Fostering regional cooperation and roadmap for GEO and Copernicus implementation in N. Africa, Middle East, and the Balkans

The Regional Data Hub

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Funded under H2020 - Climate action, environment, resource efficiency and raw materials
ACTIVITY: Developing Comprehensive and Sustained Global Environmental Observation and Information Systems
CALL IDENTIFIER: H2020 SC5-18b-2015 Integrating North African, Middle East and Balkan Earth Observation capacities in GEOSS
Project GA number: 690133
Total Budget: 2,910,800.00 €

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Objectives

GEO-CRADLE

… is a unique EU funded Coordination Action running at regional level,
… is looking at the N. Africa, Middle East, and the Balkan territories;

It seeks to identify common needs, create synergies, and integrate capacities,

Fosters the regional cooperation and integration of monitoring capabilities and networks, and scientific skills

Proposes/sets up large scale regional initiatives based on the Earth Observation (space based and in-situ) for addressing societal priorities in different thematic aspects such as Adaptation to Climate Change, Access to Raw Materials, better exploitation of the renewable Energy resources, and Food Security

Objectives

- **Promote** the uptake of EO services and data in response to regional needs
- **Support** the effective integration of existing Earth Observation Capacities in the region
- **Facilitate** the engagement of the complete ecosystem of EO stakeholders in the region
- **Enhance** the participation in and contribution to the implementation of **GEOSS** and **Copernicus** in **North Africa**, **Middle East** and the **Balkans**

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Thematic Areas

Adaptation to Climate Change (ACC)

Improved Food Security – Water Extremes Management (IFS)

Access to Raw Materials (ARM)

Access to Energy (SENSE)

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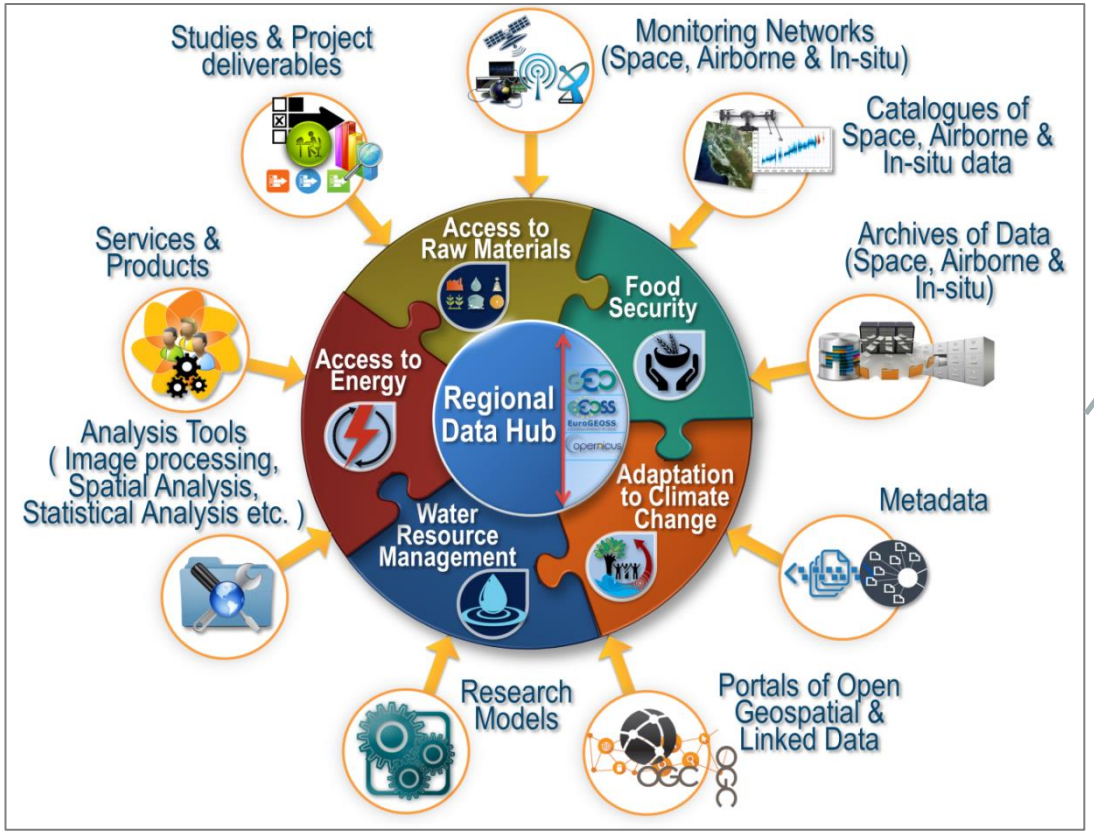
The Proiect Pillars

The Concept of Regional Data Hub (RDH)

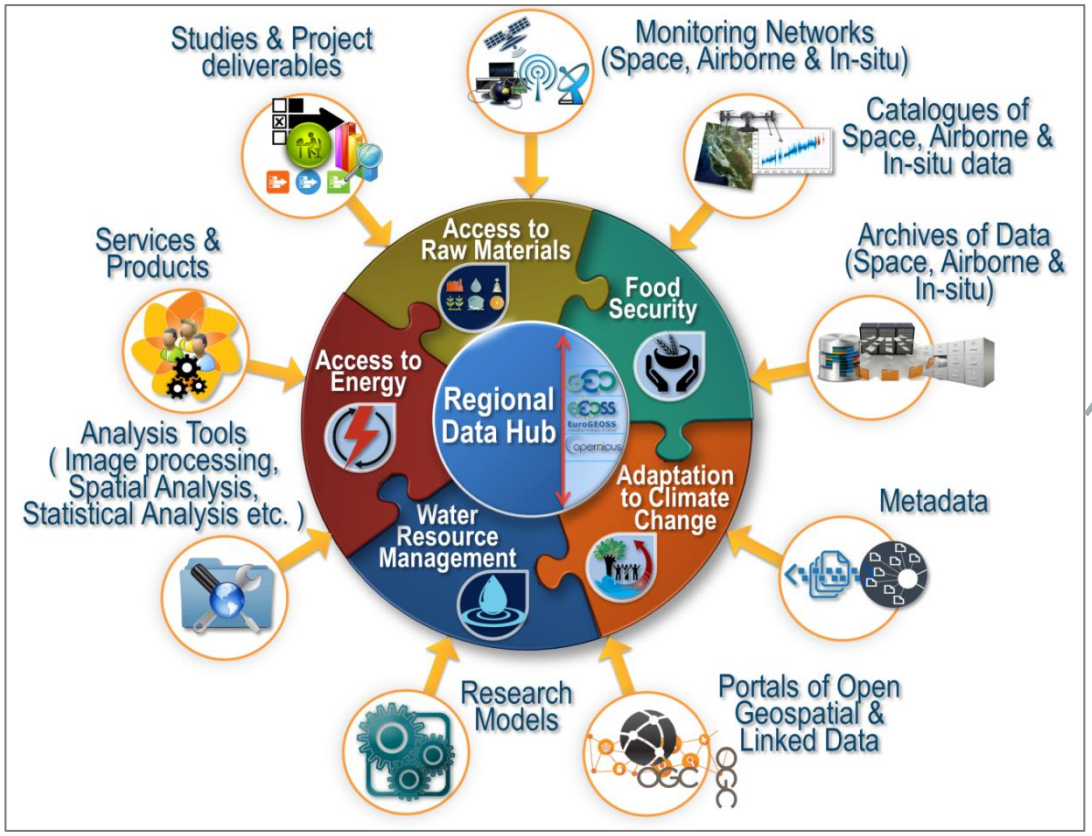


"one-stop-shop" for RoI specific data/information /knowledge access for EO players, service providers, and end users.

Data Portals, Databases and Links to be mapped or linked to the RDH

All data sources are collected from the inputs of the Stakeholders at the GEO-CRADLE survey and desk research

Requirements for the Data Sources



"one-stop-shop" for RoI specific data/information /knowledge access for EO players, service providers, and end users.

The Data Portals need to fulfil two requirements in order to be mapped or linked to the Regional Data Hub:

a. the ***quantity*** of the data and metadata that are relevant to both the *geographic extent of the RoI* and the *Thematic Areas* of the GEO-CRADLE Project.

b. the ***quality*** of the data and the metadata regarding both the *compatibility* of the data to the GEOSS APIs and GCI, and the *existence* of corresponding *metadata*.

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Number of identified portals per Thematic Area and RoI

a/a	Adaptation to Climate Change	Improved Food Security & Water Extremes Management	Access to Raw Materials	Access to Energy	Total Number of Portals per RoI (unique)
North Africa	0	1	1	0	2
Middle East	5	3	2	4	6
Balkans	8	8	3	5	14
Total Number of Portals per Thematic Area	13	12	5	9	

Key Findings

- ✓ **In ME there are countries with no evidence at all of any open data activity, and some other countries that have created limited sections of open data in stand by mode**
- ✓ **In NA open data concepts remains limited; data are focused on statistics; the data format is not facilitating the data reuse; there is a need for generating new data using open standards; lack of funds for developing the technical/ connectivity infrastructures**
- ✓ **In BA there is a diversity in cultures and infrastructures; there are numerous portals with open and free data; others publish data only for viewing using the mother tongue**

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Portals/datasets developed/operated by the Stakeholders

a/a	Institute	Country	Link	Data Policy	Data Type	Thematic Area	Information
1.	National institute of R&D for opt/el	ROMANIA	RADO	Free	.jpg	Climate	Meteo/Climatic, Atmospheric Profiling
2.	World Radiation Center	SWITZERLAND	EBAS	Free for non-commercial & scientific use.	.nas (NASA-Ames)	Climate, Energy	Atmospheric Profiling
3.	Public Power Corporation	GREECE	Hydroscope	License restricted, fee applies.	.hts files of timeseries.	Energy	Meteo/Climatic, Hydrometric/ Water Quality
4.	Center of Satellite Communication & Remote Sensing	TURKEY	Tarbil	View-only. Authentication required	Maps with data/metadata	Climate, Food	Meteo/Climatic
5.	National Observatory of Athens	GREECE	Sentinel Mirror Site	Free and Open	Sentinel 1: SAR data, Sentinel 2: optical data	Climate, Food, Energy	Space-borne
6.	The Cyprus Institute	CYPRUS	Geological Survey	Free and License Restricted	Unknown	Climate, Food, Energy	Meteo/Climatic
7.	Ministry of Labour, Welfare & Social Ins	CYPRUS	Air Quality	View-Only	graphs in .png format	Climate	Meteo/Climatic
8.	TÜBİTAK UZAY	TURKEY	Gezgin	Restricted	Unknown	Food, Climate	Unknown
9.	Faculty of Physics, Uni of Belgrade	SERBIA	HyMeX	Authentication required	models	Climate	Geospatial data

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Portals/links returned from inventorying and desk research

a/a	Country	Portals/Sites	Data Policy	Data Type	Thematic Area	Information
1.	CYPRUS	Geological Survey	Free and License Restricted	KML,JSON,CSV etc	Climate, Raw Materials, Food, Energy	Atmospheric, Climatic, Geospatial data etc.
2.	POLAND	Central geological Db	Free and open	.shp	Raw materials, Food	Geological data, metadata
3.	FYROM	Soil information system	Only view	maps	Raw Materials, Food	Land, Soils, pH, Hill shades
4.	ISRAEL	Meteorological services ltd	Restricted - needs authentication to view and download data		Climate, Food, Energy	Meteo, Soil, Rain etc.
5.	REP of SRPSKA	GEOportal	Partially free for view Partially Restricted - needs authentication to view maps		Food	E-cadastre, network of GPS /GNSS stations
6.	ALBANIA	GEOportal	Only view	maps	Food, Raw materials, Energy	Land use, Mineral and Energy resources etc.
7.	KOSOVO	GEOportal	Only view	maps	Food	Geospatial data, Orthoimagery
8.	BOSNIA & HERZ	GEOportal	-	WMS, WFS, WCS	Food, Raw materials	Geospatial data, Orthoimagery
9.	MONTENEGRO	GEOportal	Only view	maps	Food	Geospatial data
10.	CROATIA	GEOportal	Only view	Maps, network	Climate, Food, Raw materials, Energy	Geospatial data, Orthoimagery, Soil, Minerals, Energy.
11.	SLOVENIA	Portal	Inspire Metadata system	metadata	Climate, Food	Geospatial data, Orthoimagery

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Portals/links returned from inventorying and desk research

a/a	Country	Portals/Sites	Data Policy	Data Type	Thematic Area	Information
12.	ROMANIA	a. ACASA by NIEP b. EIDA data & services provided by National Institute of Earth Physics	In Romanian In Romanian	-	Climate, Food	Geospatial data
13.	SERBIA	a. GIS - JP "Vojvodinašume" Company b. Geodetic Authority c. Geological Information System (Ministry) d. GEOportal	View only View only In Sebian, Free and open In Serbian, View only maps and metadata for download in pdf files	maps maps xml, json	Climate, Food, Raw materials, Energy	Geospatial data, Orthoimagery, Climatological data, Hydrological data, etc
14.	MOROCCO	CGMS	In French. Authentication needed to access maps	-	Climate, Food	Geospatial data
15.	North Africa Countries	ISRIC - World Soil Information	Minimum charge - COFUR principles	wms	Climate, Food	Soil, Geological data
16.	Mediterranean Countries	Mediterranean Db-HyMeX Db	Authentication Required	-	Climate, Food, Raw materials	Atmospheric data, Geological data, Geospatial data, Hydrological data etc.

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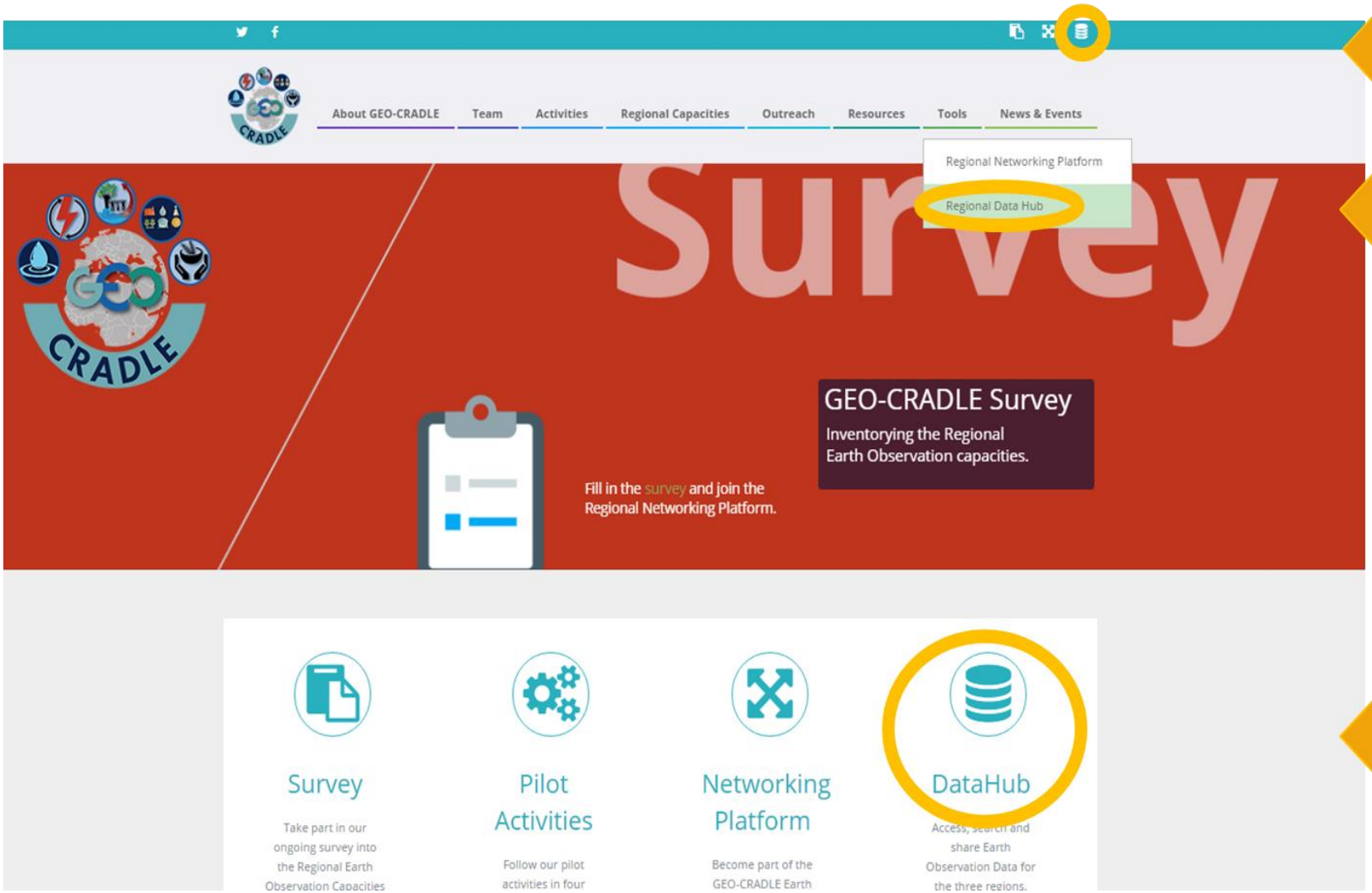
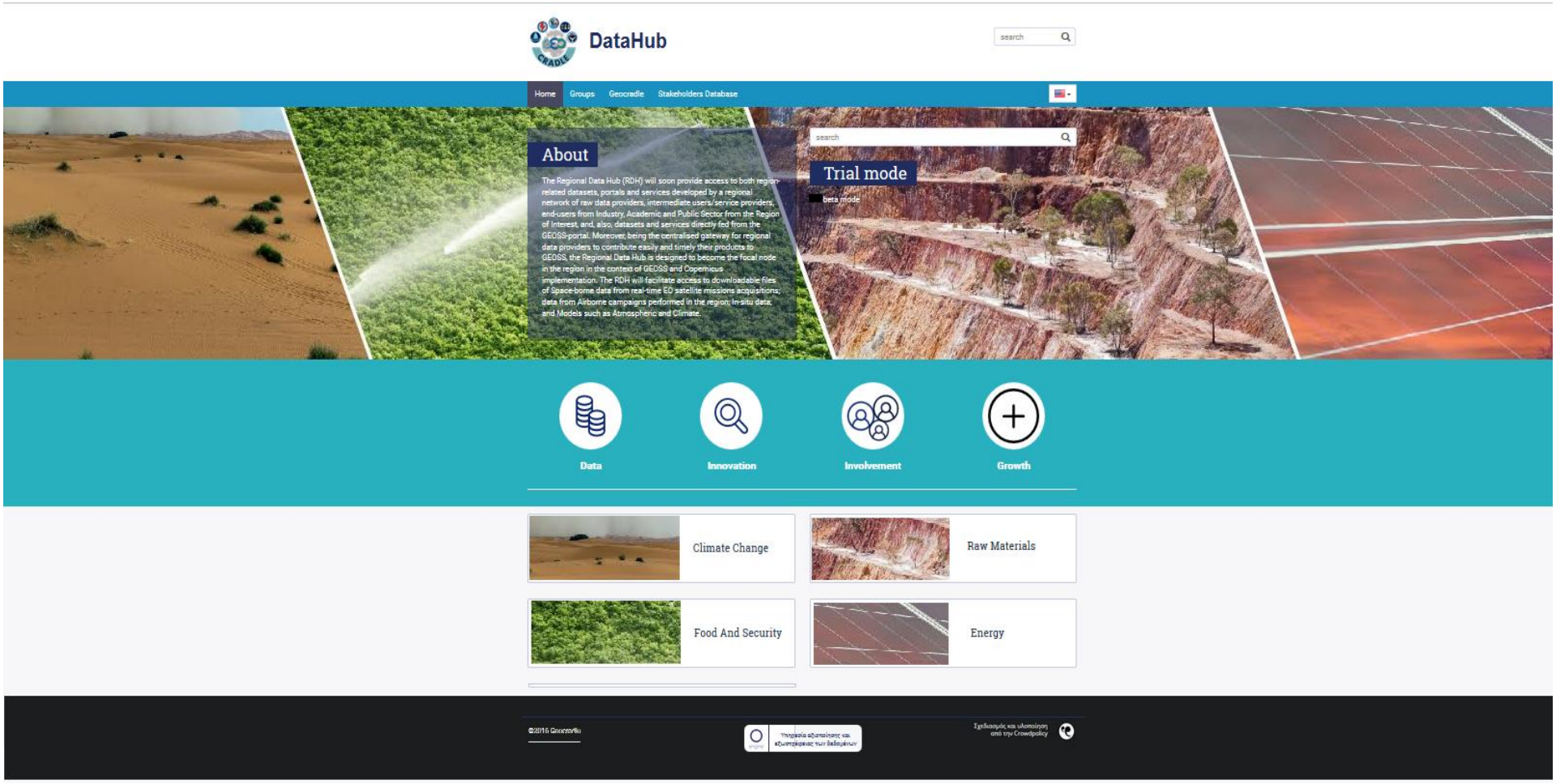
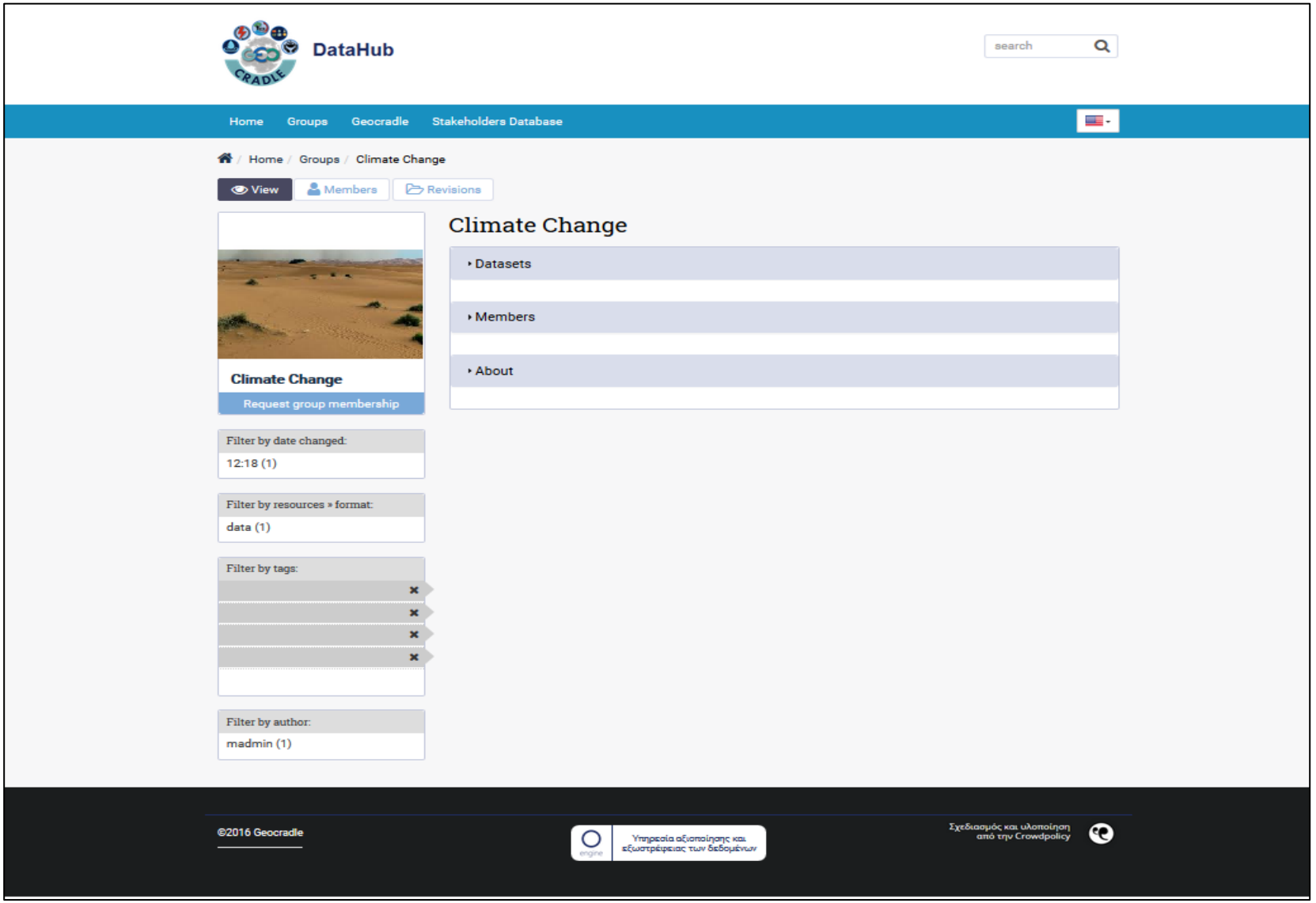
First Mockups of the Regional Data Hub



First Mockups of the Regional Data Hub cont'd



First Mockups of the Regional Data Hub cont'd



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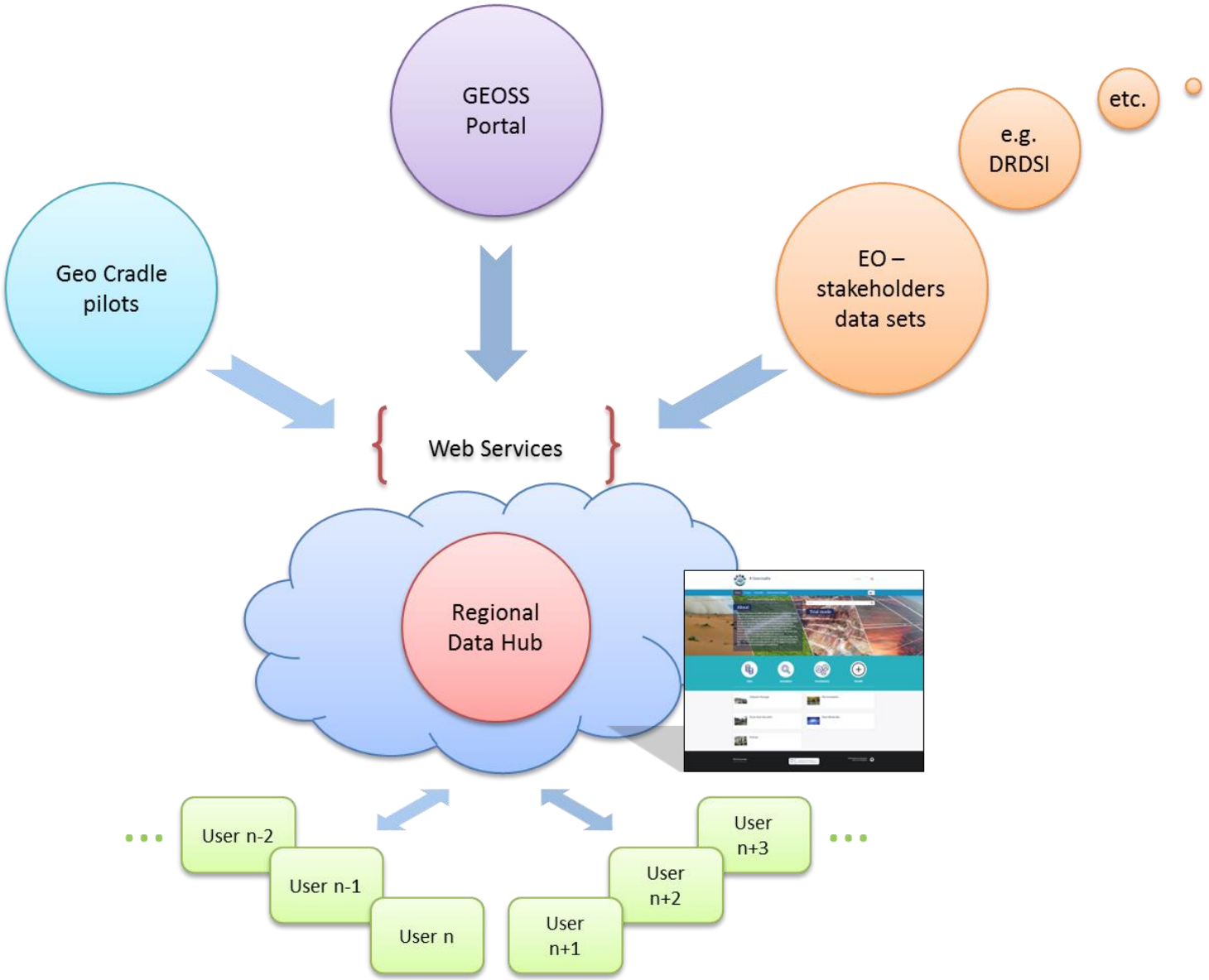
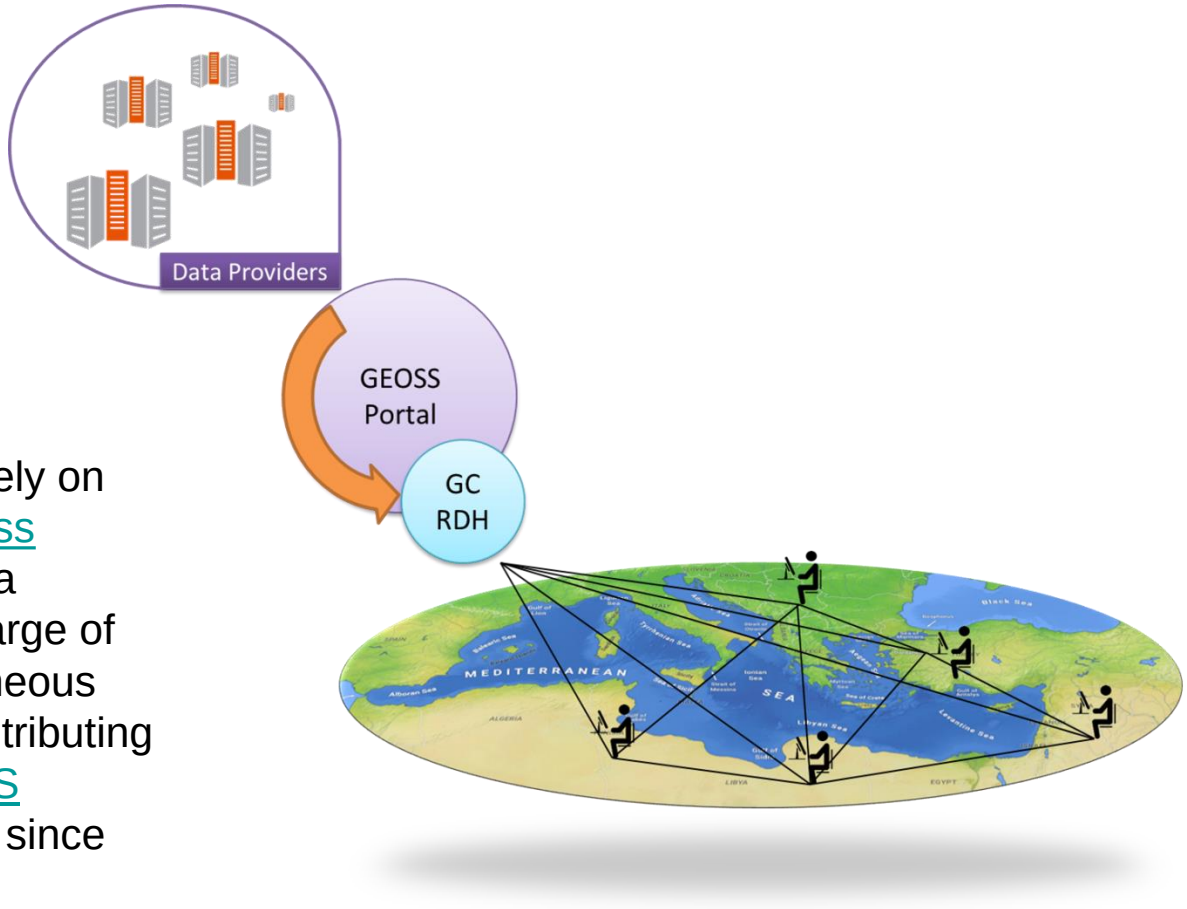
High Level Architecture of Regional Data Hub



Regional Data Hub – Connection with GEOSS Portal

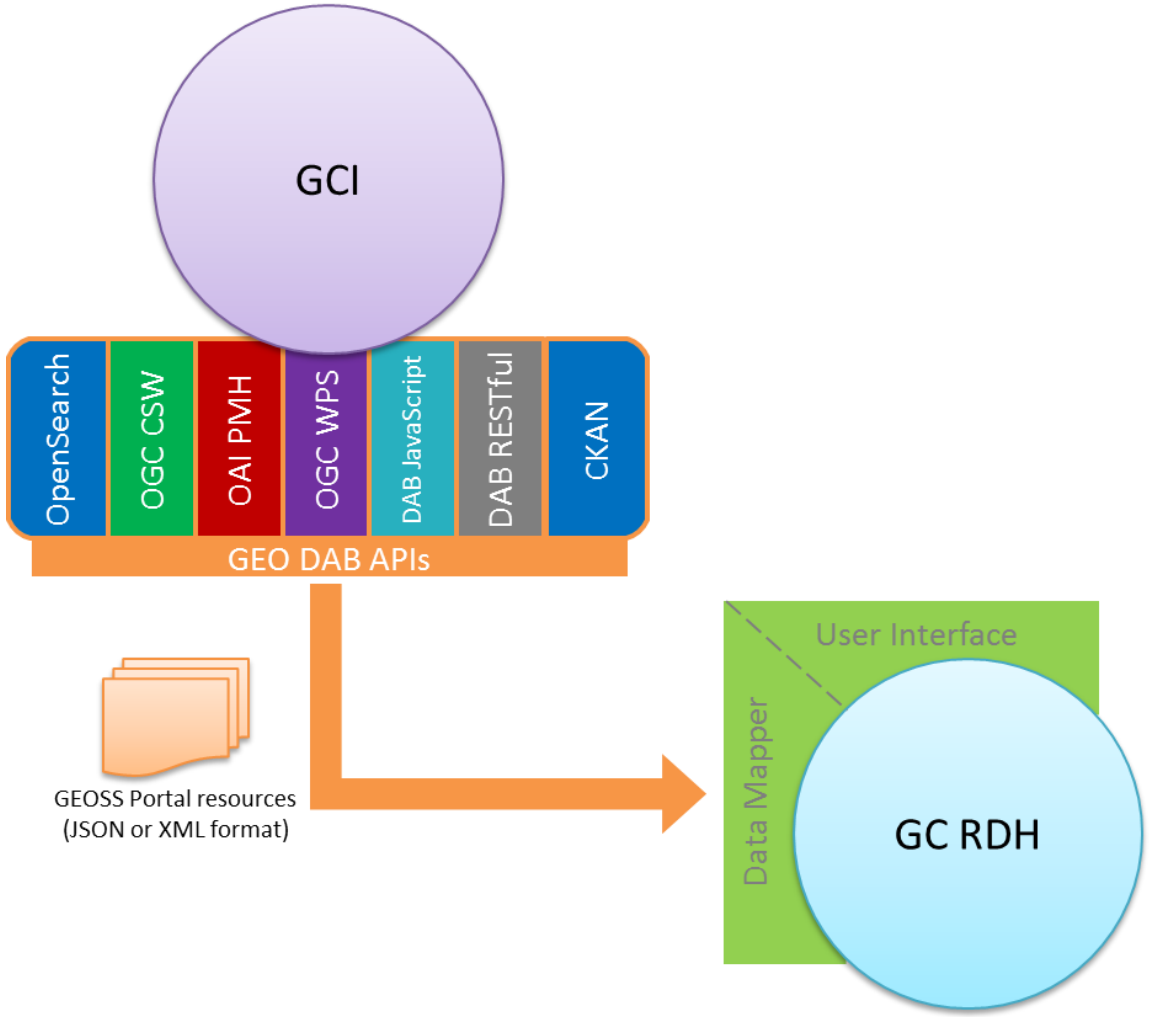
- GEO CRADLE Regional Data Hub (GC-RDH) is going to provide its users with a transparent discovery and access mechanism of the GEOSS portal's resources!



- This mechanism will heavily rely on the GEO Discovery and Access Broker (DAB) APIs which is a middleware component in charge of interconnecting the heterogeneous and distributed capacities contributing to GEOSS; part of the GEOSS Common Infrastructure (GCI) since November 2011.

Regional Data Hub – Connection with GEOSS Portal (a deeper insight)

- **Building Blocks**
  - GEO DAB APIs
  - DKAN software
- **Objectives**
  - Enable machine -to-machine communication with GEOSS portal (GEO DAB APIs)
  - Provide user friendly UI to the GC RDH user for discovering and accessing GEOSS resources in transparent mode (DKAN).
- **Workflow**
  i. User searches for resources.
  ii. GC RDH forwards user request to GEO DAB using the GEO DAB APIs. Three GEO DAB APIs are going to be utilized (DAB JavaScript, DAB REST and CKAN when it is released
  iii. Fetch GEOSS resources through the **Data Mapper** module of GC RDH in order to properly convert them **on the fly** in the DKAN schema.
  iv. Display results in the GC RDH UI as implemented in the DKAN infrastructure.



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Why DKAN?

- DKAN was identified by U.S. Project Open Data as a **“ready-to-use”** tool.

- DKAN offers:
  - A powerful administration panel.
  - A fully customizable page layout.
  - An extraordinary faceted search engine and UI that allows the users to make the optimal discovery of resources.
  - A highly modular architecture that can be easily extended by everyone with modules that support missing functionalities.
  - APIs enabling machine to machine communication.

- Moreover DKAN:
  - Is open source.
  - Is built upon PHP, Drupal and CKAN. PHP powers a significant percentage of web pages and Drupal powers an estimated 2% of the Internet as a whole.
  - Has an active and wide community of users and developers.

Why GEOSS Portal?

- One of the main objectives of GEO-CRADLE; to showcase the added value of applications built upon GEO DAB APIs
- Plethora of resources: 140 brokered sources, 70.441.318 GEOSS Data Core elements (source http://www.geodab.net/blank)
- High degree of interoperability: supports several service interfaces (e.g. OpenSearch, OAI-PMH, OGC WPS, etc.)
- Provides a big data challenge

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thank you!

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