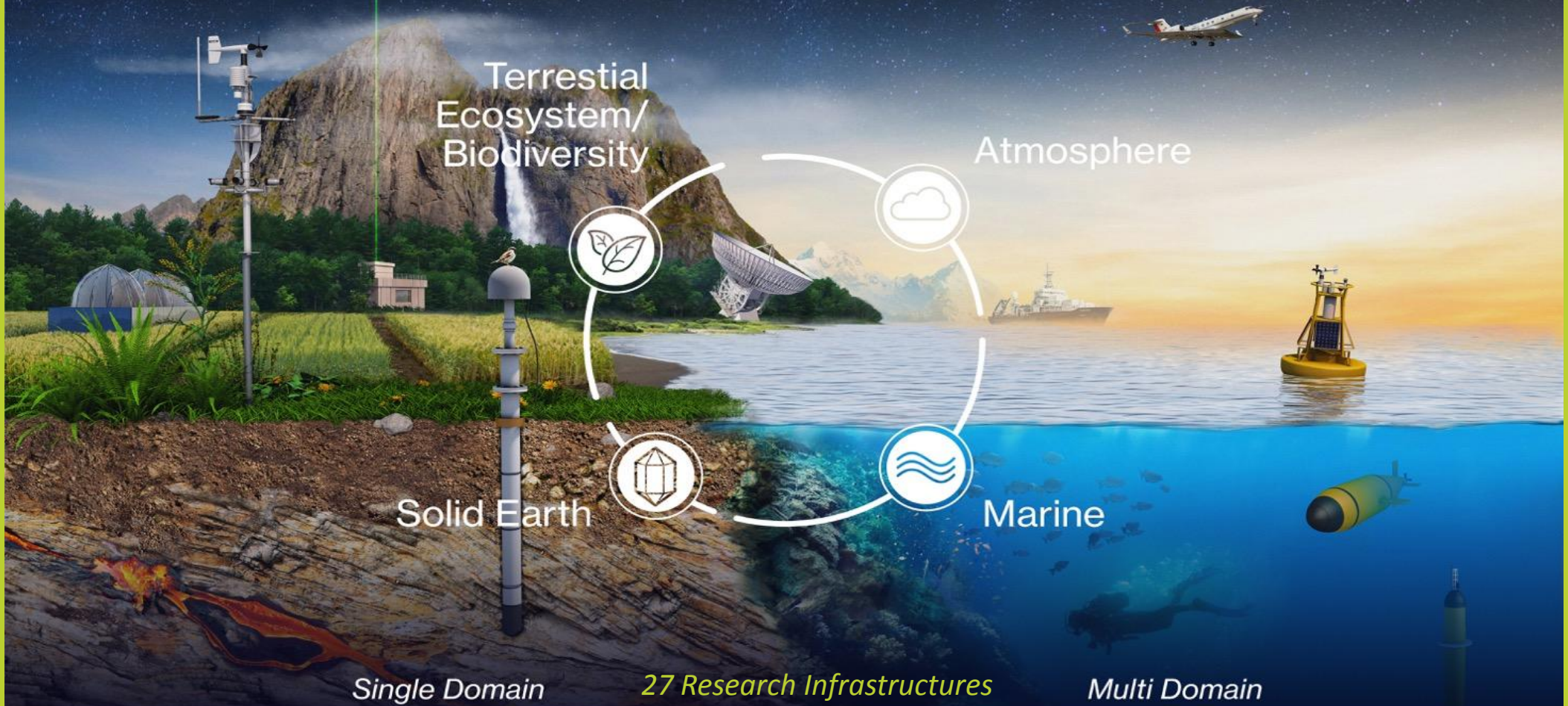
Daniele Bailo (EPOS ERIC / INGV), Keith Jeffery (UKRI/BGS)

ENVRI Community

Terrestial Ecosystem/Biodiversity

Atmosphere

Solid Earth

Marine

Single Domain   *27 Research Infrastructures*   Multi Domain

AnaEE
DiSSCO
ELIXIR
EMPHASIS
INTERACT

EPOS

EUROFLEETS
EURO-ARGO
JERICO-RI
SEADATANET

ACTRIS
ARISE
EISCAT_3D
EUFAR
EUROCHAMP 2020
HEMERA
IAGOS

EuroGOOS
ICOS
IS-ENES
SIOS

DANUBIUS
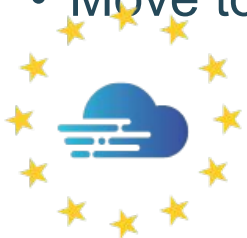eLTER
EMBRC
LifeWatch
AQUACOSM

EMSO

The Earth is our Lab
Europe's Environmental Research Infrastructures

ENVRI Goals

- Improve understanding of the system Earth
- Harmonized delivery of observational data
- Collaboration among Research infrastructures
- Knowledge Sharing
- Develop RI common solutions
- Avoid unnecessary costs & prevent duplication of efforts
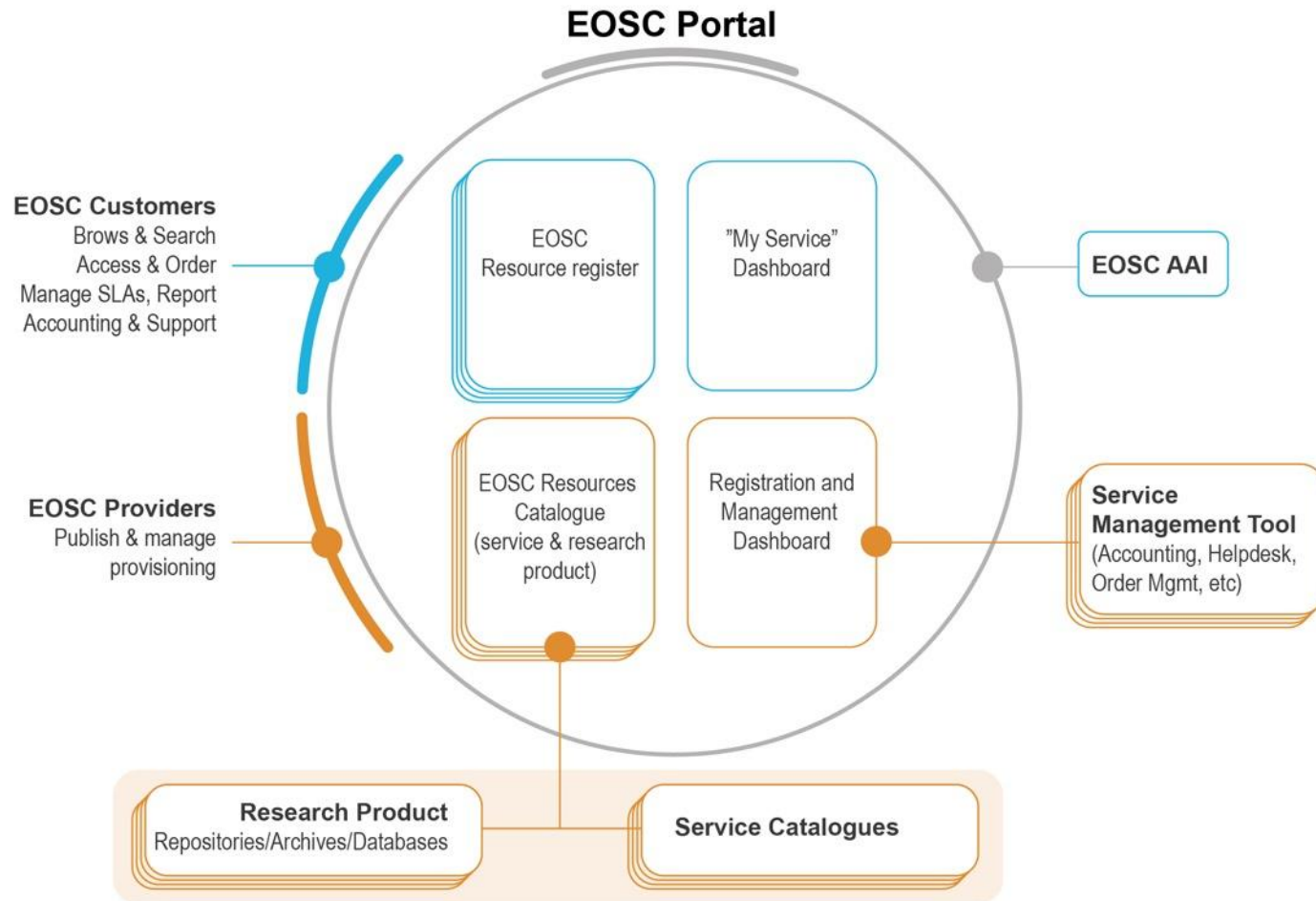- Move towards EOSC interoperability

EUROPEAN OPEN SCIENCE CLOUD

Life Air

Land Water

ENVRI FAIR

The Role of ENVRI in EOSC

EOSC Portal

EOSC Customers
Brows & Search
Access & Order
Manage SLAs, Report
Accounting & Support

EOSC Providers
Publish & manage
provisioning

EOSC
Resource register

"My Service"
Dashboard

EOSC AAI

EOSC Resources
Catalogue
(service & research
product)

Registration and
Management
Dashboard

Service
Management Tool
(Accounting, Helpdesk,
Order Mgmt, etc)

Research Product
Repositories/Archives/Databases

Service Catalogues

Together with the other ESFRI RI clusters the ENVRI cluster is one of the main initiatives of the EOSC family.

ESFRI Clusters contribute significantly to the EOSC

ENVRI is considered as one of the matured clusters

Illustration adapted from EOSC Portal Concept 2.0, Version 2.2, July 2019

ENVRI HUB

Key Features:
- Central gateway to European Environmental data and services.
- Data is interoperable across Earth system disciplines.
- Supports interdisciplinary environmental research.
- Data is open and free for all.
- Users can utilize Virtual Research Environments.
- Allows science computing directly inside the hub.

https://envri-hub.envri.eu/

ENVRI Hub

Services ▾   FAQ   About   Feedback   ENVRI Community

Welcome to the Data Portal of the European Environmental Research Infrastructures

Tell us what you are looking for: a dataset, policies, a service, ...

🔍 Enter your keywords here

Or explore our services

ENVRI Catalogue of Services
Access the descriptions of the RI services that provide data, metadata, semantic assets, taxonomic information, and more.

ENVRI Knowledge Base
Access technical practices, common data and service requirements that facilitate search and analysis of existing RI solutions for interoperability challenges.

ENVRI Training Gateway
Access training resources developed by and for the ENVRI Community.

ENVRI Science Demonstrators
Use reliable Jupyter Notebooks to support interactive data science and scientific computing.

ENVRI Catalogue of Services

Key Objectives

- Describe and provide access to ENVRI assets for humans through a portal
- Create a machine readable and actionable tool for autonomic access to RIs services
- Interface to and for the European Open Science Cloud
- Leverages on the work done in EPOS ERIC

https://envri-hub.envri.eu/

Key interoperability concepts

- **Based on a 3-tiers architecture:**
  - **Data sources**
  - **Core Data Access system**
  - **APIs for external access**

- Assumes data provision through **web-services**

- Semantic description of web services in **EPOS-DCAT-AP**

- Uses a **metadata catalogue (CERIF)** for storing information about web services details and their semantics

- Can perform **semantic crosswalks** through different web services parameters

- Assumes an intelligent software can manage the semantic rich metadata information for **accessing heterogenous** web-services
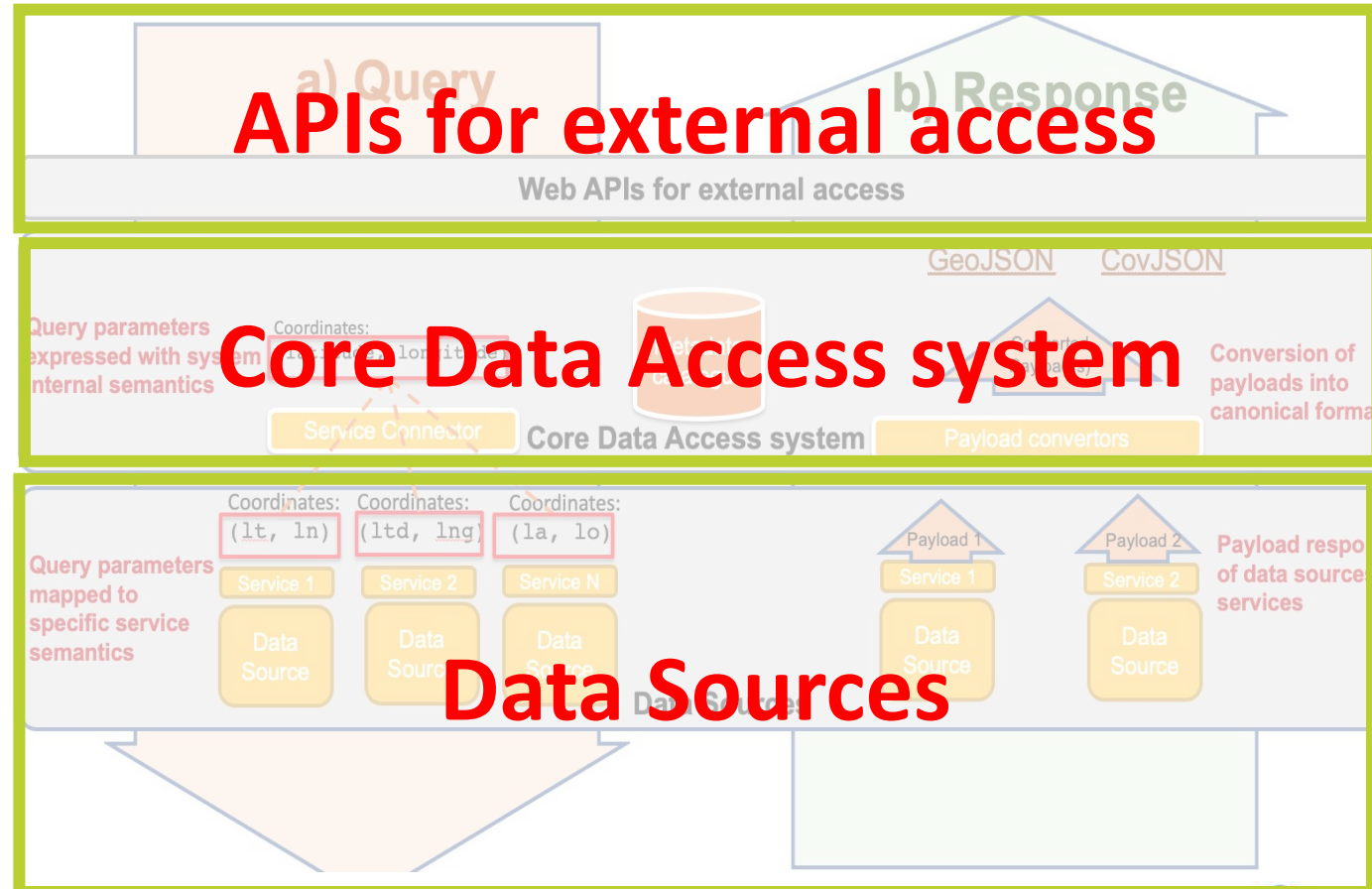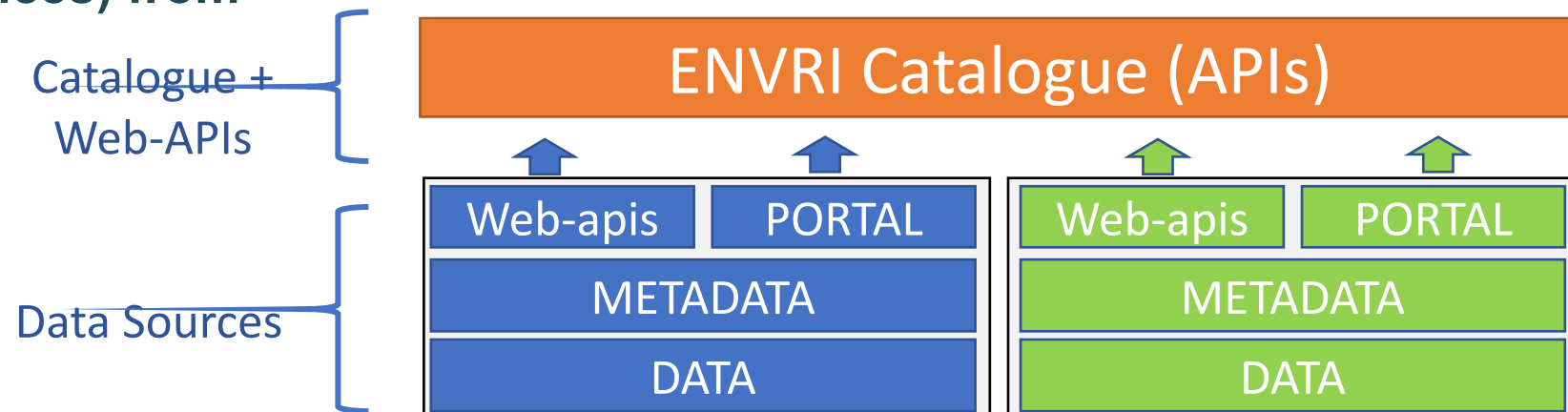
Role of the ENVRI Catalogue

- **ENVRI Catalogue is based on the "service" concept**

- **It can provide access to:**
  - **Data**
  - **Services**
  - **…from heterogeneous Environmental Data sources**

- **ENVRI catalogue allows interoperation with RIs assets (data and services) from the environmental cluster**

EUROPEAN OPEN SCIENCE CLOUD

Catalogue + Web-APIs

ENVRI Catalogue (APIs)

Data Sources

Web-apis	PORTAL
METADATA	
DATA	

Web-apis	PORTAL
METADATA	
DATA	

ENVRI FAIR

- It contains **55 «assets» descriptions** provided by:

- **ARGO, LIFEWATCH**, **SIOS, SEXTANT, ICOS**, **ACTRIS, CREA**

- APIs available here **https://ics-c.epos-ip.org/demo/k8s-epos-deploy/envri-fair-catalogue/api/v1/ui/**

- API provide:
    - List of «assets» (services or portals)
    - Details for each asset

- API consumed by the Catalogue GUI by ENVRI-hub

- API can be consumed by EOSC

Work goes on..

- We have demonstrated technical interoperability across multiple ENVRI RIs but more ingested metadata records are needed, and more development efforts are required

- We have demonstrated federated single sign-on across a subset of ENVRI RIs – more work to be done

- This is only loosely supported by governance interoperability; each RI has its own governance and – while we have increasing convergence on policies and their implementation - there is more to be done, and MoUs can be a starting point.

THANKS

🏠 envri.eu/envri-fair 🐦 @ENVRIcomm 💼 ENVRI community 📘 facebook.com/ENVRIcom