



# Blue-Cloud VRE platform evolution and integration with EOSC resources and services - WP5 Overview

Massimiliano Assante, PhD

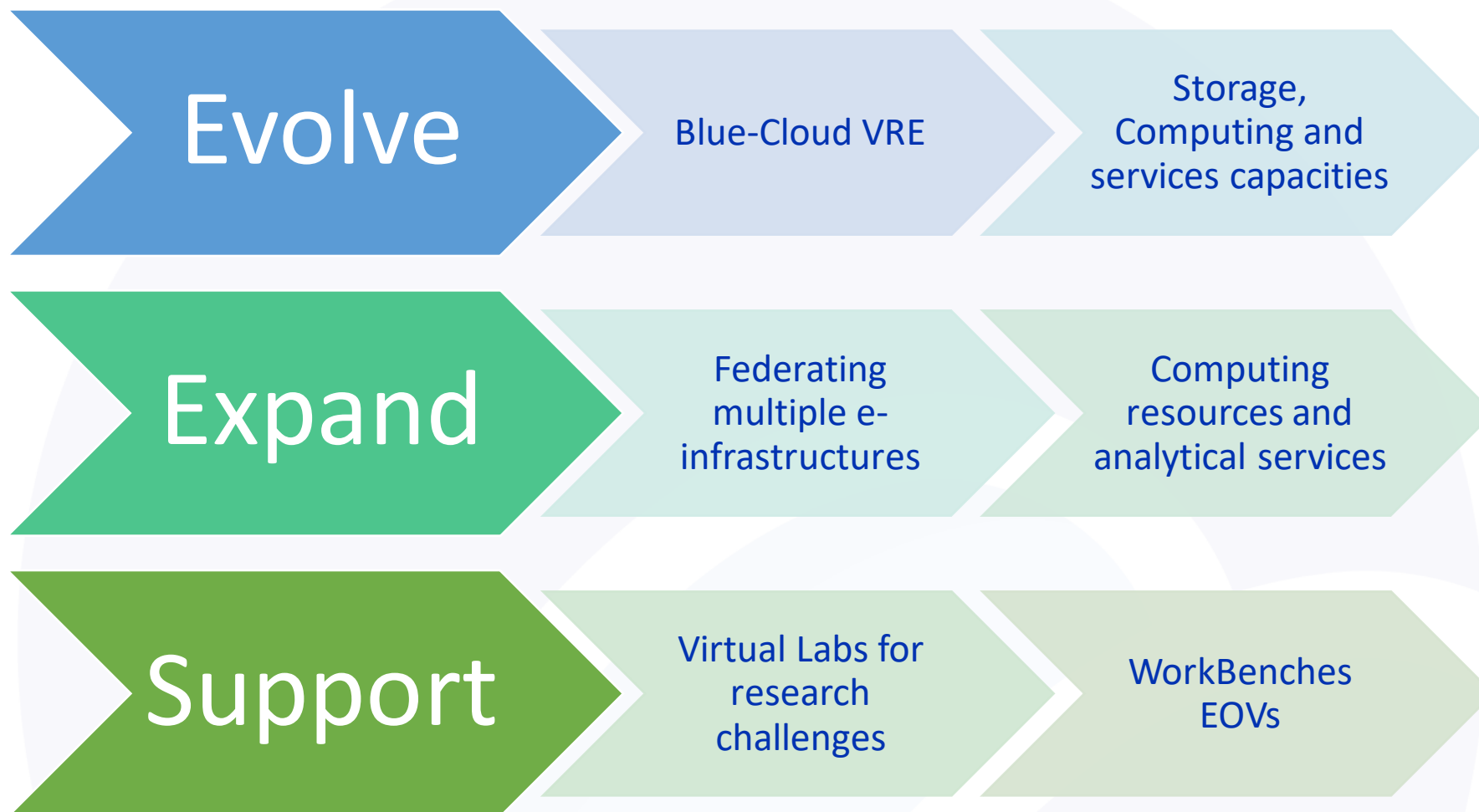
ISTI - CNR

 <https://orcid.org/0000-0002-3761-1492>

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Funded by  
the European Union

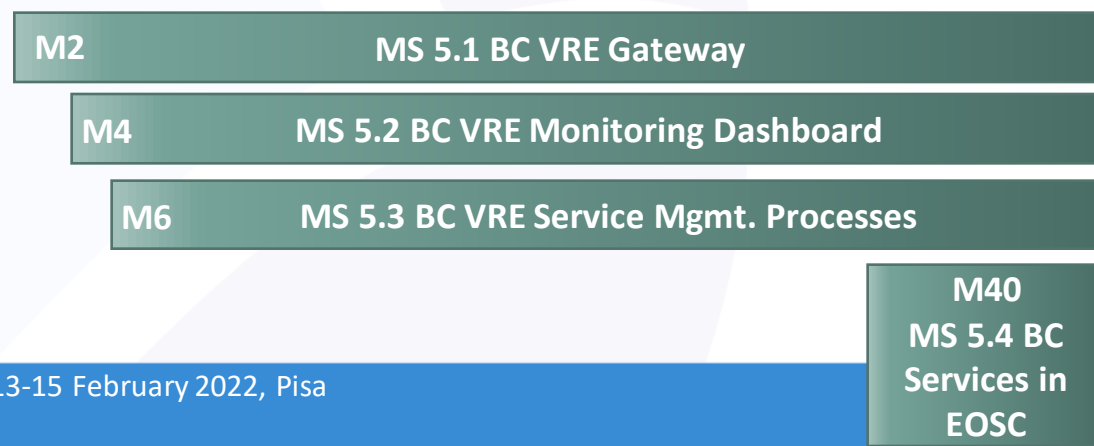
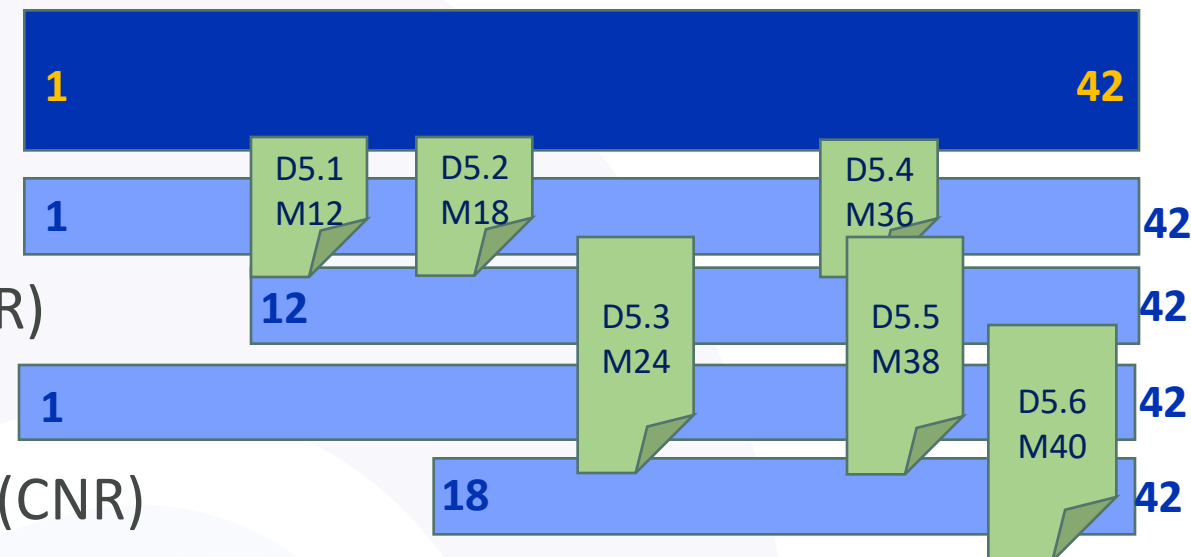


## WP5 Task and responsibilities

“VRE Platform Evolution and integration with EOSC resources and services” (CNR, 139 PM)

- T5.1: VRE common services (CNR)
- T5.2: VRE exp. by federating multiple e-infras (CNR)
- T5.3: VRE interaction with EOSC projects (EGI)
- T5.4: VRE interoperation with EOSC core services (CNR)

## Timeline



D5.1: Blue-Cloud VRE Common Services (CNR-ISTI, M12)

D5.2: Blue-Cloud VRE Operation Report (CNR-ISTI, M18)

D5.3: Blue-Cloud VRE Federated Infrastructures (EGI, M24)

D5.4: Blue-Cloud VRE Common Services Release 2 (CNR-ISTI, M36)

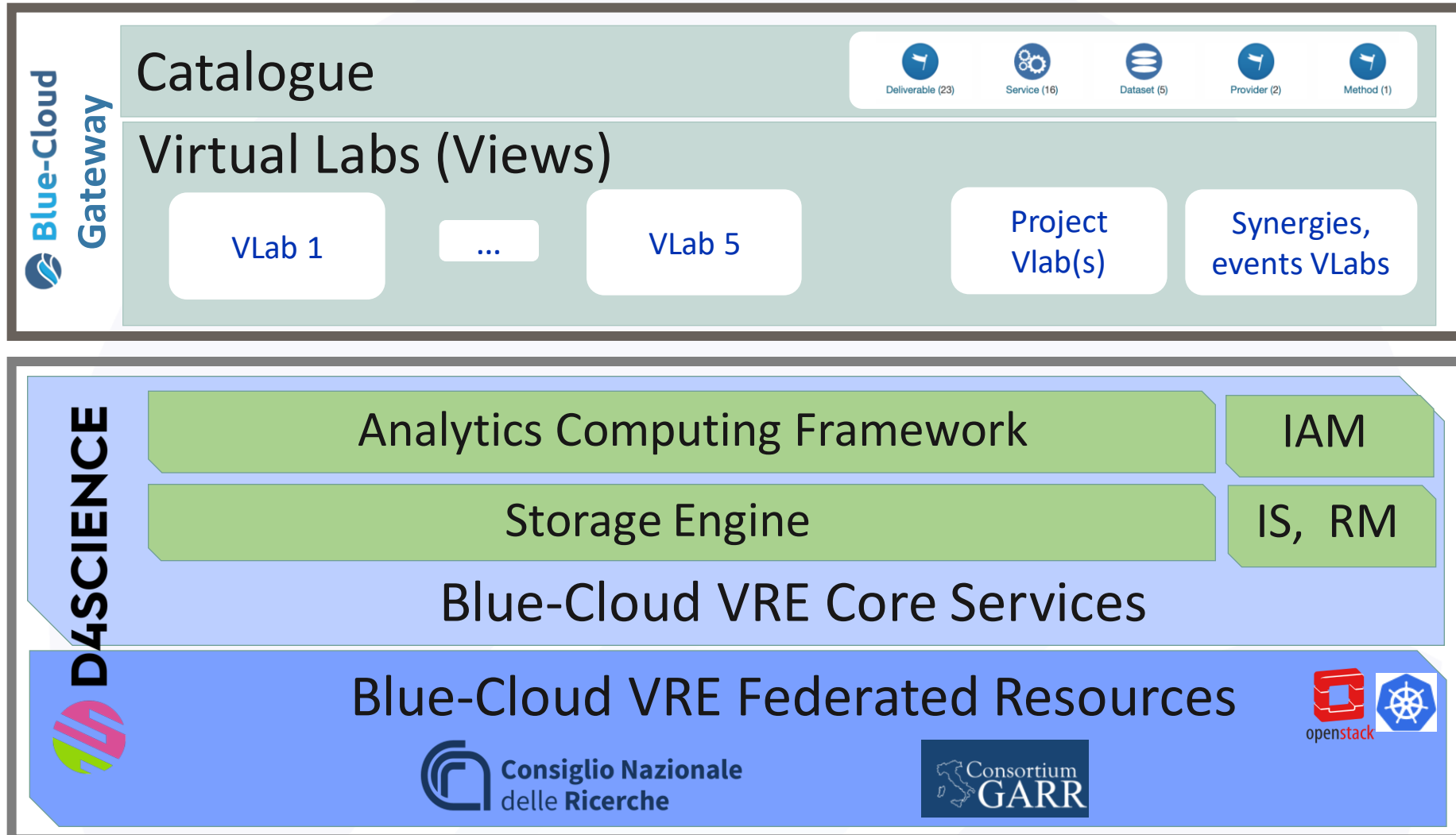
D5.5: Blue-Cloud VRE Operation Report Release 2 (EGI, M38)

D5.6: Blue-Cloud VRE Interaction with EOSC Projects (EGI, M40)

# Task 5.1 - Evolution

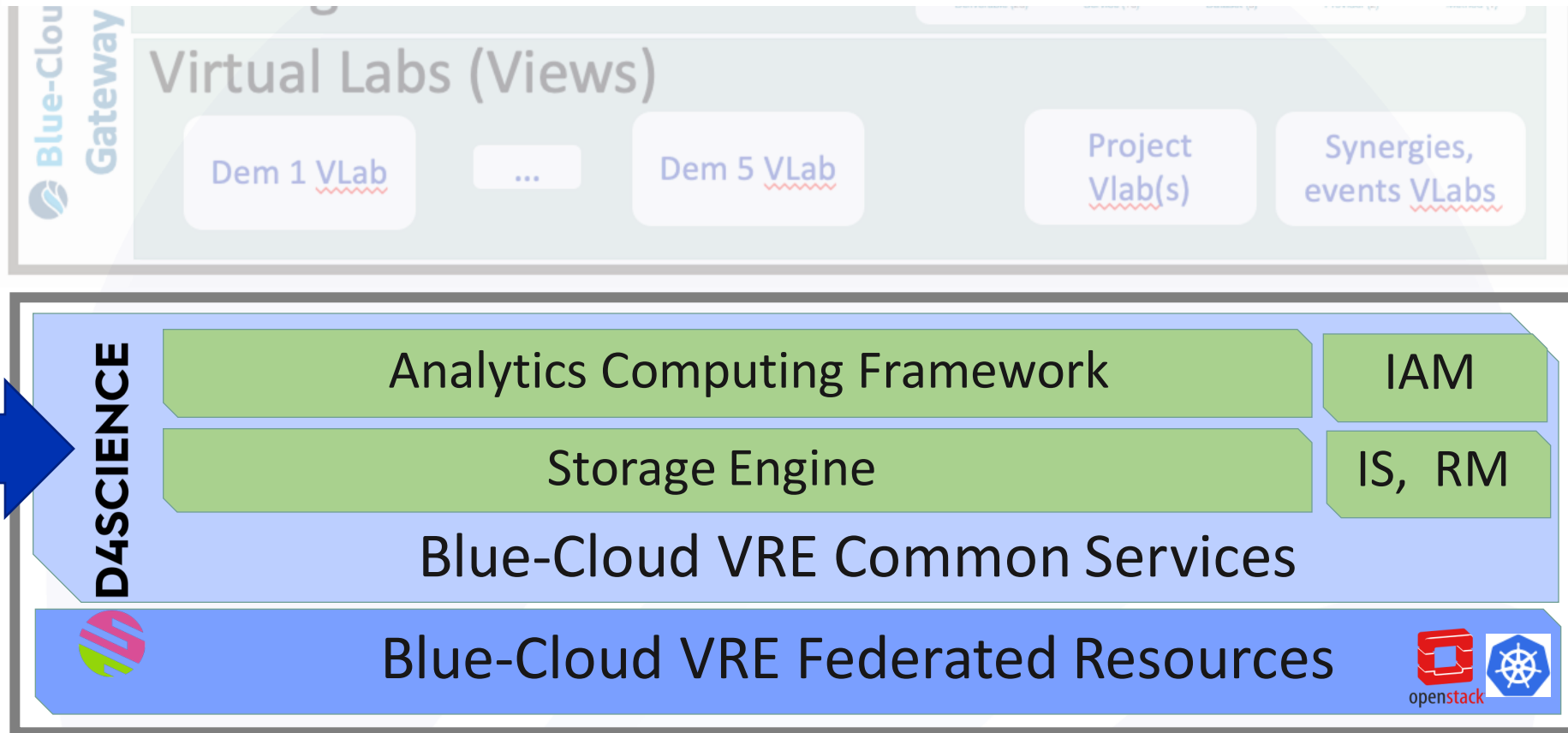


<https://blue-cloud.d4science.org>



## TASK 5.1 Evolution of common services

Lead: CNR; Partners: EGI, Nubis, GRNET



Identity and Access Management (IAM) Service, Information System (IS), Resource Manager (RM), Storage Manager (SM), Analytics Computing Framework (ACF)

### Storage Manager

**strict consistency** within the data center

**eventual consistency** across data centers to protect the data

### Analytics Framework

support HTC on (Docker) containerised applications

support deployment over multiple Kubernetes clusters (Jupyter notebooks)



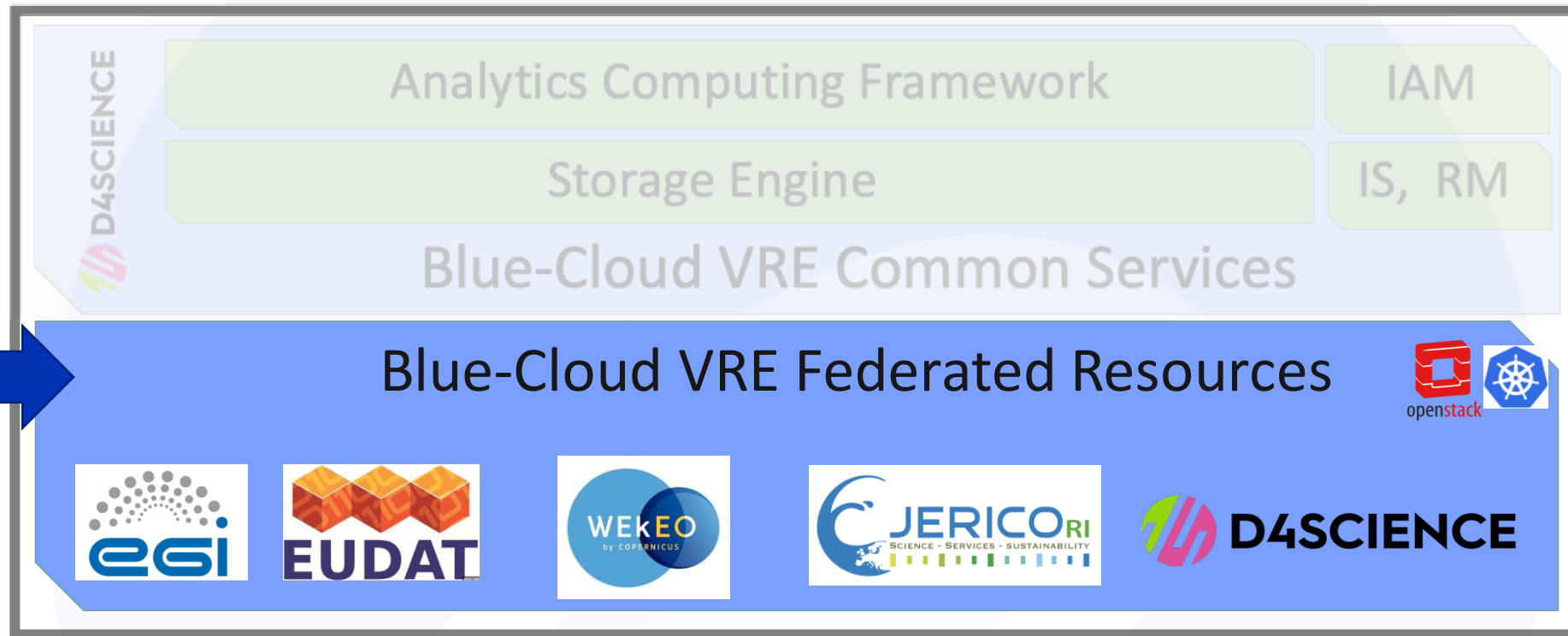
# Task 5.2 - Expansion



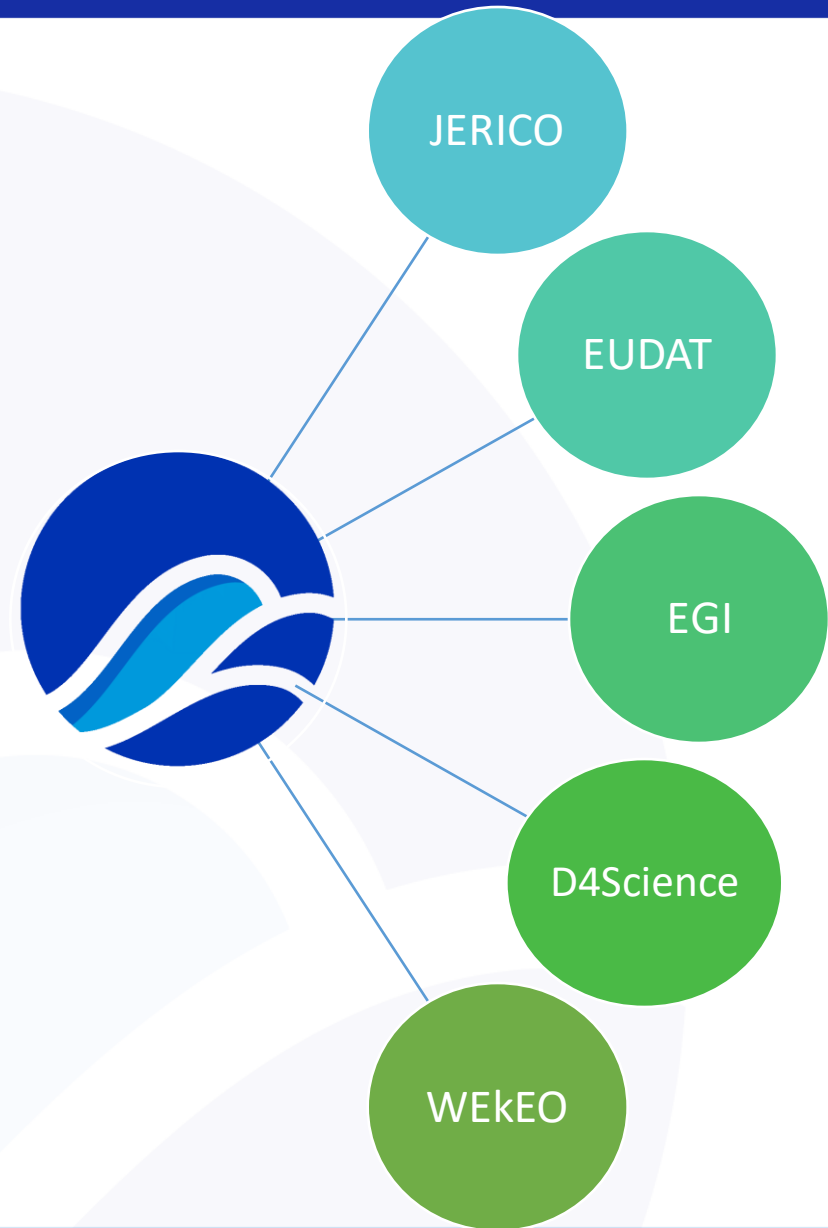
## TASK 5.2 Expansion by federating multiple e-infrastructures

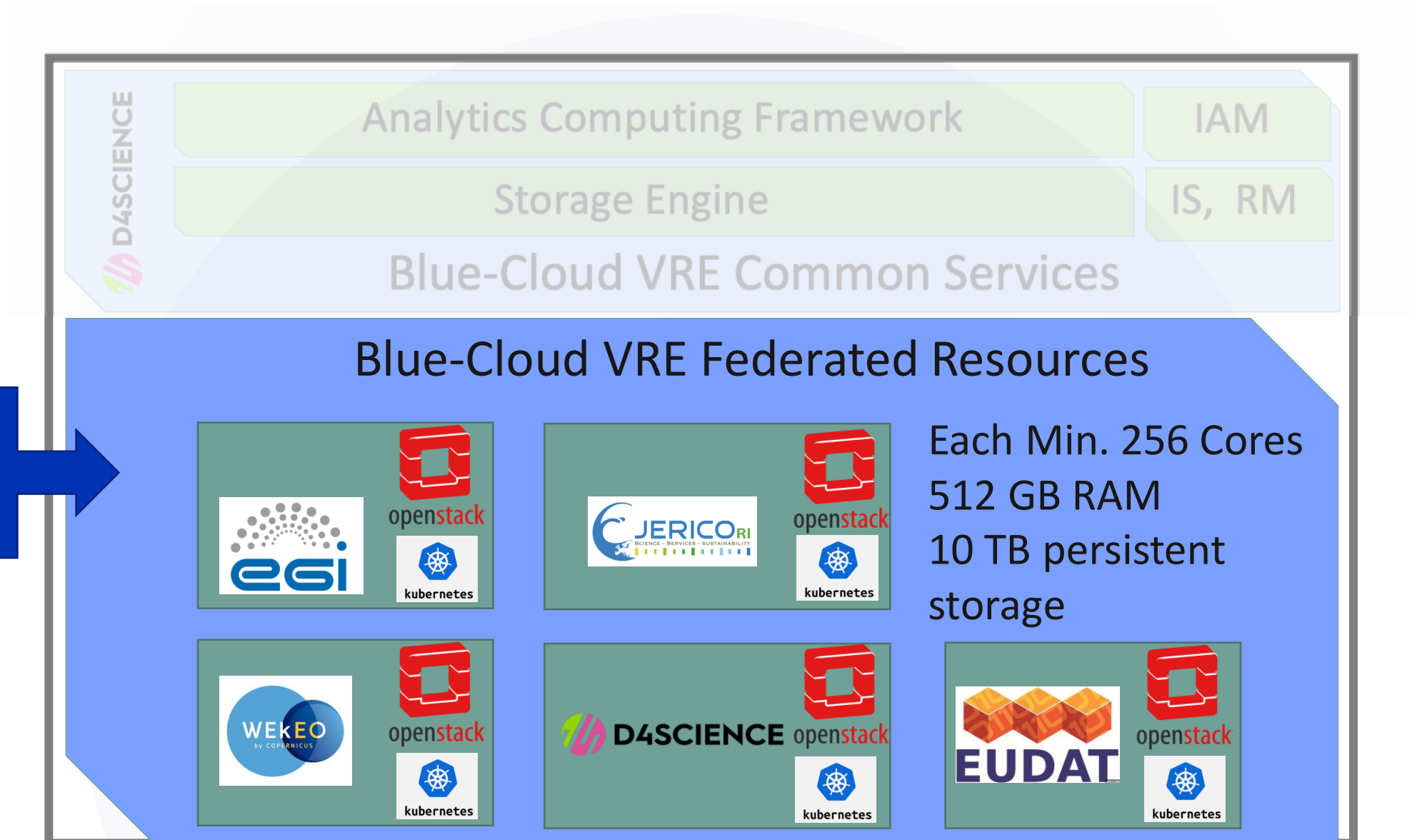
Lead CNR; Partners: EGI, Nubis, IFREMER, MARIS, MOI, CMCC, CINECA, SOCIB, UvA

Task  
5.2

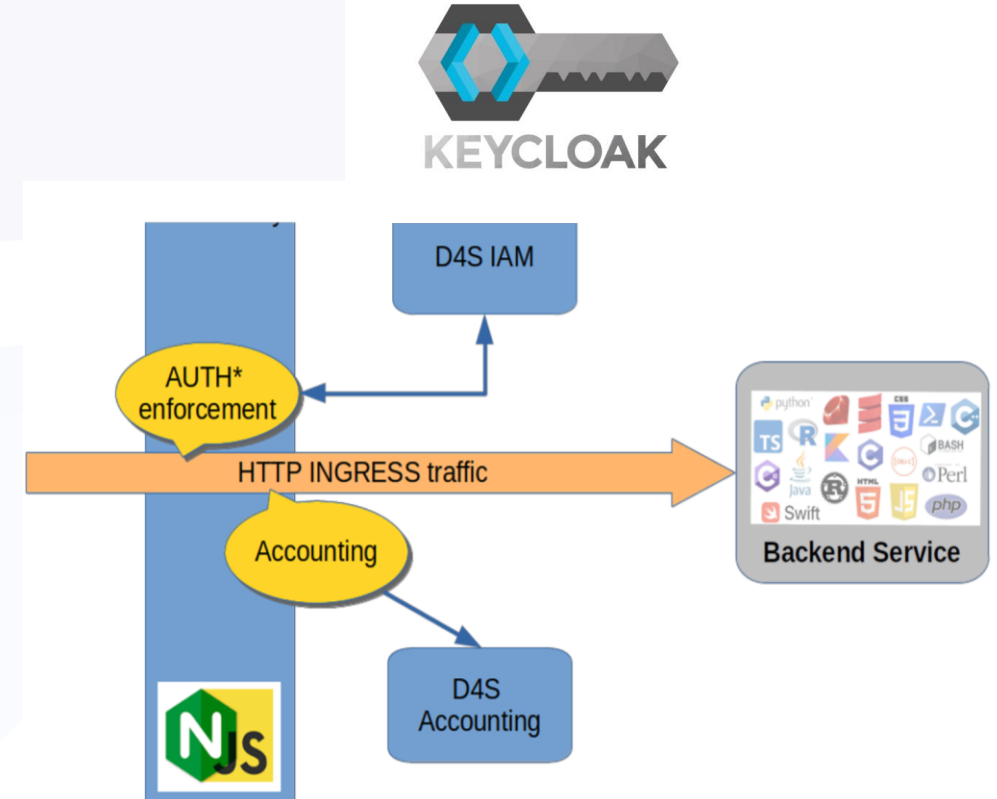


*Each site providing computing resources will be federated either by an OpenStack region or a Kubernetes cluster*

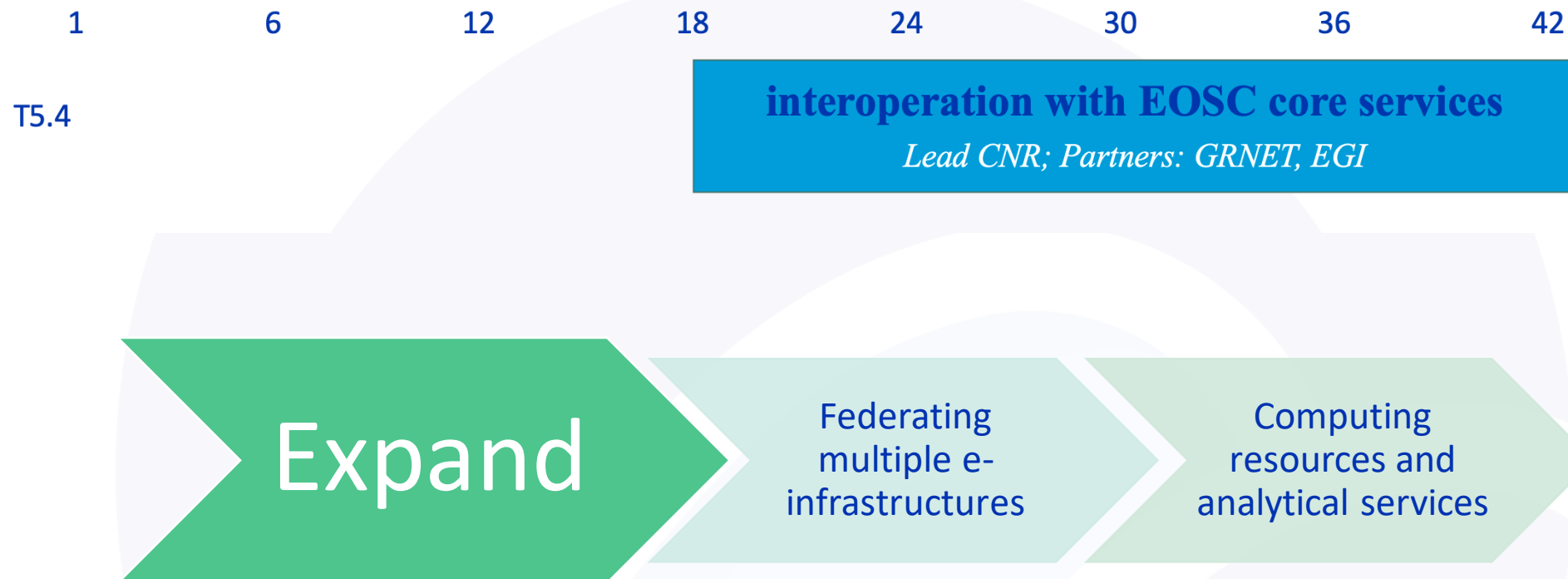




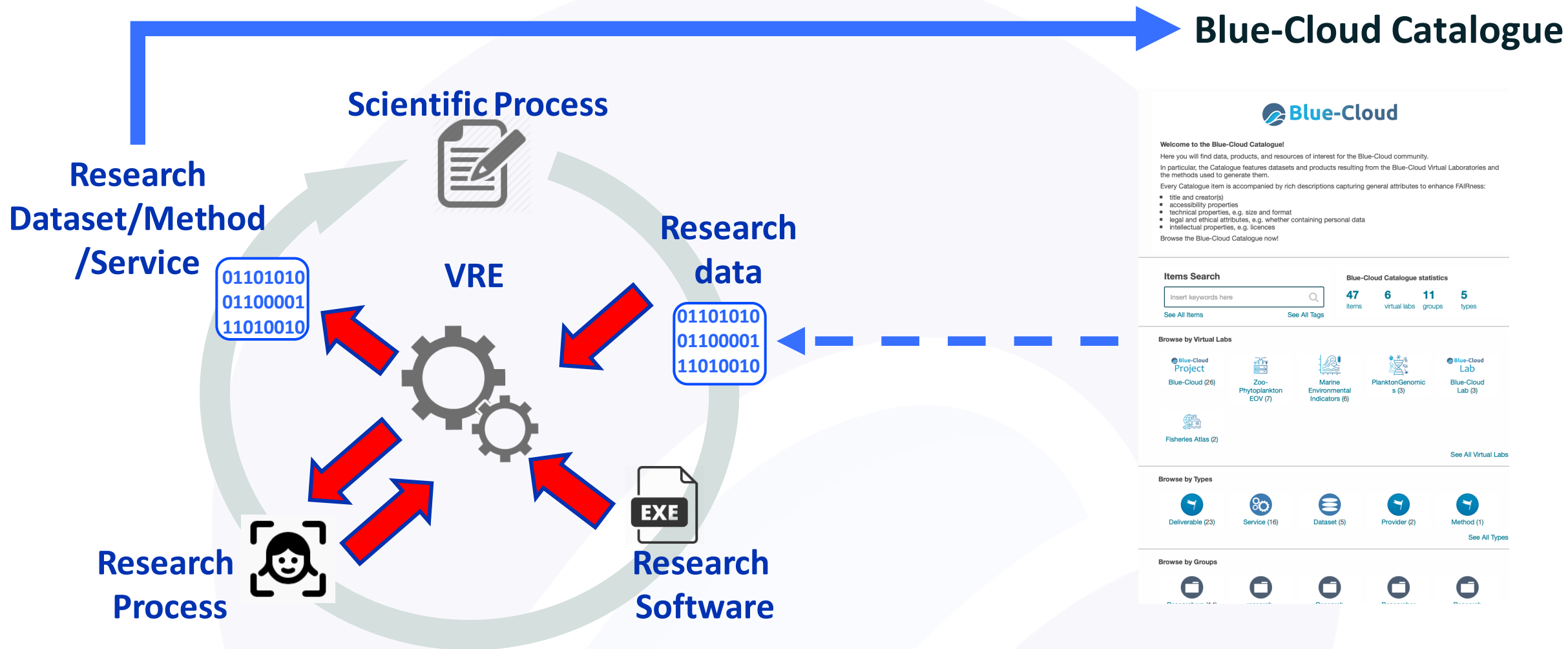
Third-party services operated in independent administrative OpenStack Regions will be linked and authorized through policy enforcement points (PEP) .



# Task 5.4 - Interoperation



## Prerequisite: Publishing in the Blue-Cloud Catalogue



Resembles a catalogue of artefacts  
with **search and browse**

Every published item in the catalogue  
is characterised by:  
a **type**, which highlights its features

an **open ended set of metadata**

optional **resource(s)** representing the  
actual payload of the item.

#### Blue-Cloud Catalogue statistics

**47**  
items

**6**  
virtual labs

**11**  
groups

**5**  
types

#### Browse by Virtual Labs



Blue-Cloud (26)



Zoo-Phytoplankton  
EOVI (7)



Marine  
Environmental  
Indicators (6)



PlanktonGenomics (3)



Blue-Cloud Lab (3)

[See All Virtual Labs](#)

#### Browse by Types



Deliverable (23)



Service (16)



Dataset (5)



Provider (2)



Method (1)

[See All Types](#)



*Organization*

*Title & Description*

*PURL*

*QR-Code*

*Tags*

*License*

*Resources (item payloads)*

*Metadata*

FAO aquatic species distribution map of *Chlamydoselachus anguineus*

Followers: 0

Follow

Food and Agriculture Organization of the United Nations

**FAO**

Achieving food security for all is at the heart of FAO's efforts – to make sure people have regular access to enough high-quality food to lead active, healthy lives. Our three... read more

Social

Google+

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Facebook

License

Creative Commons Attribution Share-Alike 4.0 [Open Data](#)

Product Groups

**FAO aquatic species distribution map of *Chlamydoselachus anguineus***

The main sources of information for the species distribution are the habitat description and geographic range contained in the published FAO Catalogues of Species (more details at <http://www.fao.org/fishery/fishfinder>). Terms used in the descriptive context of the FAO Catalogues were converted in standard depth, geographic and ecological regions and inserted into a Geographic Information System.

105831 11367 Chlamydoselachidae Chlamydoselachus an... FAO FIGIS

Fried shark HEXANCHIFORMES HXC Species distribution aquatic species dis... fao-species-map-hxc fisheries fishery

[http://www.fao.org/...](http://www.fao.org/)

**Data and Resources**

**SPECIES\_DIST\_HXC**  
FAO aquatic species distribution map of *Chlamydoselachus anguineus*  
Go to resource

**SPECIES\_DIST\_HXC**  
GIS data download (WFS - GML)  
Go to resource

**SPECIES\_DIST\_HXC**  
GIS data download (WFS - ESRI Shapefile)  
Go to resource

**XML**  
metadata (XML)  
Go to resource

**Unnamed resource**  
Aquatic Species Distribution Maps  
Go to resource

**Unnamed resource**  
Factsheet - Summary description  
Go to resource

**Unnamed resource**  
Aquatic Species Distribution Maps (GIS Viewer)  
Go to resource

**FAO - Fisheries and Aquaculture Department (FI)**  
Go to resource

**FAO - Fisheries and Aquaculture Department (FI)**  
Go to resource

**FAO - Fisheries and Aquaculture Department (FI)**  
Go to resource

**Additional Info**

Item URL

<http://data.d4science.org/ctlg/d4science.research-infrastructures.eu/sarda-sarda3>

QR Code

**Geonetwork Links**

Field	Value
GN_Metadata_Show	<a href="http://geonetwork.d4science.org/geonetwork/srv/en/metadata.show?uuid=b9bd0ef9-76f9-4fb9-8f98-1c36557bc5f8">http://geonetwork.d4science.org/geonetwork/srv/en/metadata.show?uuid=b9bd0ef9-76f9-4fb9-8f98-1c36557bc5f8</a>
GN_Metadata_Source	<a href="http://geonetwork.d4science.org/geonetwork/srv/en/xml.metadata.get?uuid=b9bd0ef9-76f9-4fb9-8f98-1c36557bc5f8">http://geonetwork.d4science.org/geonetwork/srv/en/xml.metadata.get?uuid=b9bd0ef9-76f9-4fb9-8f98-1c36557bc5f8</a>
GN_URL	<a href="http://geonetwork.d4science.org/geonetwork">http://geonetwork.d4science.org/geonetwork</a>

**Additional Info**

Field	Value				
access_constraints					
bbox-east-long	180.0				
bbox-north-lat	90.0				
bbox-south-lat	-90.0				
bbox-west-long	-180.0				
contact-email	info@i-marine.eu				
coupled-resource					
dataset-reference-date	<table> <thead> <tr> <th>type</th> <th>creation</th> </tr> </thead> <tbody> <tr> <td>value</td> <td>2013-04-12T01:13:51.731+02:00</td> </tr> </tbody> </table>	type	creation	value	2013-04-12T01:13:51.731+02:00
type	creation				
value	2013-04-12T01:13:51.731+02:00				
frequency-of-update	asNeeded				
graphic-preview-file					

Blue-Cloud services, regularly registered in the Blue-Cloud Catalogue, will also be made accessible through the EOSC marketplace.

**Welcome to the Blue-Cloud Catalogue!**

Here you will find data, products, and resources of interest for the Blue-Cloud community. In particular, the Catalogue features datasets and products resulting from the Blue-Cloud Virtual Laboratories and the methods used to generate them.

Every Catalogue item is accompanied by rich descriptions capturing general attributes to enhance FAIRness:

- title and creator(s)
- accessibility properties
- technical properties, e.g. size and format
- legal and ethical attributes, e.g. whether containing personal data
- intellectual properties, e.g. licences

Browse the Blue-Cloud Catalogue now!

**Items Search**

Insert keywords here

See All Items      See All Tags

**Blue-Cloud Catalogue statistics**

47 items    6 virtual labs    11 groups

**Browse by Virtual Labs**

- Blue-Cloud Project (26)
- Zoo-Phytoplankton EOVS (7)
- Marine Environmental Indicators (6)
- PlanktonGenomics (3)
- Blue-Cloud Lab (3)
- Fisheries Atlas (2)

See All Virtual Labs

**Browse by Types**

- Deliverable (23)
- Service (16)
- Dataset (5)
- Provider (2)
- Method (1)

See All Types

**Browse by Groups**

**EUROPEAN OPEN SCIENCE CLOUD**

Search in catalogs    All catalogs

Working on improving search engine. We test the best solutions, may also be associated with some problems. We are open to all suggestions. If you want to report any issues - [Contact Us](#)

**ALL CATALOGS**    PUBLICATIONS    DATA    SOFTWARE    SERVICES    DATA SOURCES    TRAININGS    OTHER

**Filters**

**Research step**

- ☐ Discover Research Outputs (288) [clear all](#)
- ☐ Access Training Material (0)
- ☐ Process and Analyse (0)
- ☐ Manage Research Data (0)
- ☐ Access Computing and Storage Resources (0)
- ☐ Digital service
- ☐ no (0)
- ☐ yes (0) [clear all](#)

**Type of product**

- ☐ publication (2) [clear all](#)
- ☐ software (10)
- ☐ dataset (9)
- ☐ other (0)
- ☐ service (0)
- ☐ training (0)
- ☐ data source (0)

**Access right** [clear all](#)

- ☐ Open access (25509)
- ☐ Closed (3118)
- ☐ Restricted (153)
- ☐ Embargo (33)
- ☐ Order required (0)
- ☐ Other (0)

**Scientific discipline** [clear all](#)

Search in scientific discip

28813 search results in All catalogs

[Clear all filters](#)    Scientific discipline: 01 natural sciences x

[Publication](#)    [Open Access](#)    [Not Specified](#)

**Rosemary beetle *Chrysolina americana*: A new invasive leaf beetle (Coleoptera: Chrysomelidae: Chrysomelinae) in Israel**

[Open access](#)    29 July 2016    Type: publication    108 Downloads    289 Views

**Author names:** Friedman Ariel-Leib-Leonid  
DOI: 10.5281/zenodo.59017

[Coleoptera](#)    [Chrysomelidae](#)    [leaf beetles](#)    [Israel](#)    [Middle East](#)    [pest](#)

This is the first record of *Chrysolina americana* from Israel and from the eastern Mediterranean south of Antalya, Turkey (37°N). *C. americana* (Figs 1, 3, 4) generally resembles the *Chrysolina coeruleans angelica* (Reiche & Saulcy, 1858) (Fig. 2), widel... [Show more](#)

[Publication](#)    [Open Access](#)    [Not Specified](#)

**Wavelength Conversion via Refractive Index Tuning of A Hexagonal Photonic Crystal Cavity**

[Open access](#)    20 April 2017    Type: publication    8 Downloads    21 Views

**Author names:** Md Abu Jubair  
DOI: 10.5281/zenodo.556269

[two-dimensional photonic crystal, hexagonal cavity, refractive index tuning, wavelength conversion](#)

Photonic crystals are consisting of a periodic dielectric medium that can affect the electromagnetic wave propagation by creating allowed and forbidden electronic energy bands. Bands of wavelengths which are not allowed are called photonic band gaps. An... [Show more](#)

[Publication](#)    [Open Access](#)    [Not Specified](#)

**Tracking Magnetic Variability From High-Resolution Unpolarised Spectra**

[Open access](#)    01 August 2016    Type: publication    98 Downloads    60 Views

**Suggested**

**Keio 3D K-OMEGA-SST**

[Software](#)  
[Open Access](#)  
[English](#)

**Author names:** Minh Doan Shinnosuke Ohi

**fireworks v1.1.9**

[Software](#)  
[Open Access](#)  
[Not Specified](#)

**Author names:** Anubhav Jain Shyue Ping Ong Xiaohu Qu Bharat Medasani jakirkham C Petretto Dan Gunter William Scullin Patrick Huck zulissi fxb lord Mathew Joseph Montoya Henrik Rusche Donny Winston  
DOI: 10.5281/zenodo.3354

**Keio 2D Spalart-Ailmaras**

[Software](#)  
[Open Access](#)  
[Not Specified](#)

**Author names:** Minh Doan Shinnosuke Ohi



## EOSC Blue Task Force (CNR, EGI, GRNET)

### Blue-Cloud integration with EOSC core services

Ensure the compliance of the Blue-Cloud technical framework with the EOSC principles for service mgmt.

Service Level Agreement (SLA)

Operation Level Agreement (OLA)

Incident and service request management

service availability and continuity management.

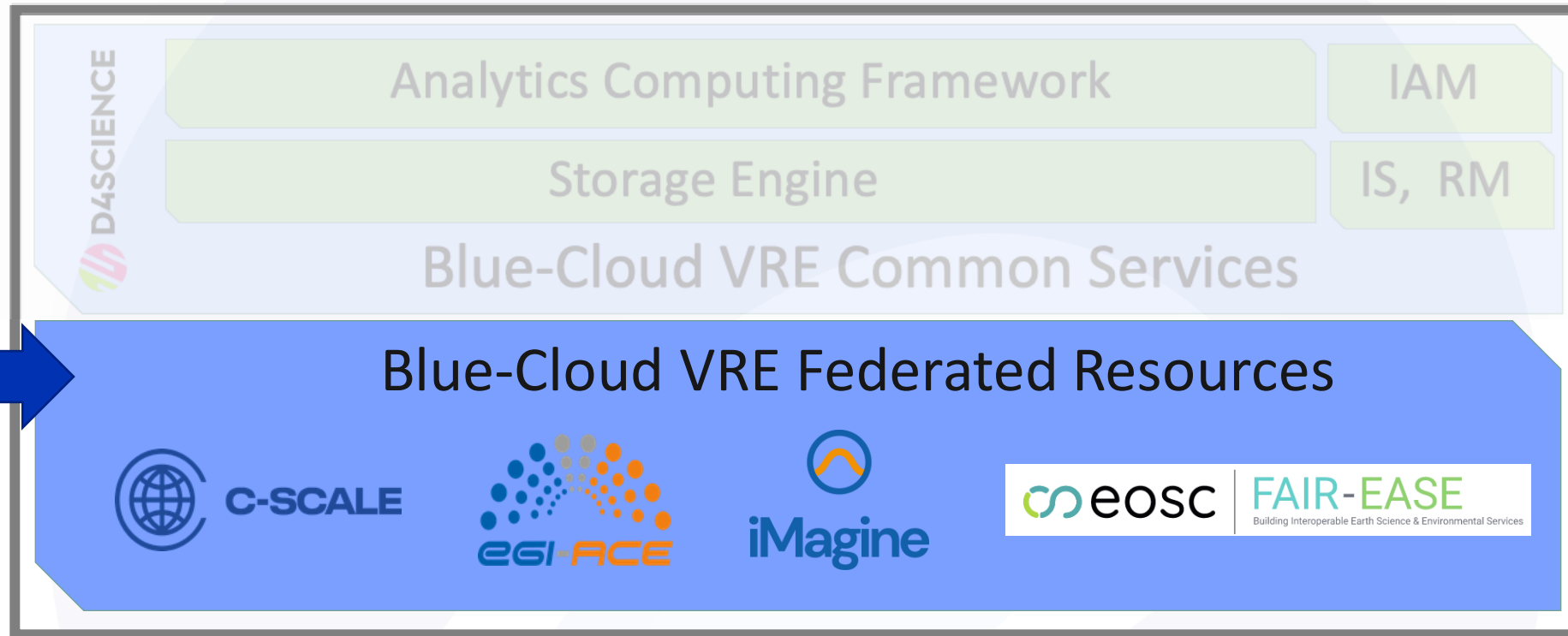
# Task 5.3 - Interaction with EOSC Projects



## TASK 5.2 Interaction with EOSC projects

Lead EGI; Partners: MARIS, CNR, CMCC

Task  
5.3



T5.3 will engage with funded H2020 and HE projects to perform technical integration and setup of SLAs



## EGI-ACE & C-SCALE

- Federated Compute platform (HTC, HPC, Cloud) with computing orchestrators and data management services
- C-SCALE focused on Earth Observation
- **Both projects end in June 2023!**

## iMAGINE

- Portfolio of 'free at the point of use' image datasets and AI-based high-performance image analysis tools

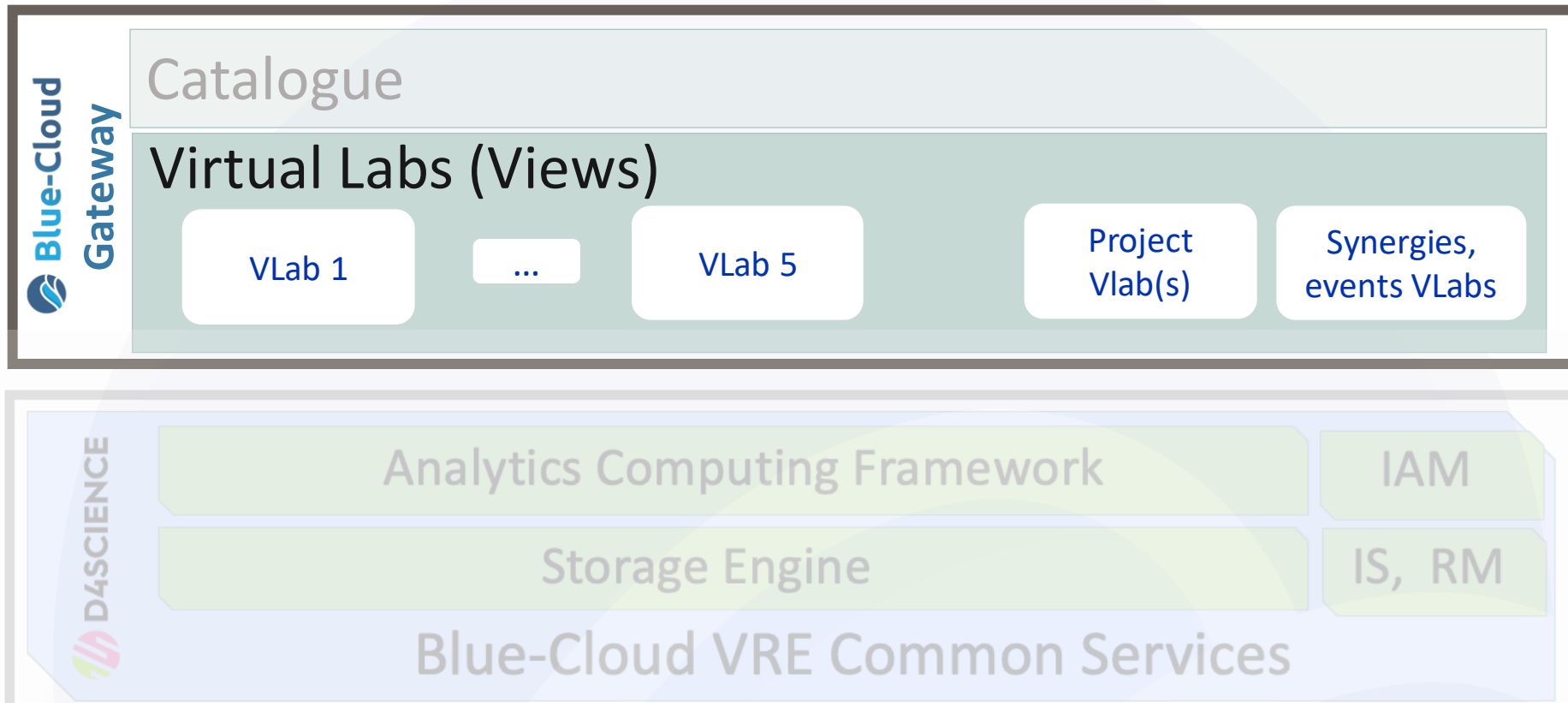
## FAIR-EASE

- Distributed and integrated services for the observation and modelling of the Earth system, environment and biodiversity.
- Based on existing Blue-Cloud developments









# VLab tools

Highly Configurable  
Jupyter Notebook env.

Rstudio Version 4+ env.

Shiny Apps (R and  
Python?)

Custom Service/Apps



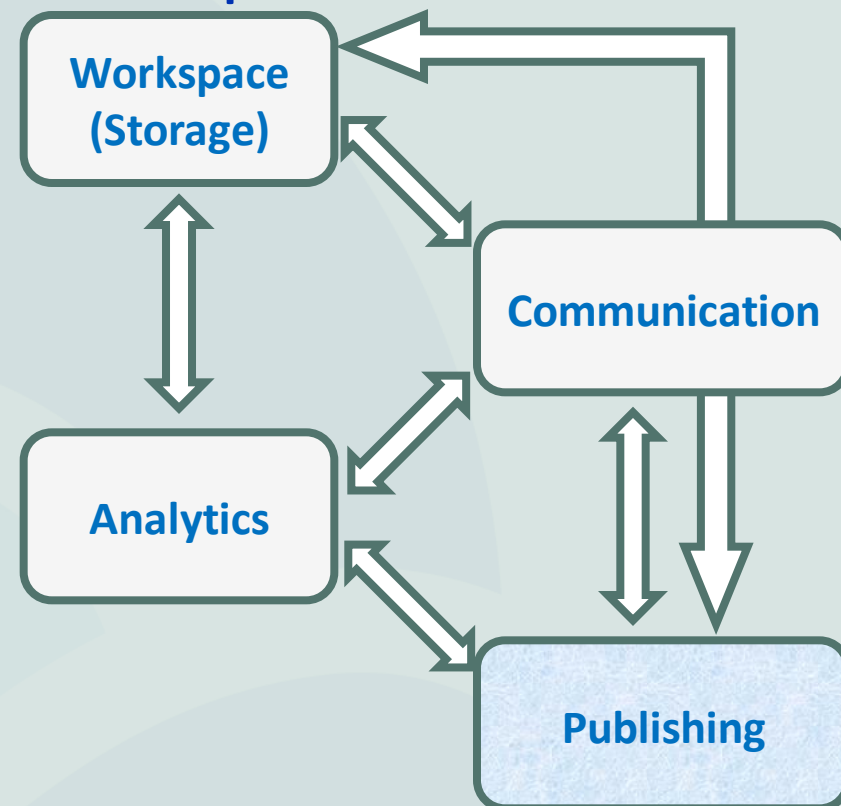
## VRE Core Services for Open Science

Workspace  
(Storage)

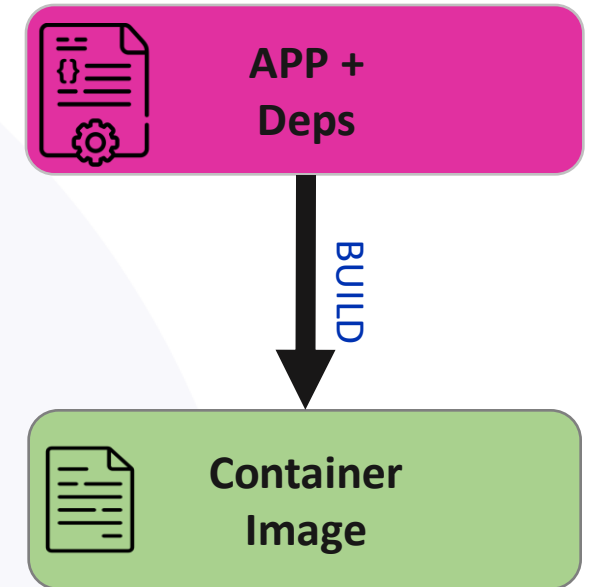
Communication

Analytics

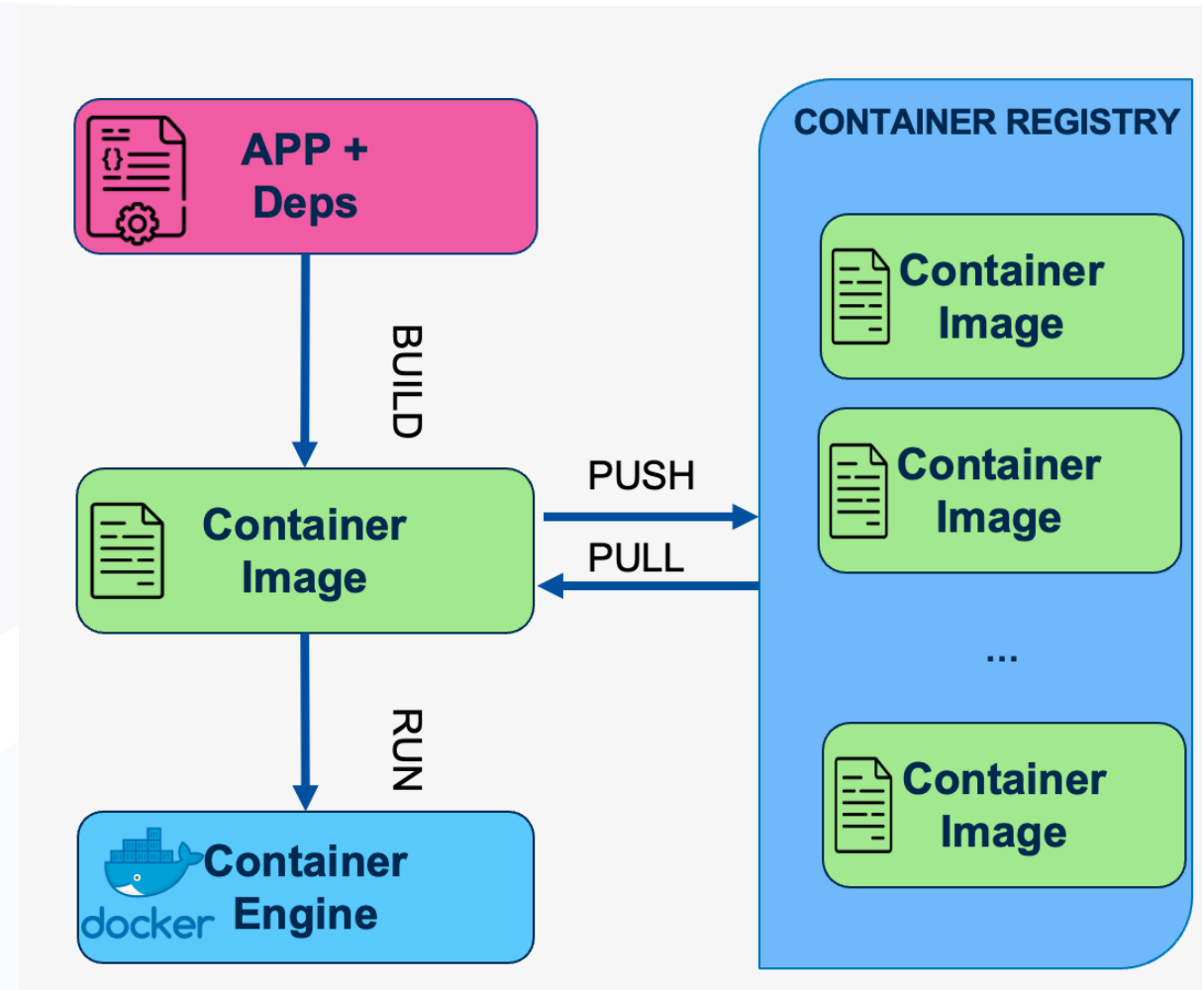
Publishing



- Containerized applications are applications that run in isolated runtime environments called *containers*
- *containers* encapsulate an application with all its dependencies, including system libraries, binaries, and configuration files.
- Container images include (in a file) everything a container needs to run—the container engine such as Docker

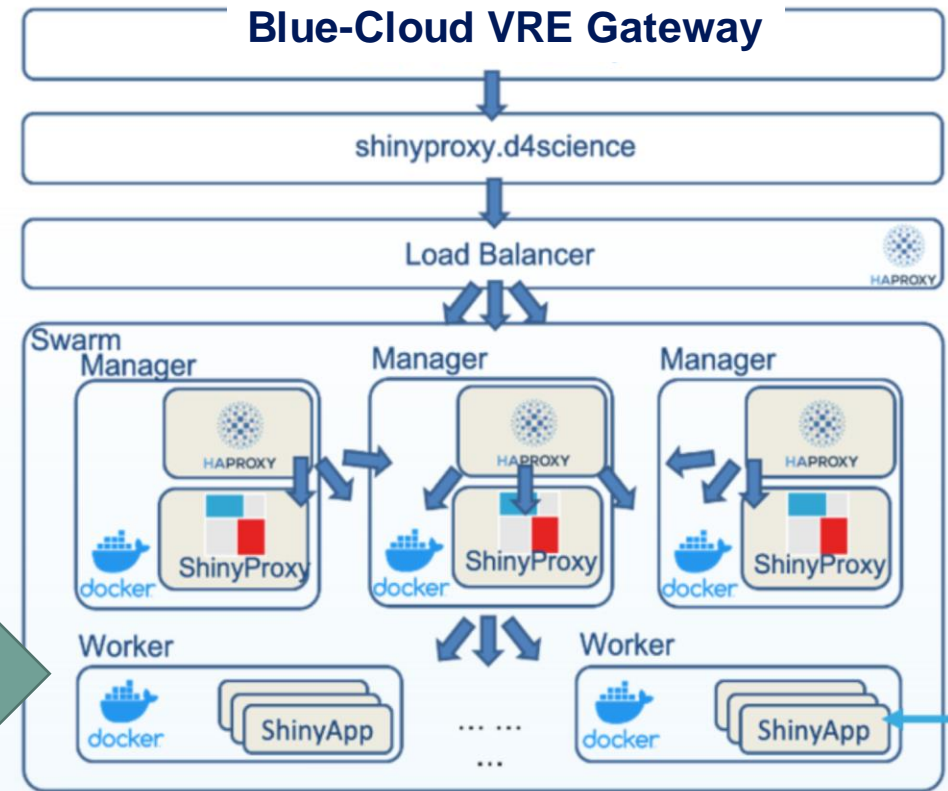
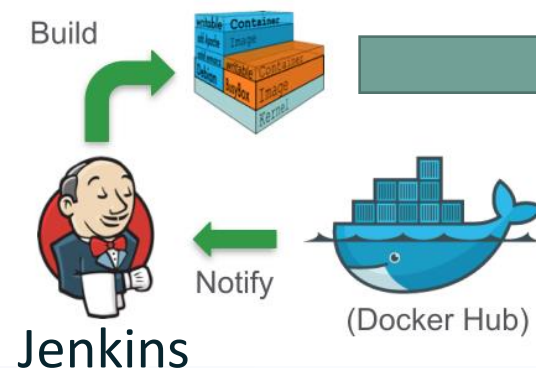


- Container images can be shared with others via a public or private container registry
- Blue-Cloud uses Docker hub\* as Registry



## Automated Deployment processes

- It can be a public app available in Docker Hub or any other public container registry.
- The image name and the run command are the only requirements.



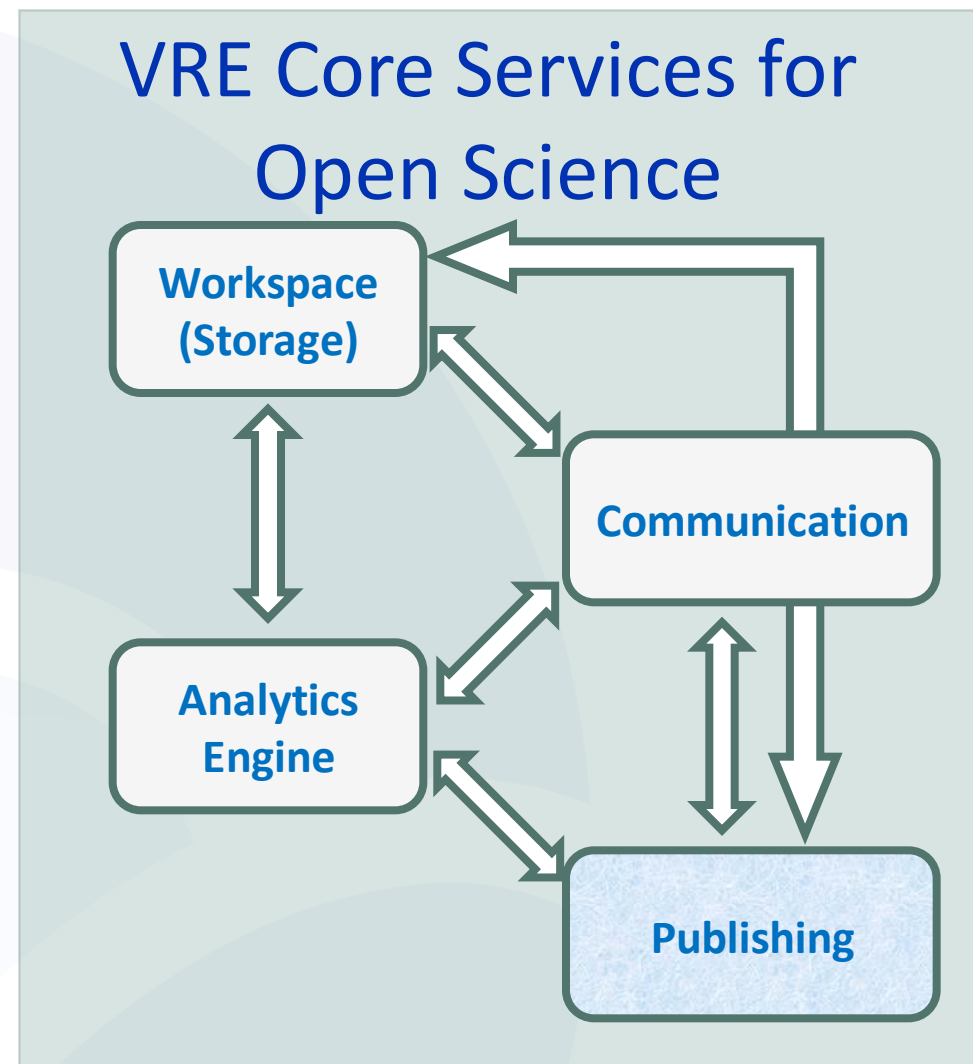
To delegate to Blue-Cloud VRE not only the hosting

- Authentication & Authorization
- User Roles Mgmt.
- Auditing / Accounting
- Metrics / Monitoring



Learning how to integrate  
your Service/App and exploit  
the VRE Core Services in VLabs

Dedicated  
Workshop /  
Training Academy  
course?





# THANK YOU

eosc | Blue-Cloud2026



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