ENABLING INTERDISCIPLINARY SCIENCES ACROSS RESEARCH INFRASTRUCTURES

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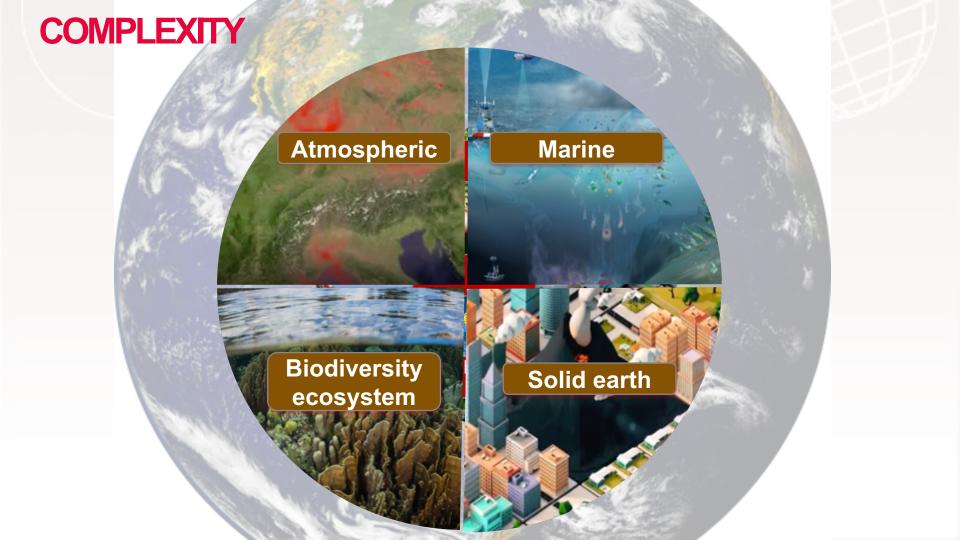
UNIVERSITY OF AMSTERDAM
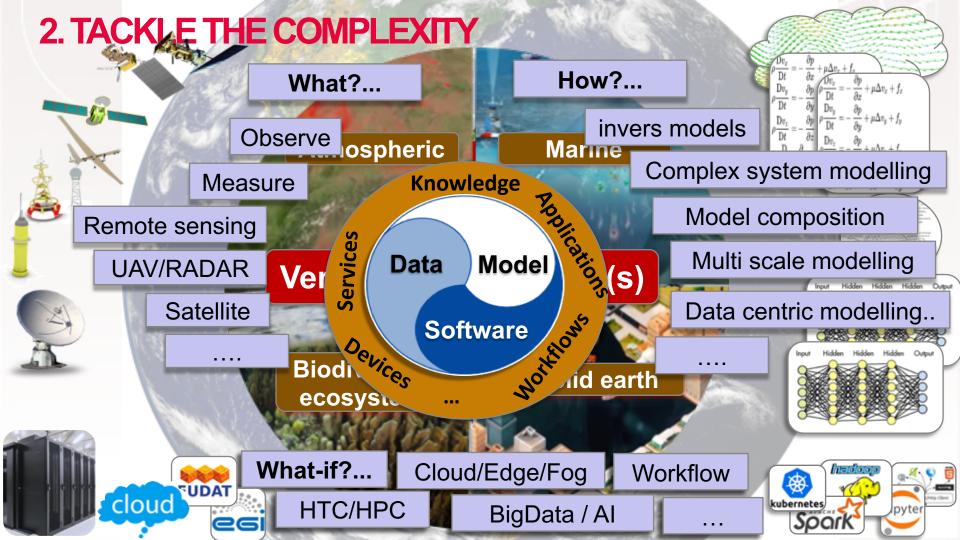
plus ENVRI

Supporting environmental research
with integrated solutions
- the Earth is our lab

1. INTERDISCIPLINARY RESEARCH

COMPLEXITY

Atmospheric

Marine

Biodiversity ecosystem

Solid earth

2. TACKLE THE COMPLEXITY

What?...

How?...

Observe

Atmospheric

invers models

Measure

Marine

Complex system modelling

Remote sensing

Model composition

UAV/RADAR

Multi scale modelling

Ver...(s)

Satellite

Data centric modelling..

....

Knowledge

Applications

Services

Data   Model

Software

Devices

Workflows

....

Biodi... ecosyste...

...lid earth

$$\rho \frac{Dv_x}{Dt} = -\frac{\partial p}{\partial z} + \mu \Delta v_z + f_z$$
$$\rho \frac{Dv_y}{Dt} = -\frac{\partial p}{\partial y} + \mu \Delta v_y + f_y$$
$$\rho \frac{Dv_z}{Dt} = -\frac{\partial p}{\partial z} + \mu \Delta v_z + f_z$$

Input Hidden Hidden Hidden Output

Input Hidden Hidden Hidden Output

What-if?...   Cloud/Edge/Fog   Workflow

HTC/HPC   BigData / AI   …

EUDAT

cloud

EGI

kubernetes   hadoop   Jupyter   Spark

Cannot find

Require:

Rich metadata…
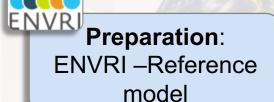Persistent Identifier…
Provenance…
Standards…
AAA…

……

….

4. ENVRI PROJECTS: Interoperable infrastructures enable interdisciplinary research
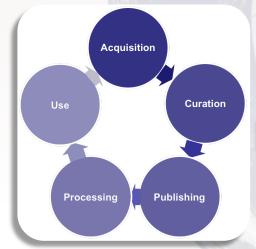
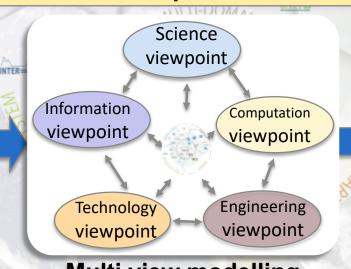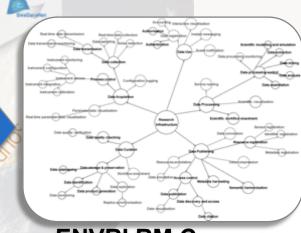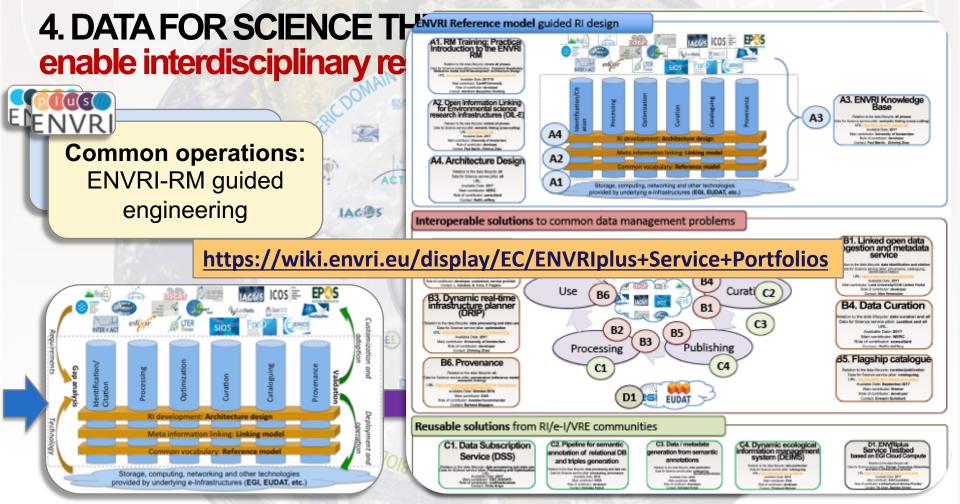# 4. DATA FOR SCIENCE THEME: Interoperable infrastructures enable interdisciplinary research

Preparation: ENVRI –Reference model

ENVRI RM: http://www.envri.eu/rm

Lifecycle

Multi view modelling

ENVRI RM Common vocabulary

4. DATA FOR SCIENCE TH...
enable interdisciplinary re...

Common operations:
ENVRI-RM guided engineering

https://wiki.envri.eu/display/EC/ENVRIplus+Service+Portfolios
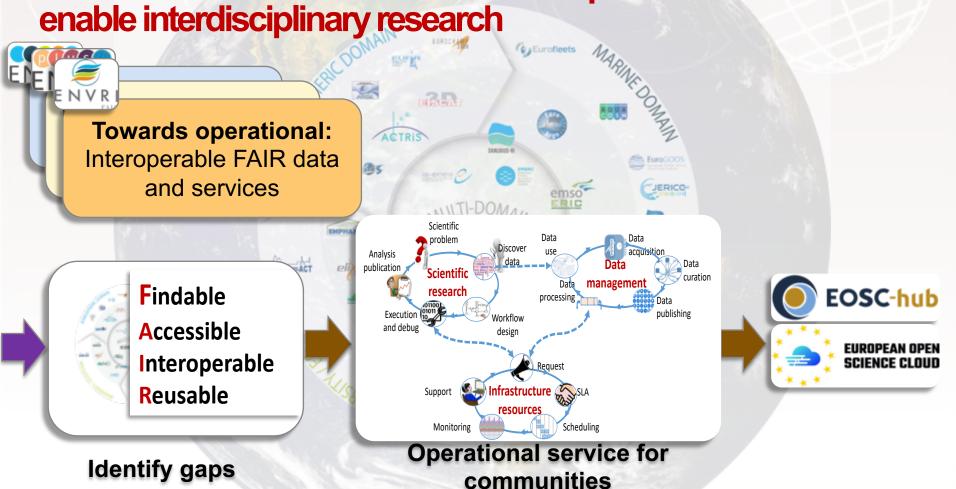
Common operations   **Agile development**   **ENVRI portfolio**

4. DATA FOR SCIENCE THEME: Interoperable infrastructures enable interdisciplinary research

Towards operational: Interoperable FAIR data and services

Findable
Accessible
Interoperable
Reusable

Identify gaps

Operational service for communities

EOSC-hub

EUROPEAN OPEN SCIENCE CLOUD

5. SUMMARY AND TAKEAWAYS

- **Data, model and software** are important assets for interdisciplinary research in environmental and earth sciences
- **Rich metadata and PID** are crucial for finding, accessing, interoperating and reusing digital assets from different RIs
- **ENVRI reference model** can decompose the complexity in developing research infrastructures, and provide common language to enhance the communication among different teams
- **Agile development approach** enables user centric innovation during the development of RI stable operation services

Data, model and software

Rich metadata and PID

ENVRI Reference Model

Agile development

ENVRI – Reference model

Common operations

Towards Operational FAIR data services