



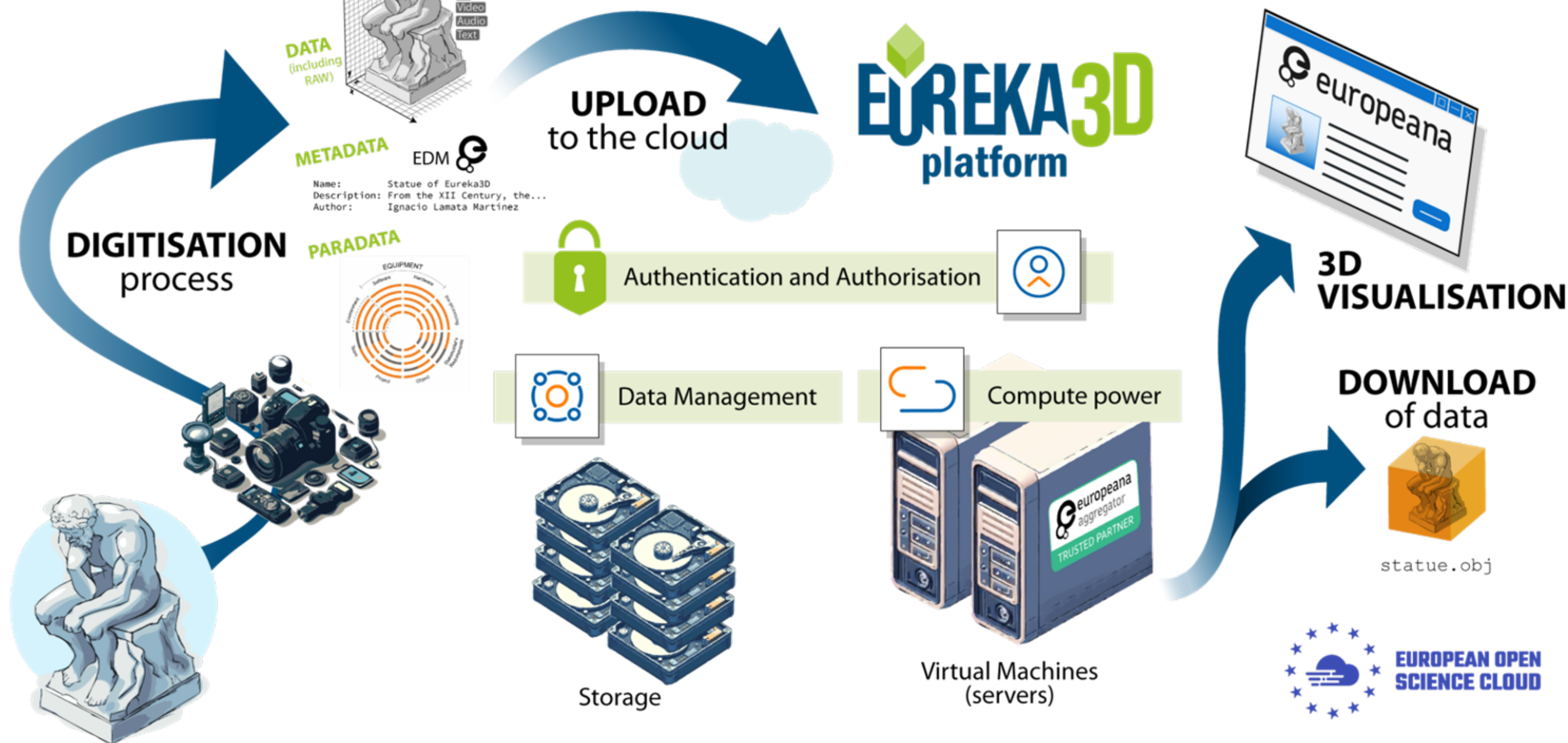
# EUreka3D Data Hub: features and workflow

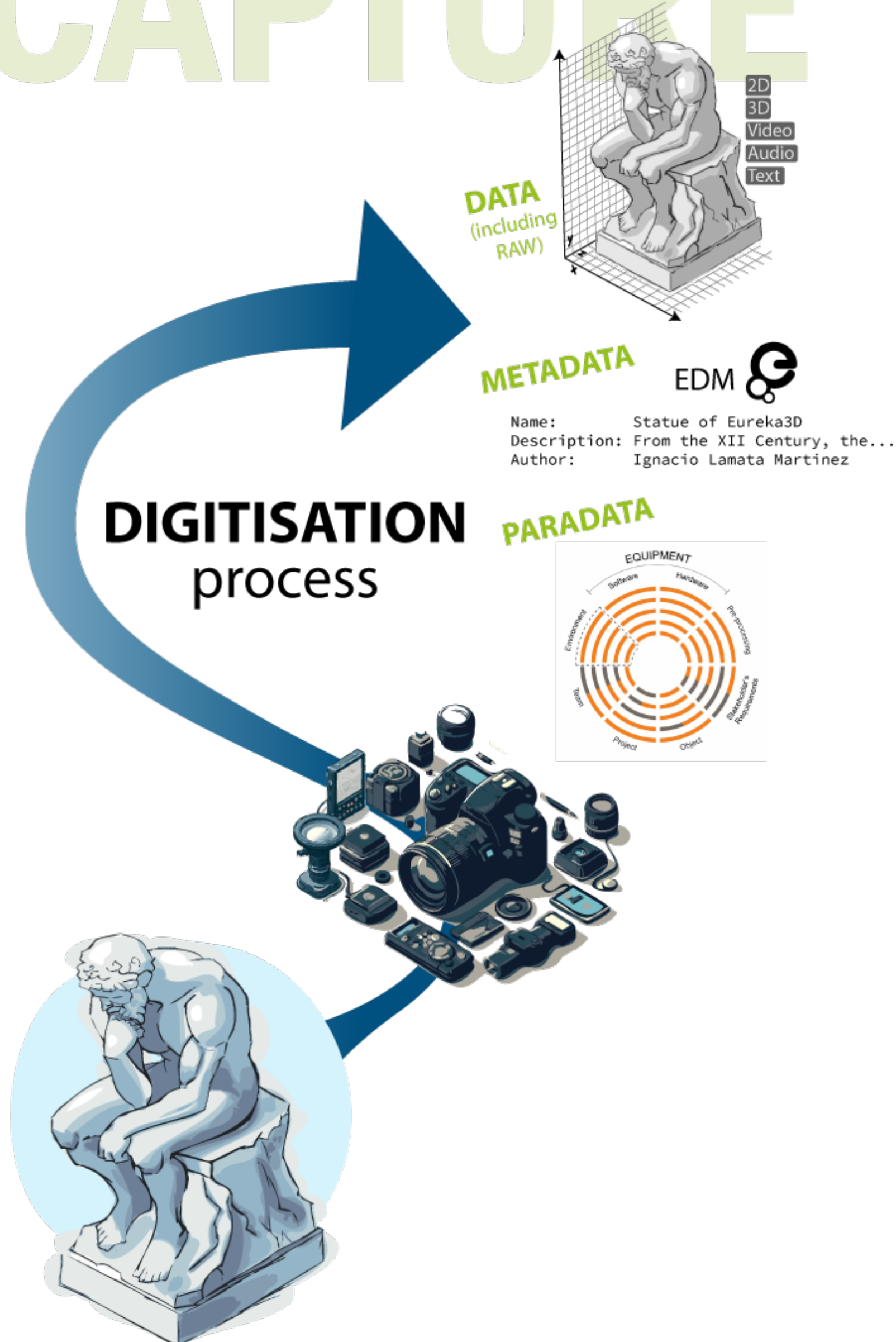
Ignacio Lamata Martinez (EGI)  
Michał Orzechowski (Cyfronet)  
Marinos Ioannides (CUT)

15th December 2023  
Project meeting in Brussels

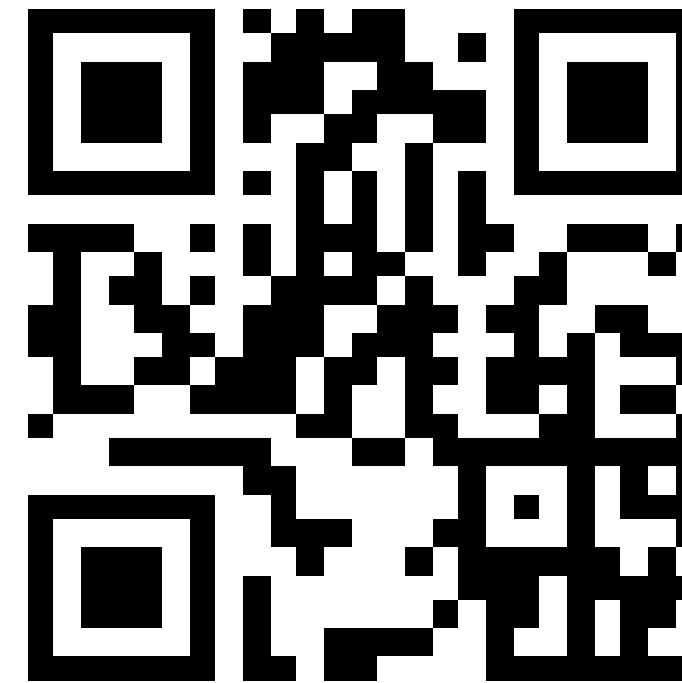
TLP: GREEN Limited disclosure

## CAPTURE CLOUD DELIVERY





- Based on the [VIGIE Study](#)



# MemoryTwin

# 3DforCultural

# Knowledge

- **Outcome:**

- **Data** (2D, 3D, Video, Audio, Text). Including raw data
- **Metadata.** Information about the **model**. For integration, [EDM](#) will be used.
- **Paradata.** Information about the **process**. No existing standard (considered an RDF-based solution).

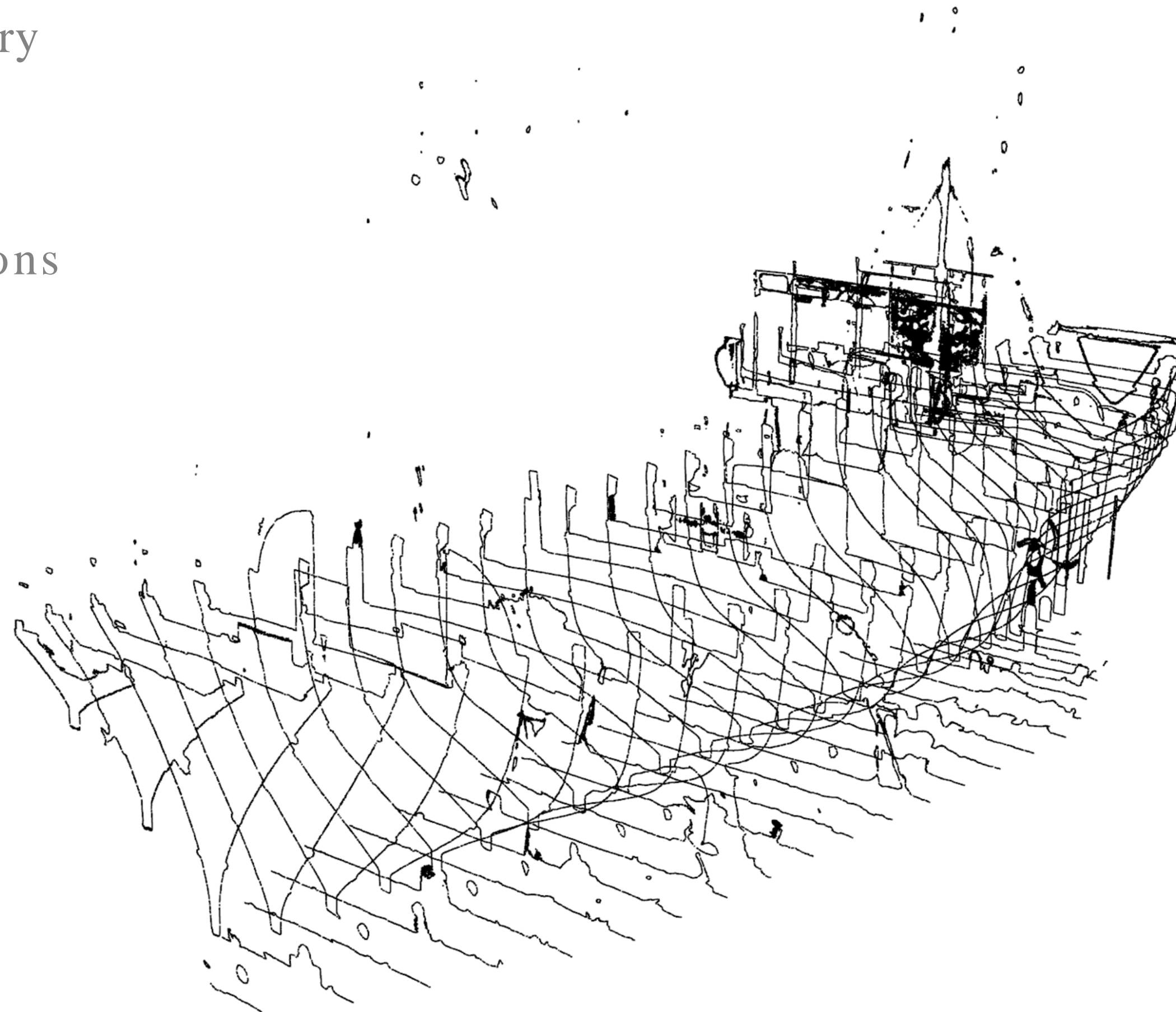
- **Digitisation of the “Lambousa Fishing Vessel”**

- From Point Cloud Data to 3D Geometry
  - Point Cloud from UAV Photogrammetry
  - Vertical Sections to the point cloud
  - NURBS curves from point cloud sections
  - Free form surfaces from curves
  - Final 3D Geometry



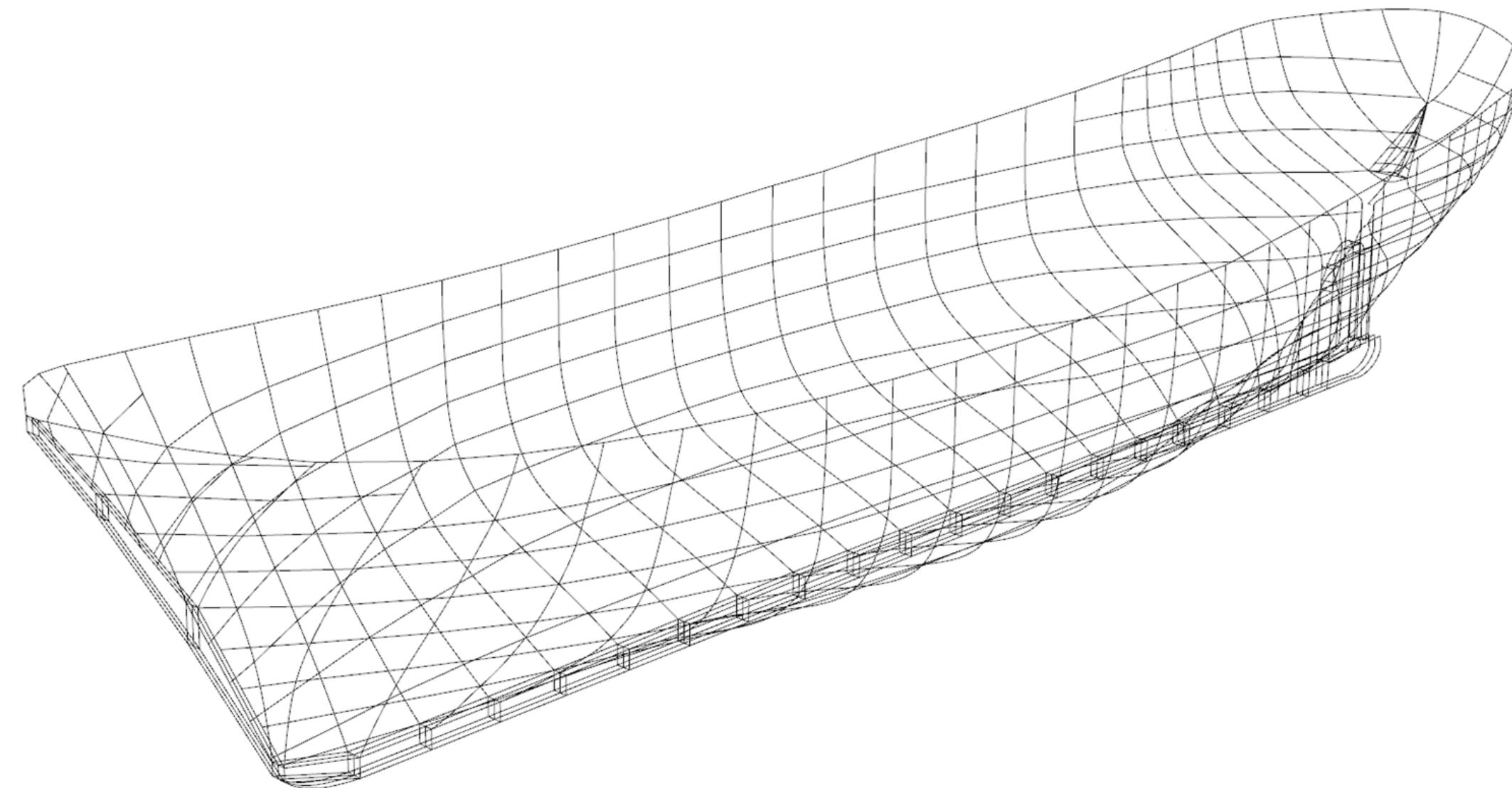
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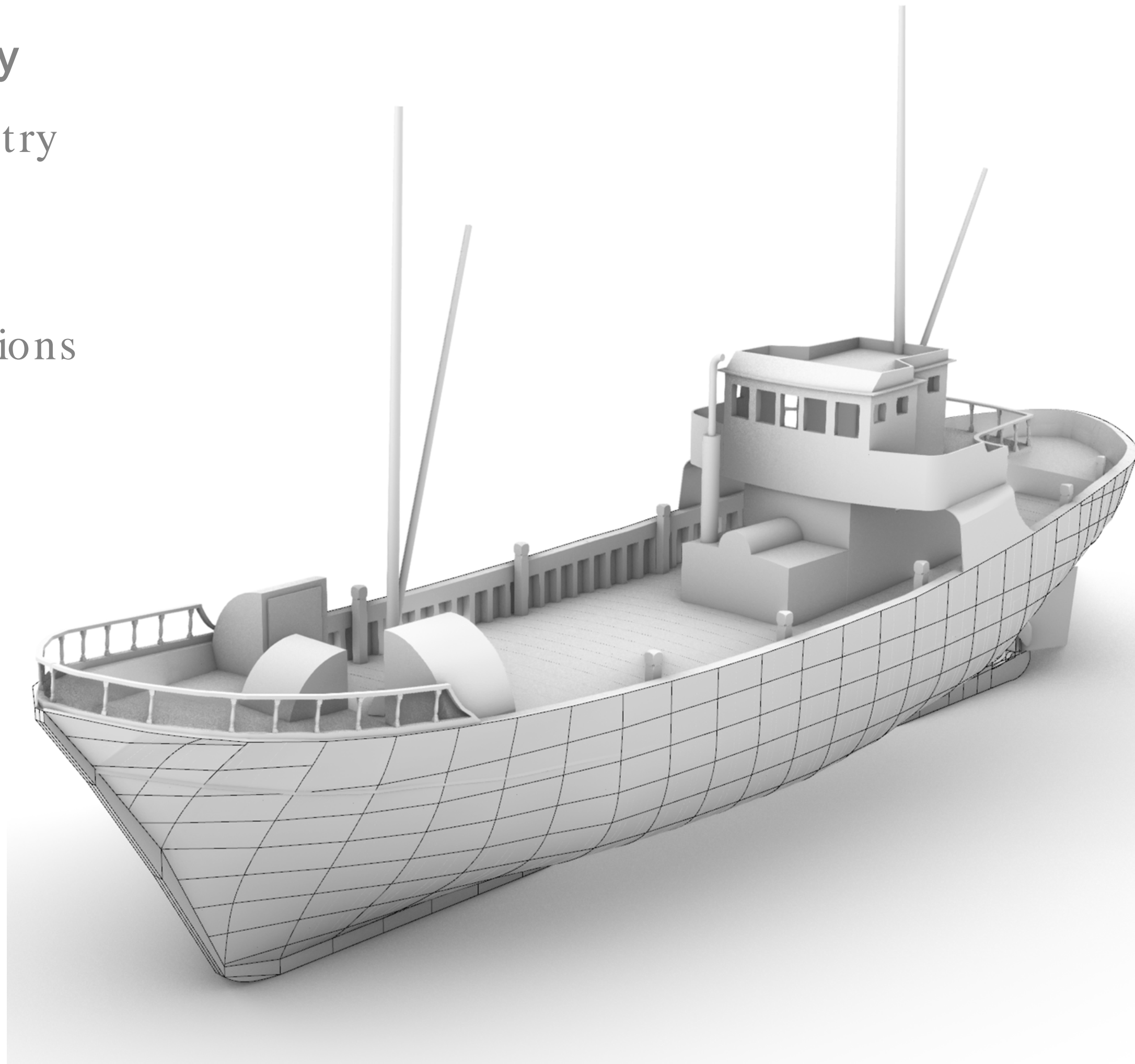
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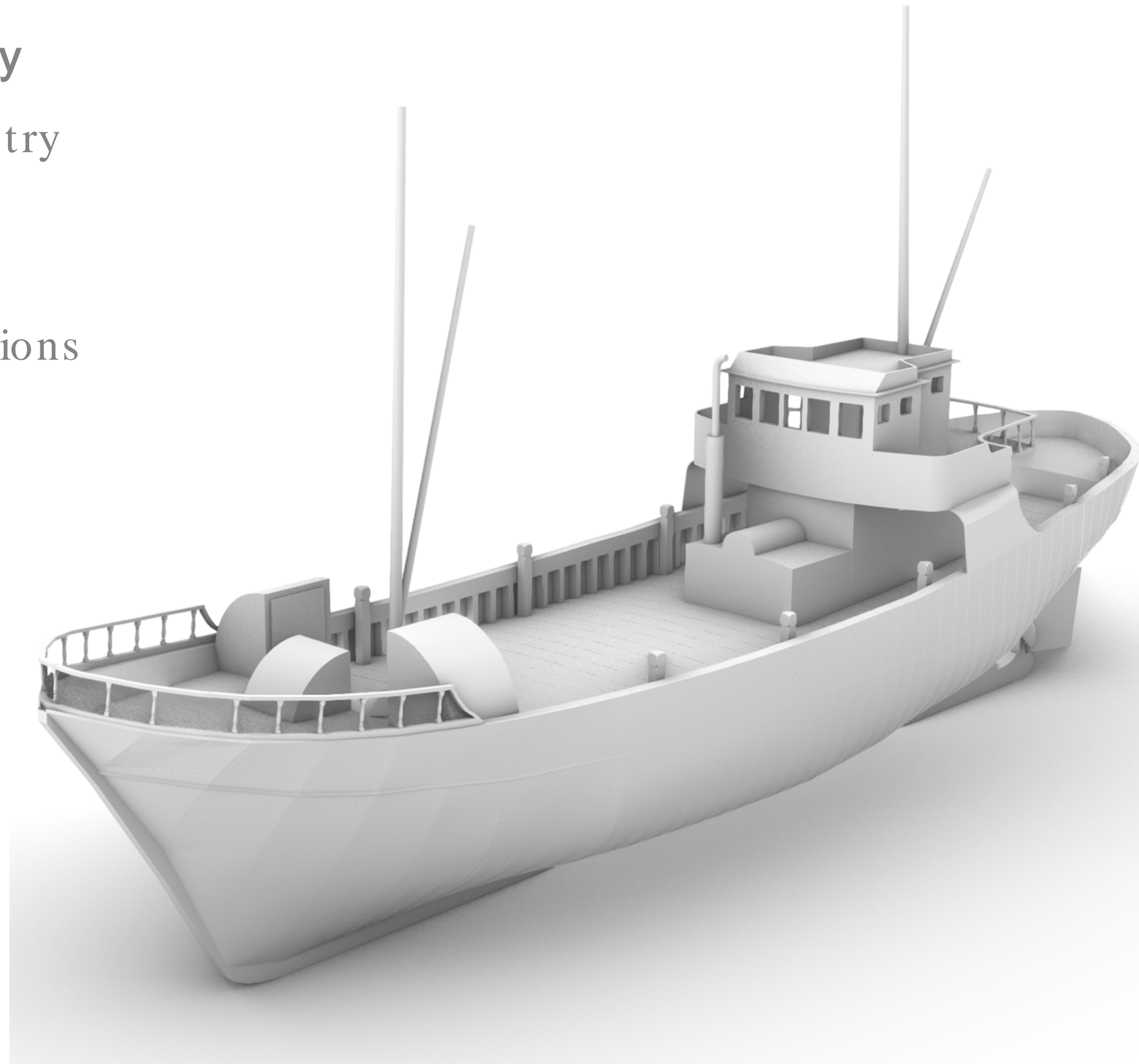
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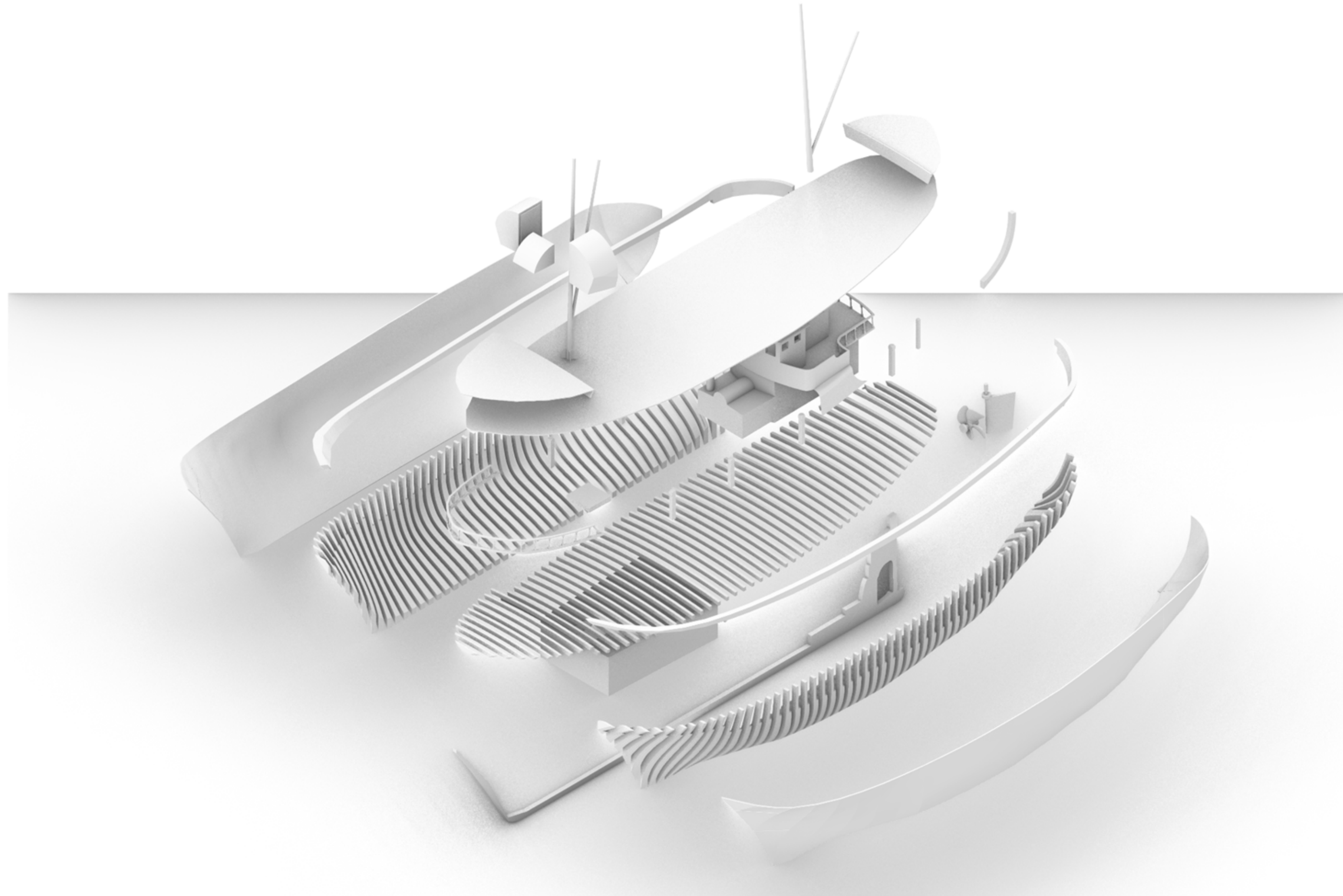


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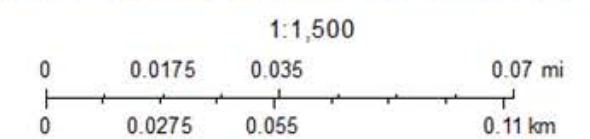
- **Digitisation of the “Fikardou Village” in Cyprus**

- From Point Cloud Data to 3D Geometry
  - Aerial photo of the village
  - Point cloud data from UAV and TLS
  - HBIM Model



December 13, 2023

Layers



- **Digitisation of the Fikardou Traditional Village**

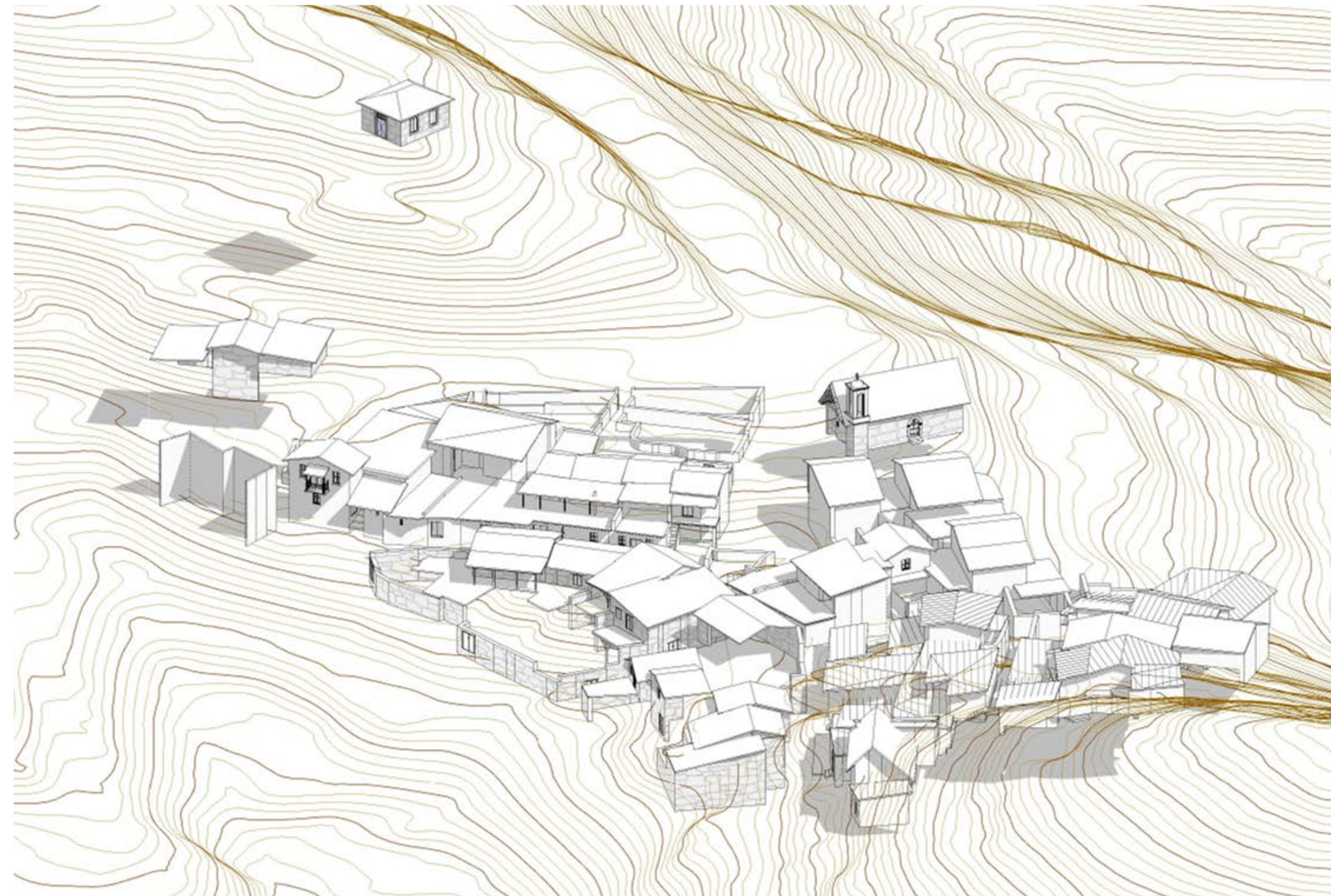
- From Point Cloud Data to 3D Geometry
  - Aerial photo of the village
  - Point cloud data from UAV and TLS survey
  - HBIM Model



- **Digitisation of the Fikardou Traditional Village**

- From Point Cloud Data to 3D Geometry
  - Aerial photo of the village
  - Point cloud data from UAV and TLS
  - HBIM Model

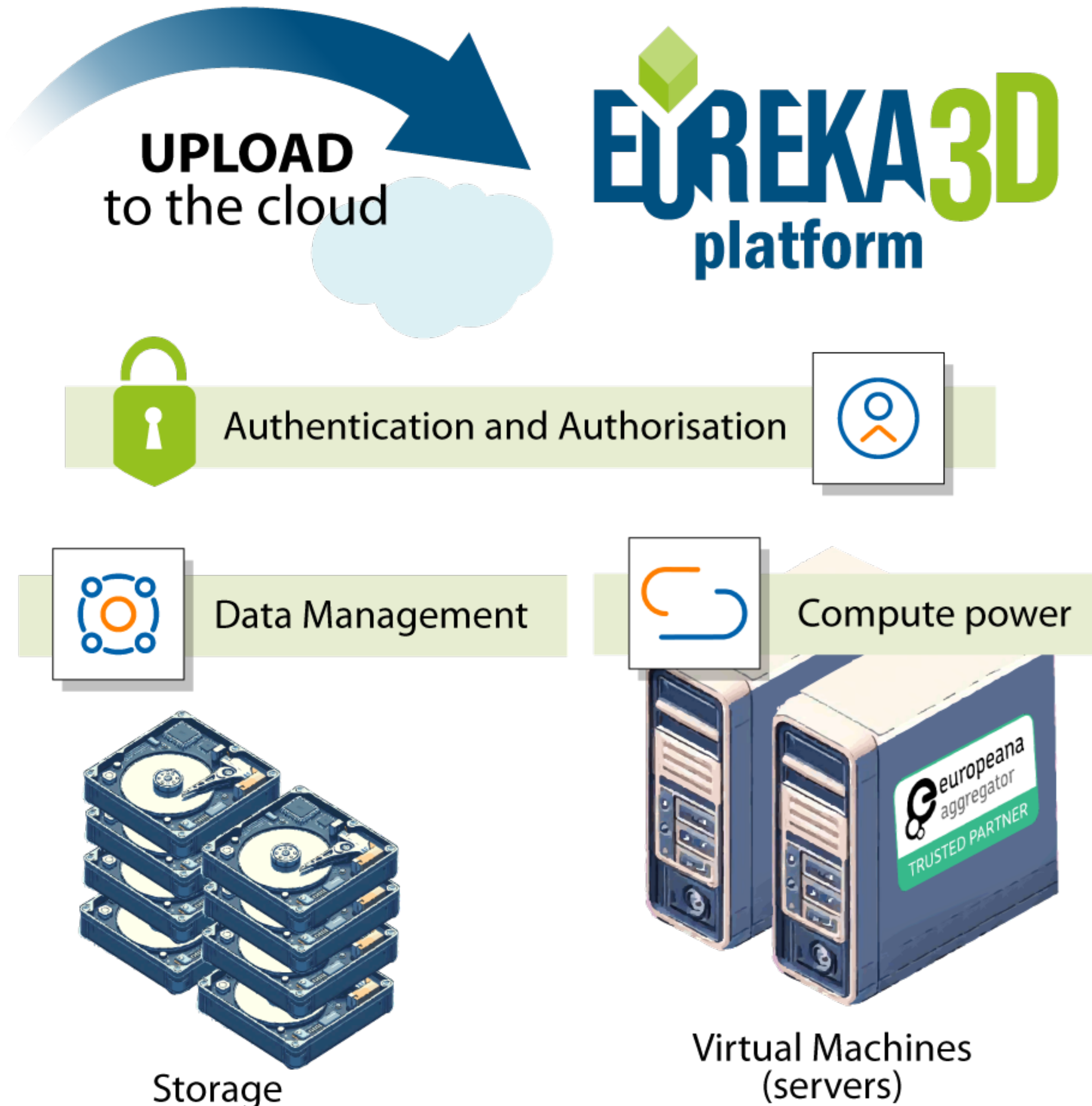
<https://www.efikardou.eu/>



```

<?xml version="1.0" encoding="UTF-8" ?>
<rdf:RDF
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
  ...
  <edm:ProvidedCHO rdf:about="http://hdl.handle.net/21.T15999/X0Zxan4">
    <dc:contributor xml:lang="en">L. M., Ignacio</dc:contributor>
    <dc:creator xml:lang="en">EGI</dc:creator>
    <dc:date>2023</dc:date>
    <dc:description xml:lang="en">Example of EUreka3D logo</dc:description>
    <dc:format>Photography</dc:format>
    <dc:rights>Public Domain</dc:rights>
  </edm:ProvidedCHO>
  <ore:Aggregation rdf:about="http://hdl.handle.net/21.T15999/X0Zxan4">
    <edm:dataProvider>EGI Federation</edm:dataProvider>
    <edm:isShownBy rdf:resource="https://eureka3d.vm.fedcloud.eu/test.html"/>
    ...
    <edm:provider>EGI Foundation</edm:provider>
    <edm:rights rdf:resource="http://creativecommons.org/publicdomain/mark/1.0/" />
  </ore:Aggregation>
</rdf:RDF>

```



- **Authentication and Authorisation** → Check-in
- **Data Management** → DataHub
- **Compute power** → Cloud Compute + Infrastructure Manager



- Check-in is an **Identity** and **Access** Management System
- Deals with **Authentication** and **Authorisation**.
  - Authentication through home organisation (typically, a research institute participating in eduGAIN), academic accounts (e.g. ORCID), social accounts (e.g. GitHub, Google, LinkedIn, etc) and others.
  - Communities organised in **Virtual Organisations** (VO).
- Assists with **GDPR** compliance.
- Registered member of the **EOSC** AAI Federation

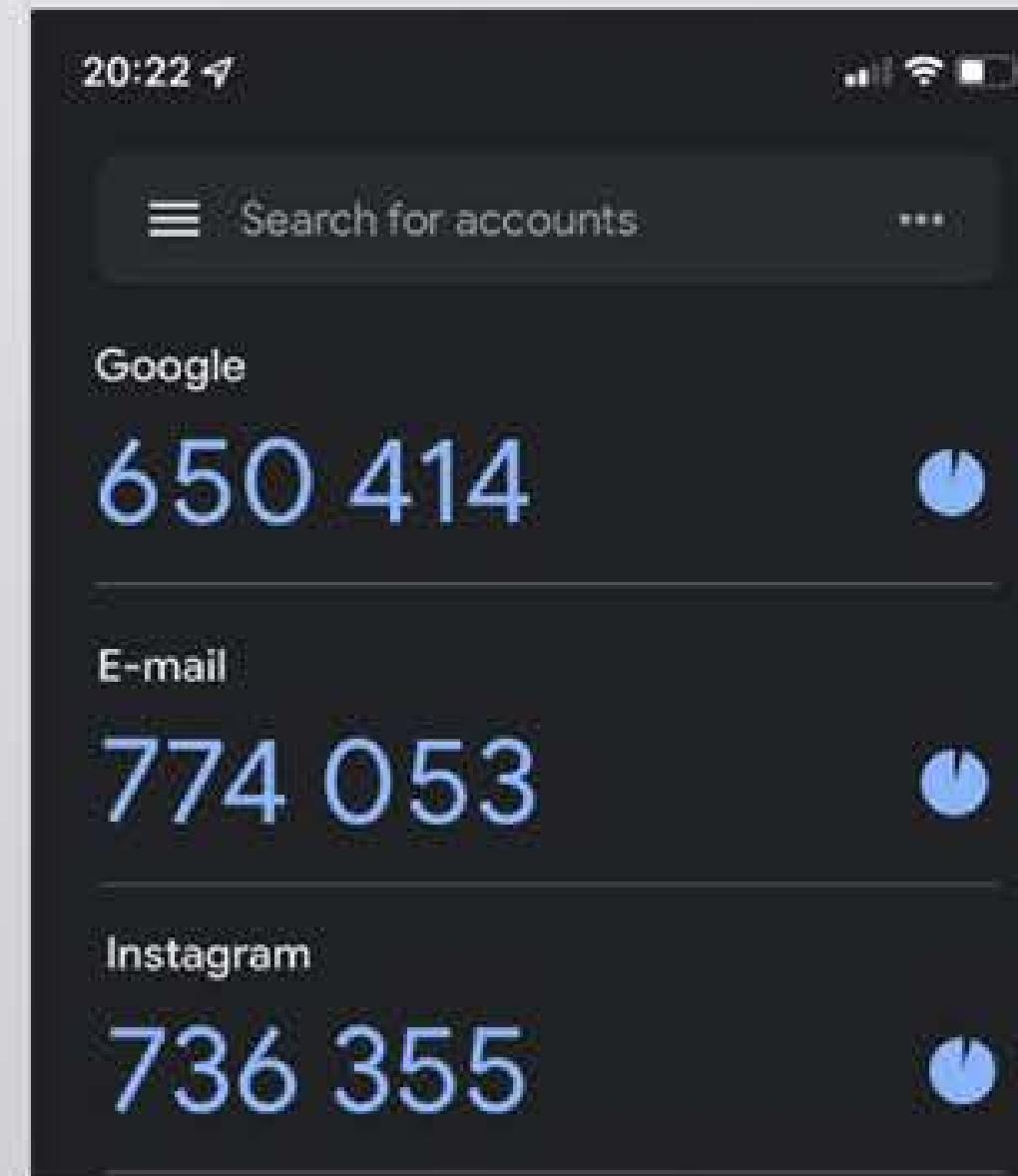
# Authentication

WHO you are

---


**Proof:**

Tg1#YU6k9D-PoqU





# University of Oxford

 Single Sign-On

Sign in

[Can't access your account?](#)


[Next](#)

Your username should be entered in the form 'abcd1234@OX.AC.UK'

[Reset your Single Sign-On password](#)

[Activate a new account](#) using an activation code

[University of Oxford Computer Usage Rules](#)

 [Sign-in options](#)

# Other examples

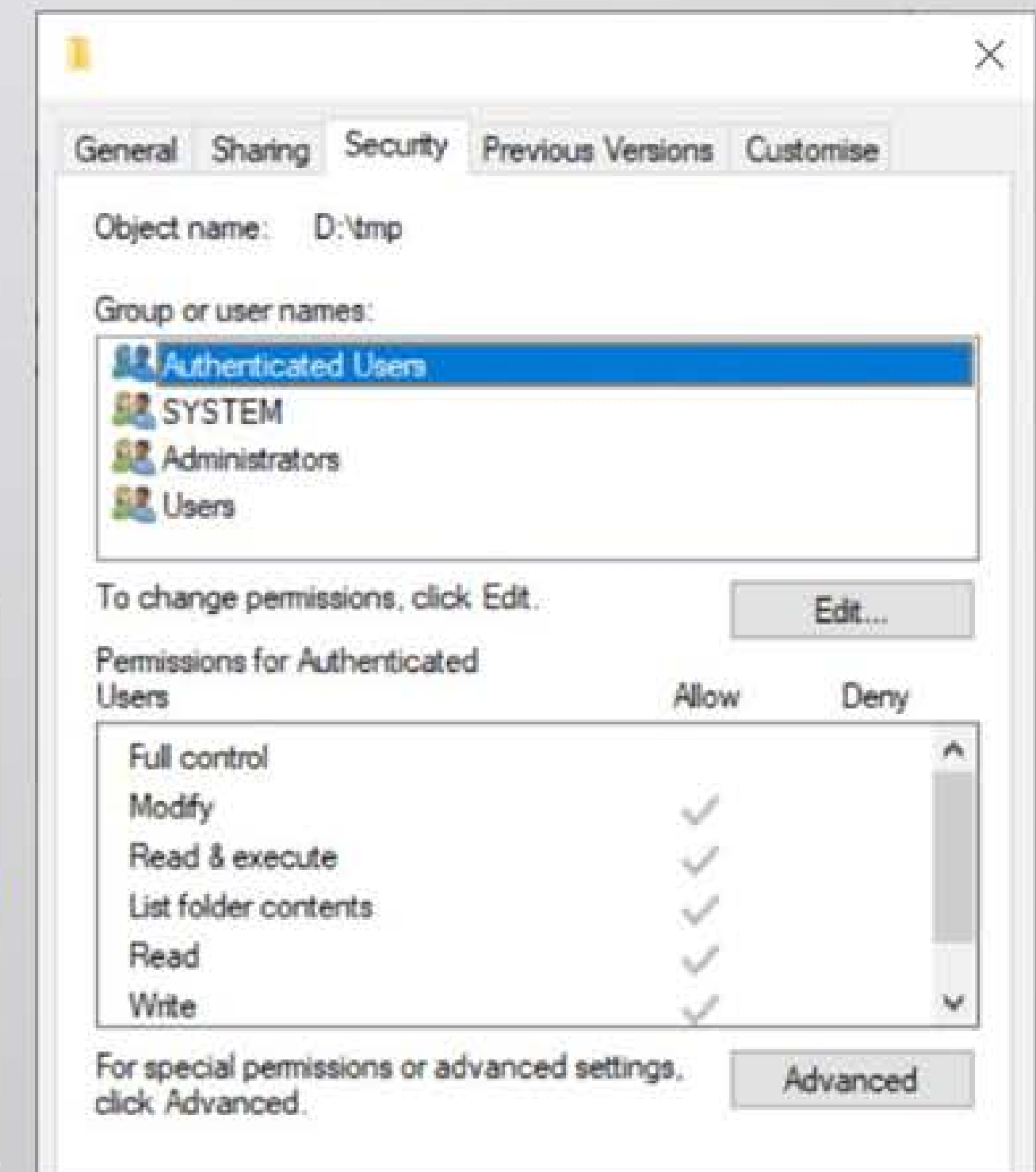


# Authorisation

## WHAT you can do in the system

### Attributes, roles...

```
drwxr-xr-x 1 0 Feb 17 17:41 bcastdvr/  
-rwxr-xr-x 2 81408 Sep 15 2021 bfsvc.exe*  
drwxr-xr-x 1 0 Dec 7 2019 BitLockerDiscovery/  
drwxr-xr-x 1 0 Dec 7 2019 Boot/  
-rw-r--r-- 1 67584 Feb 23 10:02 bootstat.dat
```



# Virtual Organisation (VO)

A **community** with common research interests

=

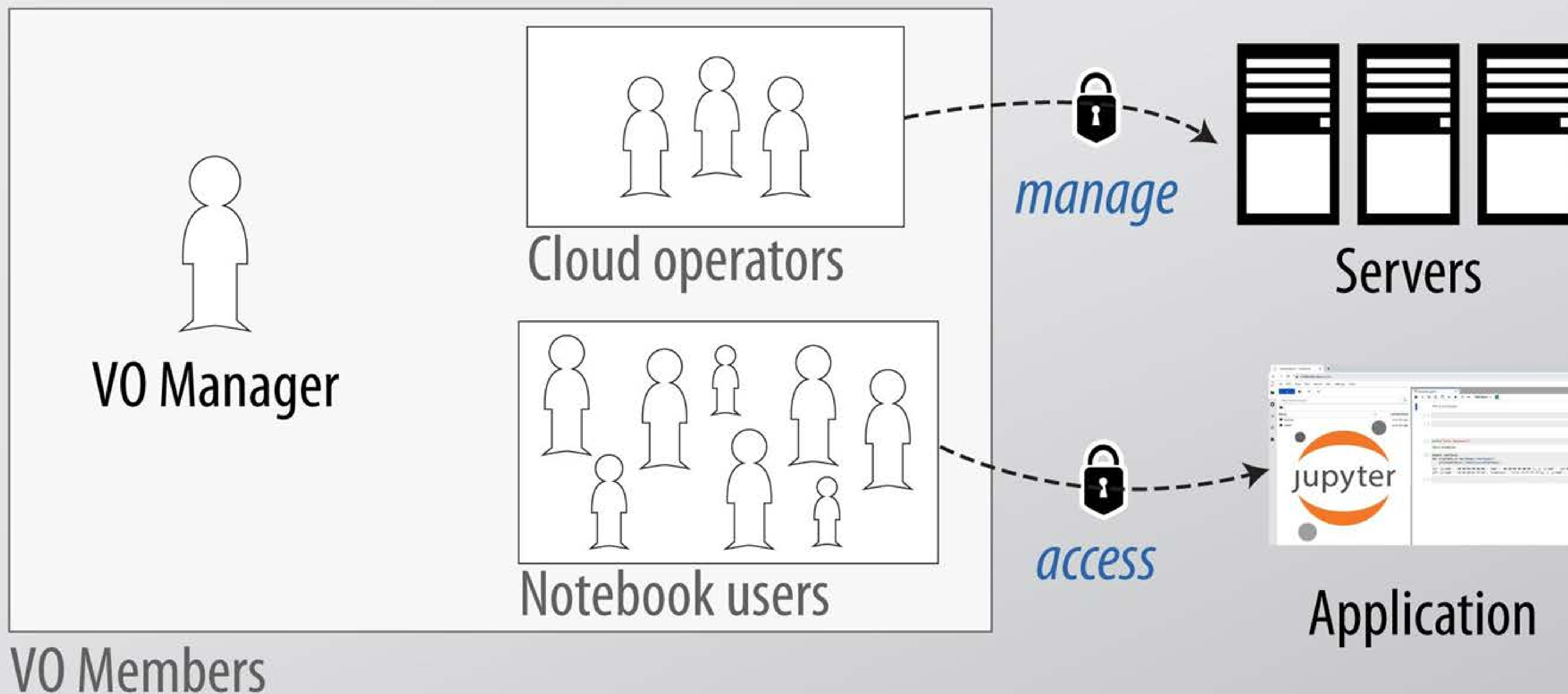
A **group** of users

=

The **mechanism to grant access** to resources  
and **organise users**

# Virtual Organisation (VO)

## Organised autonomously



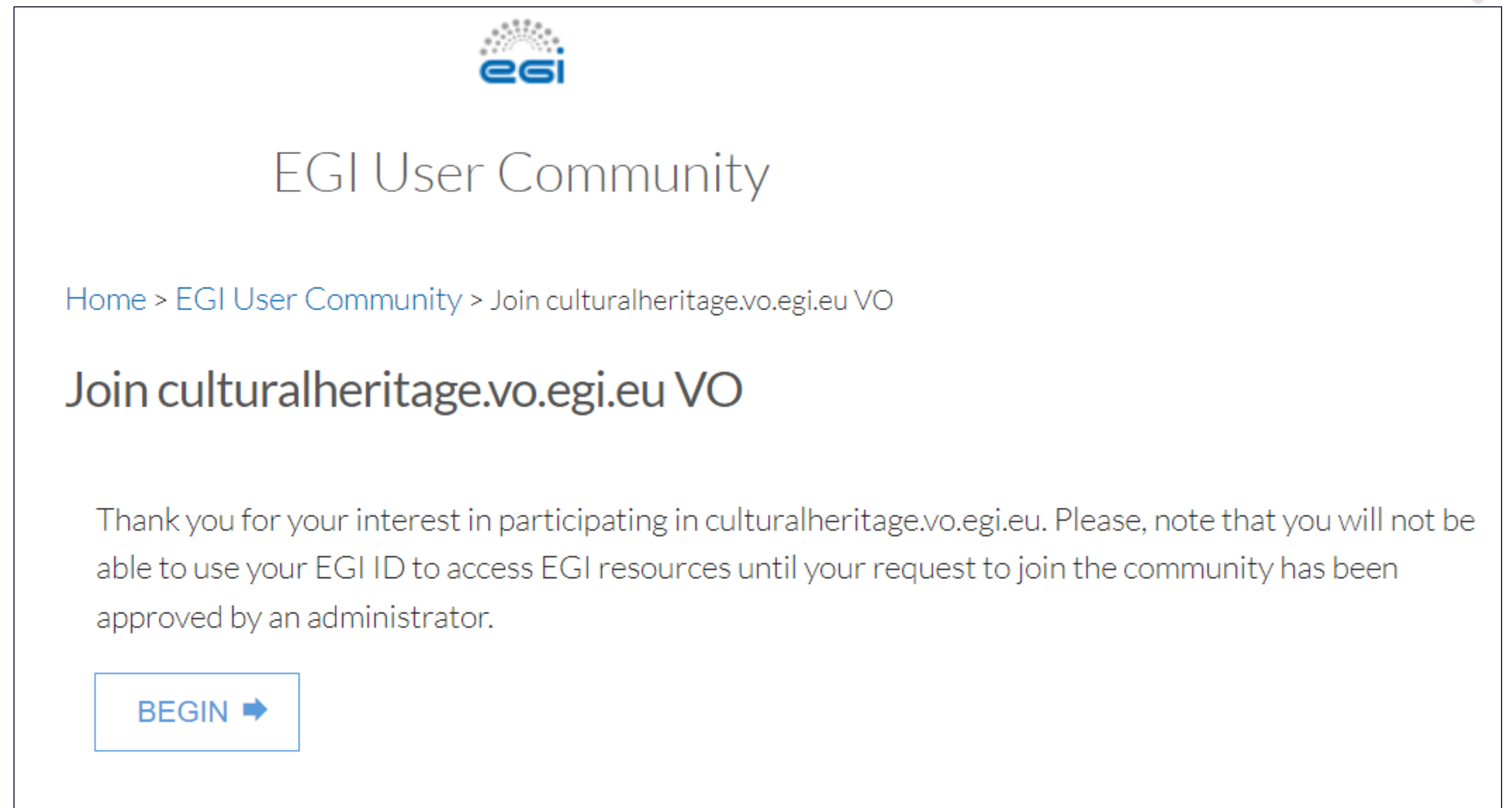
- **Register Check-in account**

- <https://docs.egi.eu/users/aai/check-in/signup/>
- Basically follow a login process

- **Join the VO for EUreka3D:**

## **culturalheritage.vo.egi.eu**

- Join via URL
- Manual approval by VO Manager



The screenshot shows the EGI User Community interface. At the top is the EGI logo. Below it, the text "EGI User Community" is displayed. A breadcrumb trail reads "Home > EGI User Community > Join culturalheritage.vo.egi.eu VO". The main heading is "Join culturalheritage.vo.egi.eu VO". A message states: "Thank you for your interest in participating in culturalheritage.vo.egi.eu. Please, note that you will not be able to use your EGI ID to access EGI resources until your request to join the community has been approved by an administrator." At the bottom, there is a "BEGIN" button with a right-pointing arrow.



- **Check-in**

- [Sign-up](#)
- [Join VO](#)



- Over ten years of devoted development - see our GitHub!
- An open-source project, run at Cyfronet datacenter, AGH University, Kraków
- We work tight with scientific communities
- Our vision is to:
  - deliver a data management platform for large-scale and distributed problems
  - address the challenges of global collaborative data sharing across organizational domains
  - streamline data processing in heterogeneous data storage set ups
- Our fundina comes from Polish and European grants and partnerships



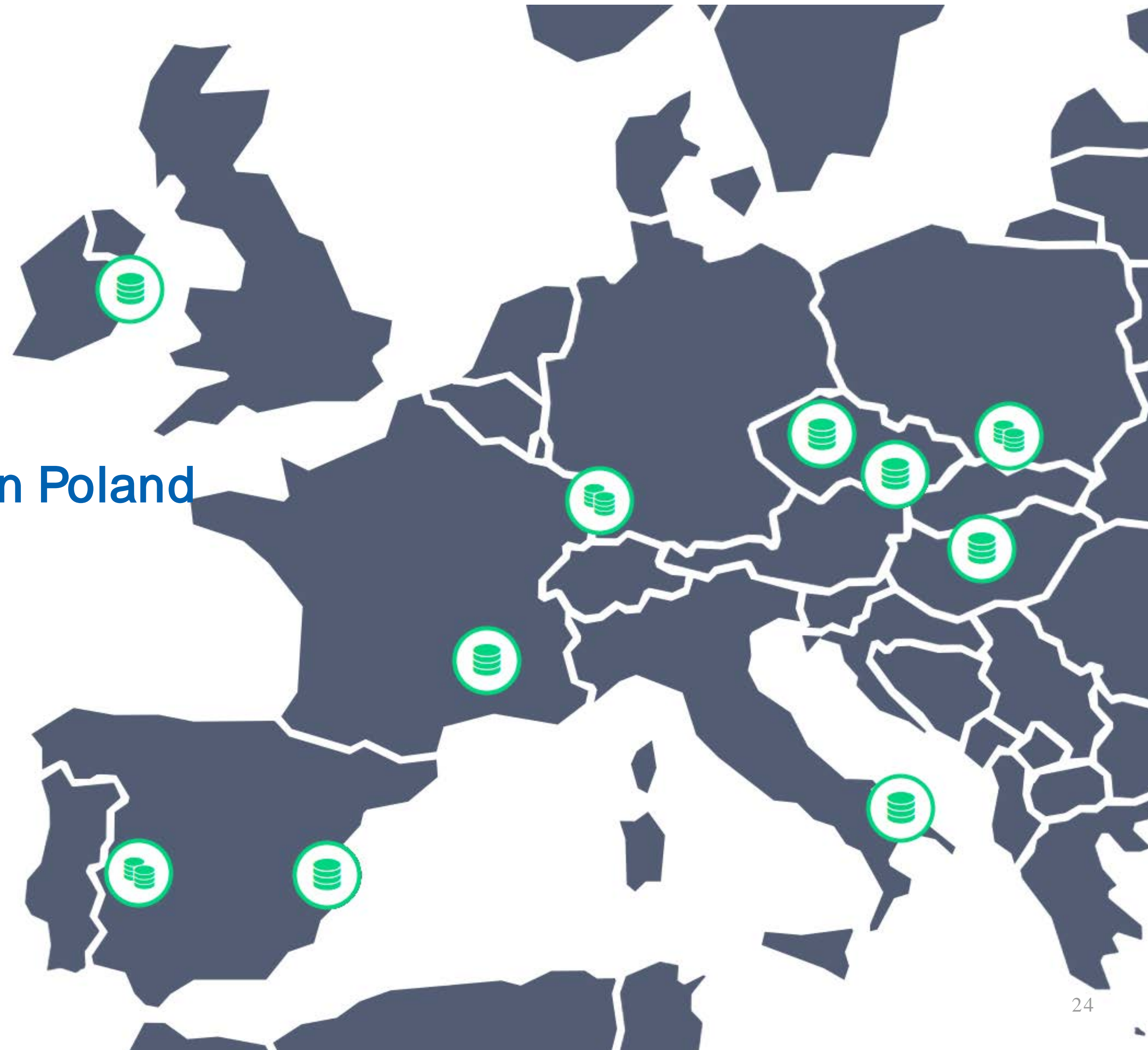
- **EGI DataHub**

- 20 sites (Oneproviders)
- 2150 data spaces
- ~1.77PB total storage size
- 700+ users

- **Between 5 and 10 other active Zones in Poland**

- **Archive for Polish National Museums:**

- 5PB of data —the current phase
- 10 PB of data —target scale
- ~100 M files





...

- **Dedicated cloud resources at Cyfronet datacenter**
  - 50TB of dedicated object storage for 3d models
  - a virtual data space on EGI DataHub to upload data
- **Metadata management for files and directories of 3d models**
- **Querying files by metadata, time, owner etc.**
- **Model processing (eg. compressions) using integrated workflows (in progress!)**

## FILES

View provided by  **plg-cyfronet-02** 

 EUreka3D 

Files



 Fikardou Village

 INSPAI

 Lambousa Fishing Vessel

 Statue

 logo



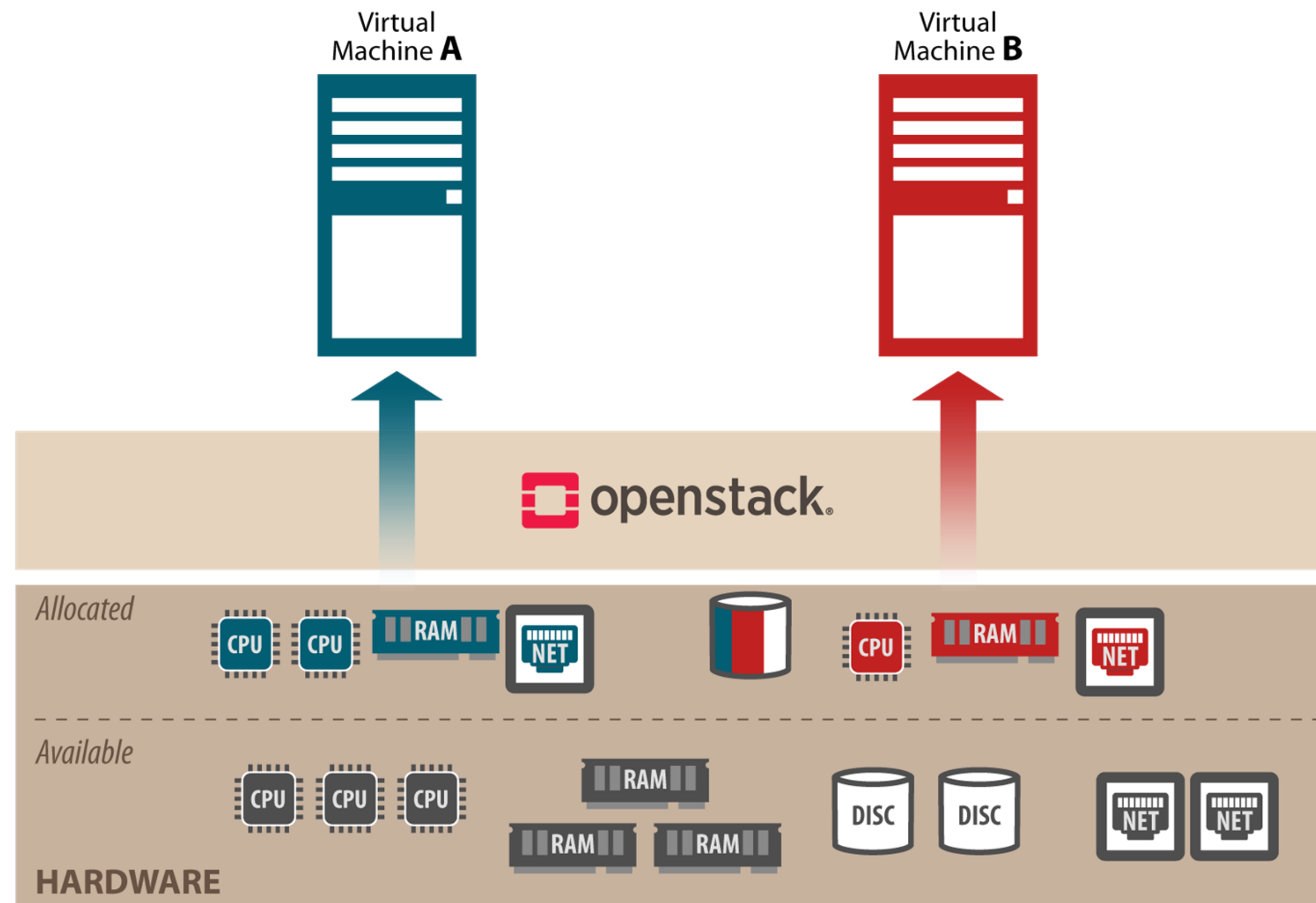
# Demo

Login and content upload using Onedata

- **DataHub**
  - [Dashboard](#)



- Provisioning of (virtual) servers on the cloud



- EUreka3D uses **Cyfronet** (PL), part of the EGI Federation.
- Capacity currently allocated:
  - 32 vCPU
  - 128 GB RAM
  - 2 Public IPs
  - 1000 GB Storage



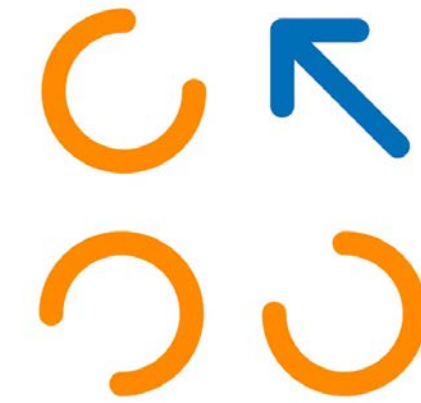


# Infrastructure Manager

<https://www.egi.eu/service/infrastructure-manager/>

- **Infrastructure deployment across multiple clouds.**
- **User-friendly.**
- **Automation** of deployments in the cloud.
- Provisioning of hardware and installation of software.

**Dashboard:** <https://im.egi.eu/>



ESI IM Dashboard   Infrastructures   Advanced ▾   External Links ▾   Ignacio Lamata Martinez ▾

Search...

**Deploy a VM**

**Launch a Kubernetes Virtual Cluster**

**Launch an OSCAR Virtual Cluster**

**SLURM virtual cluster**

**Docker VMs**

**TOSCA Template**

**Launch Kubeflow on top of a Kubernetes Virtual Cluster**

**Deploy a Galaxy portal**

**Launch a Hadoop Virtual Cluster**

### Deploy a VM

**Description:** Deploy a compute node getting the IP and SSH credentials to access via ssh with an extra HD disk. Addons: Docker + Compose, Galaxy, Add Users, SSH Keys, Bastion host, MinIO, SSH OIDC, CernVM-FS, AI4EOSC DEEPaaS, eFlows4HPC image creation service, MLFlow, Download

Infrastructure Name

**VM Data**   GPU Data   Cloud Provider Selection

Number of virtual cpus for the VM

Amount of memory for the VM

Flavor name of the VN. Only required in case of special flavors (i.e. with GPUs)

Number of VMs to be spawned

Size of the extra HD added to the instance (Set 0 if disk is not needed)

Path to mount the extra disk



# EUreka3D and Infrastructure Manager



ESI IM Dashboard Infrastructures Advanced External Links

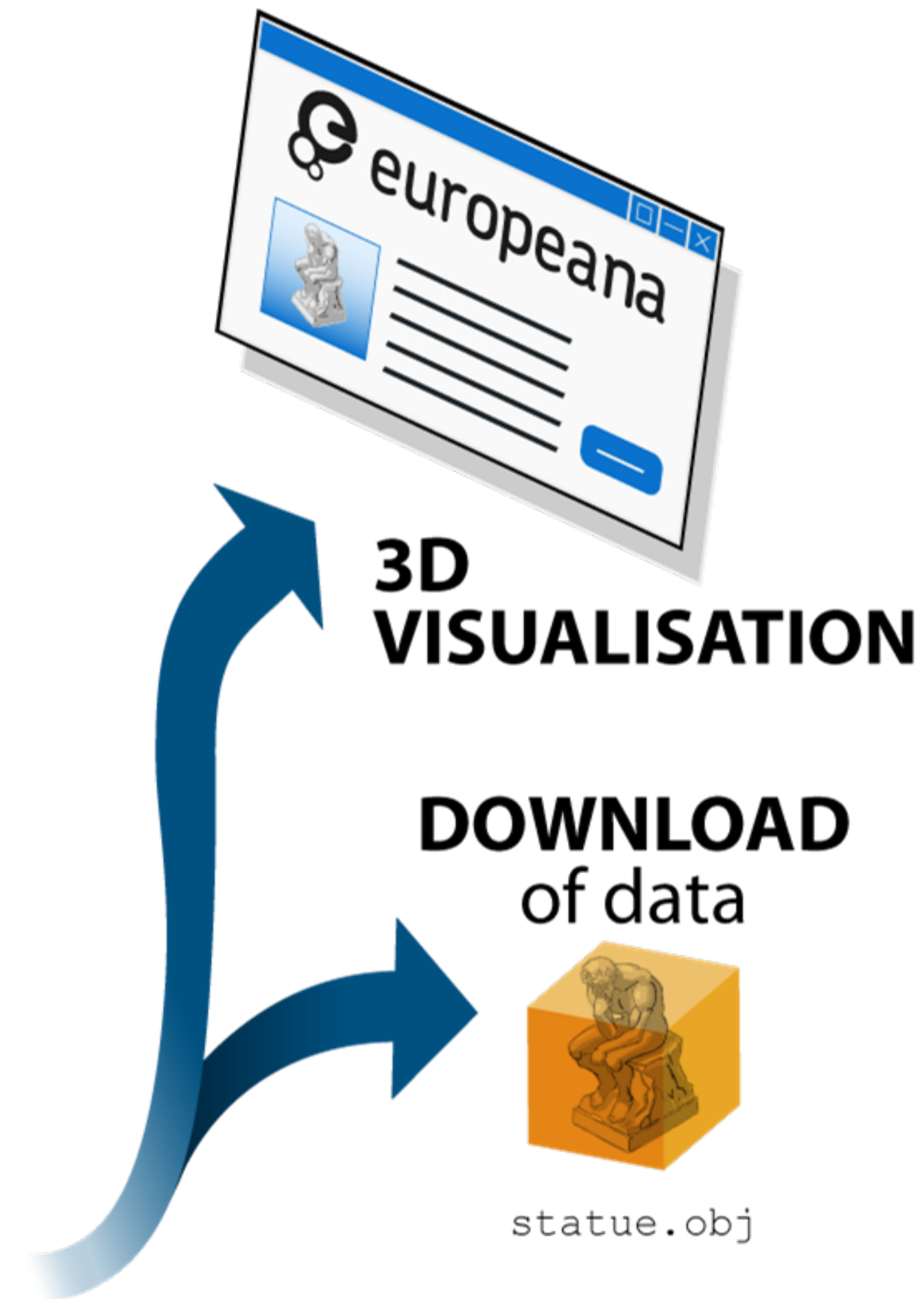
### My Infrastructures

Show 10 entries

Name	Infrastructure uuid	Cloud Type	Cloud Info	Status	VMs
EUreka3D-Main	c9f0f790-9811-11ee-a026-d2b5c140f59a		Site: CYFRONET-CLOUD VO: culturalheritage.vo.egi.eu	configured	

- **Cloud Compute**
  - [Cyfronet cloud](#)
- **Infrastructure Manager**
  - [Dashboard access to create VM](#)





- Integration with Europeana

- OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting)
- PIDs - Testing a [B2Handle](#) account

- Visualisation

- Testing different libraries for 3D visualisation

- **Visualisation**
  - [EUreka3D machine](#)
- **Data Download**
  - [DataHub access](#)
- **Integration with Europeana**
  - [Metadata in Data Hub](#)
  - [Europeana visualisation](#)



Contact us

contact@egi.eu

Let's talk. Or  
meet in person

Get in touch with us

[www.egi.eu](http://www.egi.eu)



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