14-17
Nov 2022

EOSC SYMPOSIUM

#EOSCsymposium22

eosc

EOSC Future

Funded by
the European Union

EU2022.CZ

Contributions to the EOSC MVE beyond EOSC Future and the INFRAEOSC07

Agenda

9:00 Introduction, Per Oster (CSC)

09:05 Talk #1: A membership and inventory app for the food metrology research infrastructure METROFOOD-RI, Karl Presser, Premotec GmbH

09:15 Talk #2: OpenWebSearch.EU: Towards an open Web Search Infrastructure, Michael Granitzer, University of Passau

09:25 Talk #3: Considering data harmonisation and quality information in European marine metrology research infrastructures, Markus Konkol, 52°North Spatial Information Research GmbH

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09:45 Talk #5: IntelComp: AI driven policy making using open scientific data, Androniki Pavlidou, Athena Research Center

09:55 Talk #6: Involving researchers in Open Science: the SoVisu innovative solution, David Reymond Université de Toulon

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METROFOOD
INFRASTRUCTURE FOR PROMOTING METROLOGY IN FOOD AND NUTRITION

PREMOTEC

EOSC SYMPOSIUM

METROFOOD-RI Membership App

Karl Presser, Claudia Zoani, METROFOOD consortium

EOSC Symposium 2022

14-17 November 2022, Prague, Czech Republic

METROFOOD-PP has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 871083.

METROFOOD
INFRASTRUCTURE FOR PROMOTING METROLOGY IN FOOD AND NUTRITION

What is METROFOOD-RI?

- Research Infrastructure promoting **metrology (science of measurements) in food and nutrition**
- Network of food labs and growing and farming facilities
- **METROFOOD-RI** is a distributed research infrastructure
- Entered **ESFRI roadmap** in 2016 as "Emerging" and then in 2018 as "Project"
- Finished its **preparatory phase**, METROFOOD-PP (GA871083)
- Covers agrifood systems focusing on food safety,food quality, traceability, authenticity, circular bioeconomy, sustainability and human health

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METRO FOOD
INFRASTRUCTURE FOR PROMOTING METROLOGY IN FOOD AND NUTRITION

Physical Part

METRO FOOD

Physical-RI

Metro

- Plants and Labs for RM development
  - RM Preparation
  - Stability and homogenity studies
- Analytical Labs.
  - Sampling, pretreatment and storage
  - Food composition and characterization
  - Inorganic contaminants
  - Organic contaminants
  - Chemical and biological markers and profiles
  - Microbiological analysis
  - Development of sensors and devices
  - Environmental Analysis
  - Testing (rheological, leaching etc.)
  - Other

Food

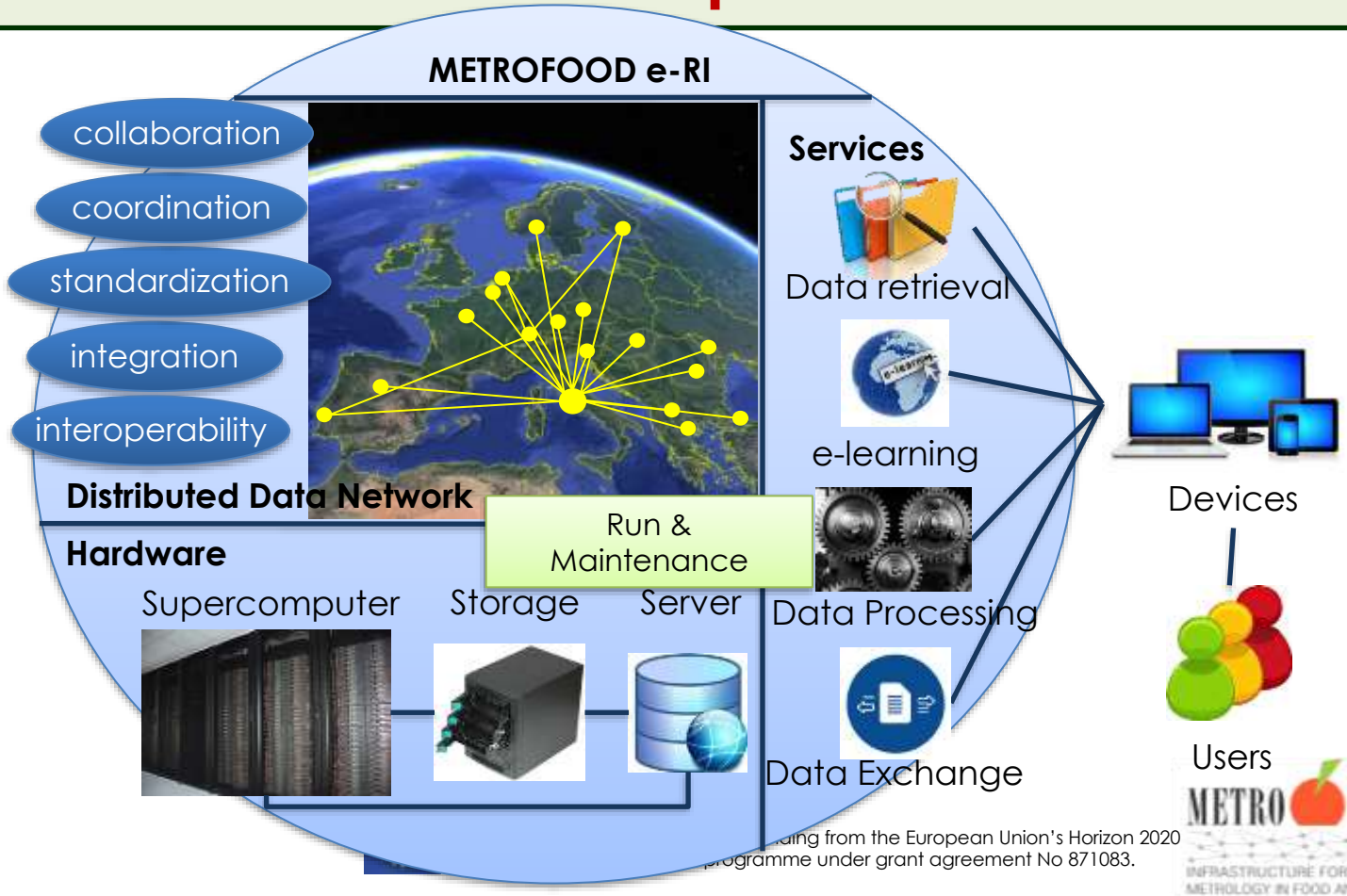
- Experimental fields/farms
  - Crop production
  - Animal breedings
  - Fish farms
- Facilities for food processing and storage
  - Industrial processing
  - Packaging
  - Supply chain and storage
  - Food preparation

e-RI

- Software development
  - development of new databases
  - integration of existing databases
  - graphical interfaces development
  - database manteinance and updating
- Data collection
- Data analysis
- Management of interlaboratory tests
  - Reference Materials
  - Official and Reference Methods
  - Reference Laboratories
  - Vocabularies, Guidelines and procedures
  - PTs Providers
  - Food composition
  - Contaminants in food
  - Food markers
  - Characteristics of production areas and technologies
  - Food consumption
- Diffusion and Training

202 Physical facilities

Electronic component



93 electronic facilities

...ding from the European Union's Horizon 2020 ...programme under grant agreement No 871083.

Membership App

- The app lists all national nodes and partner institutions
- A national node contains the list of country institutions

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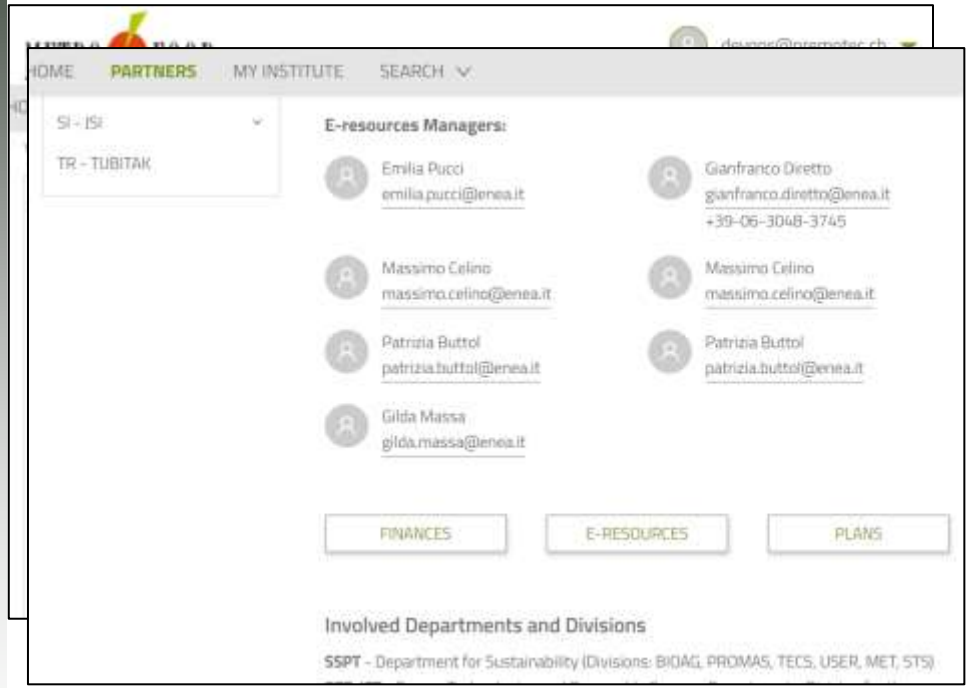
Partner Institute



- For each partner, the app has information about
  - Contact person
  - Address
  - Physical and electronic resources
  - Physical and electronic resource managers
  - Finances
  - Future plans
  - Involved departments and divisions

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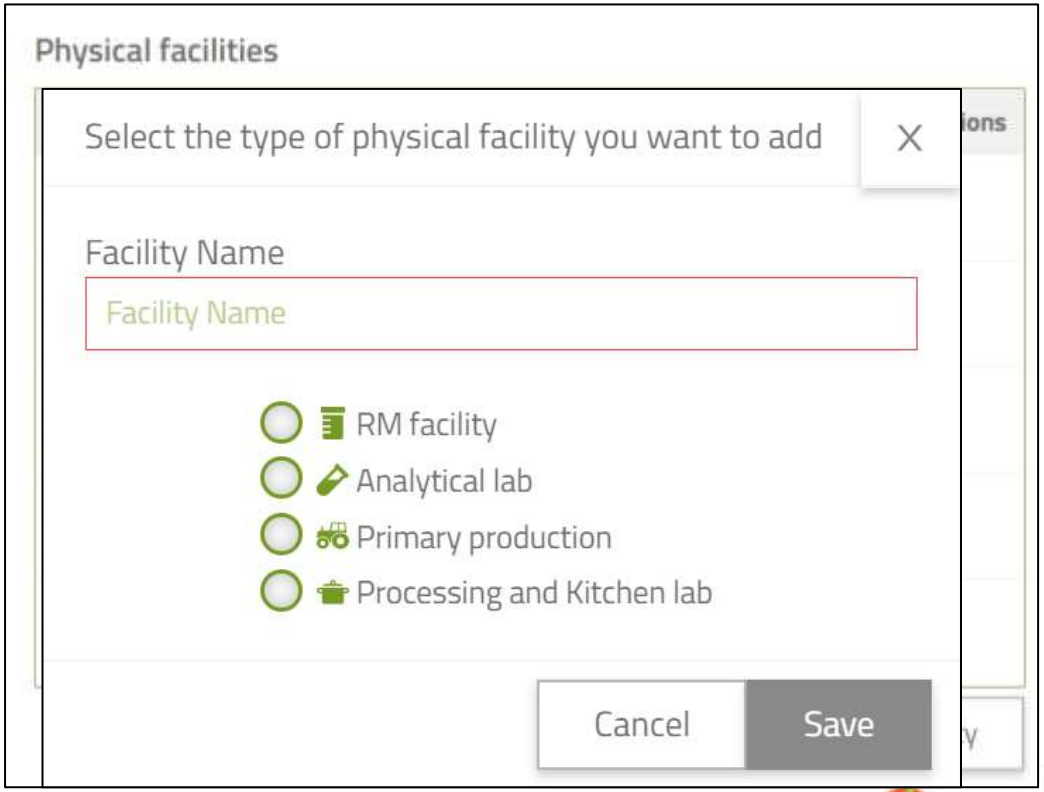
INFRASTRUCTURE FOR PROMOTING METROLOGY IN FOOD AND NUTRITION

Physical Resources

- For each partner institute, the app lists the physical facilities
- Multiple facilities can be stored
- 4 types of facilities: Reference Material (RM) facilities, analytical labs, primary production, processing and kitchen lab



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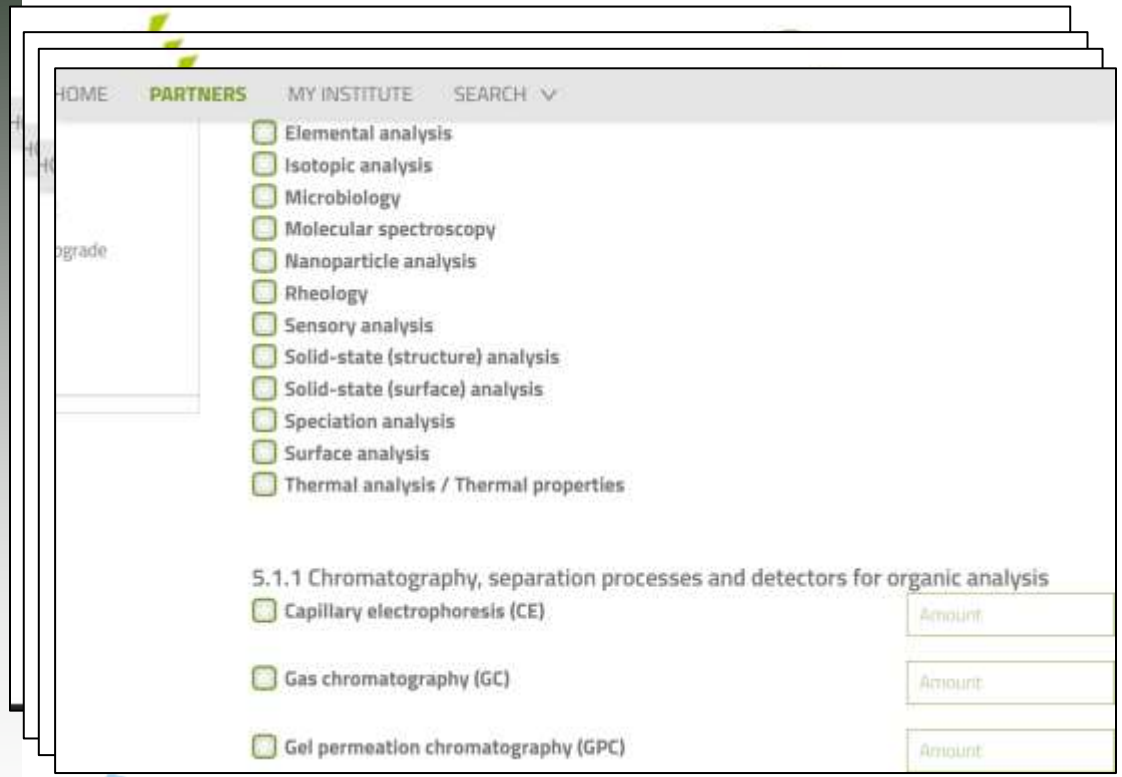
Physical Resources



- For each physical resource, the app provides info about:
  - People
  - Sector
  - Finances
  - HR
  - Equipment
  - Plans for upgrade
  - % to RI
  - Quality

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electronic resources

- Type of e-resource (database, hardware, app, etc.)
- Info about TRL, hosting, target audience
- Access and licensing

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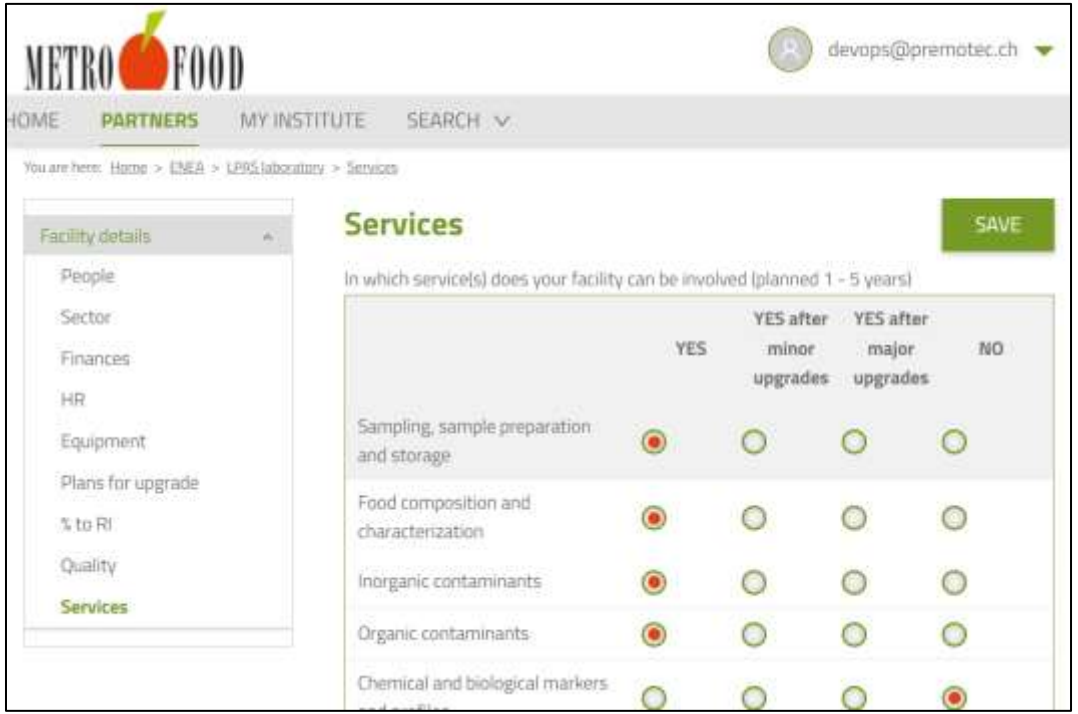
Services

- METROFOOD-RI services were defined
- Each facility has information to what services they can contribute
- In future: Service provision infrastructure will use this information



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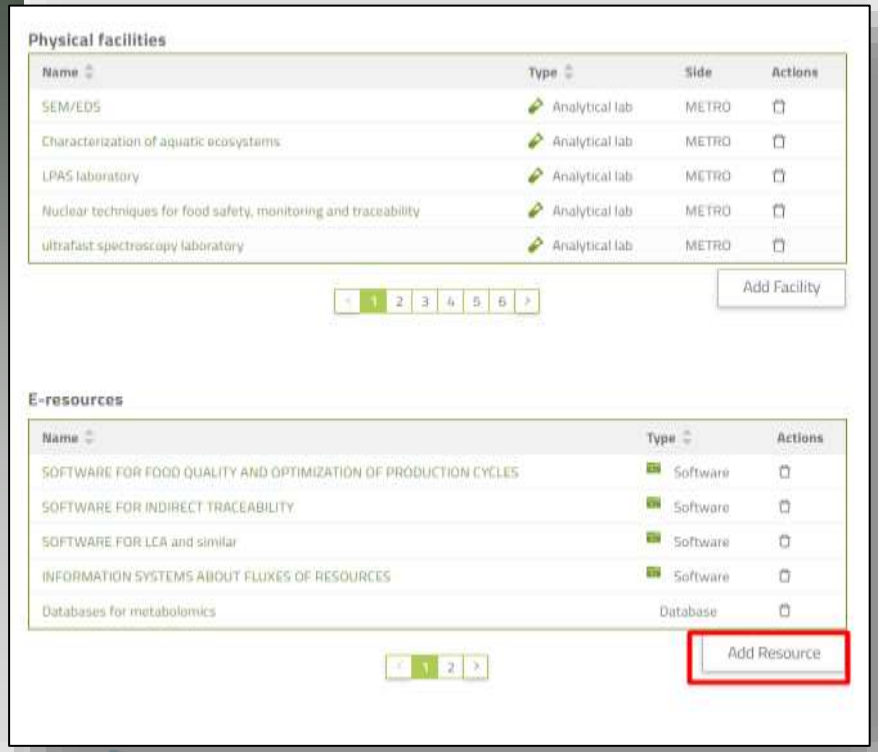
Roles and Rights



PI/DI can answer the Quality, IT Staff and future e-needs or define a Person who should do that

Institute level

PI/DI can add an e-resource (name and Person Responsible for the e-resource details: **e-Resource Manager**)

PI/DI or the e-Resource Manager can add more technical details about the e-resource

E-resource level

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METROFOOD INFRASTRUCTURE FOR PROMOTING METROLOGY IN FOOD AND NUTRITION

Thank you for your attention

METRO FOOD
INFRASTRUCTURE FOR PROMOTING METROLOGY IN FOOD AND NUTRITION

www.metrofood.eu

https://www.metrofood.eu/media-room/videogallery/28-new-metrofood-research-infrastructure-with-commentary.html

Karl Presser
Premotec GmbH
karl.presser@premotec.ch

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INFRASTRUCTURE FOR PROMOTING METROLOGY IN FOOD AND NUTRITION

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Open WebSearch .eu

UNIVERSITÄT PASSAU
Fakultät für Informatik und Mathematik

Towards an Open Web Search Infrastructure

https://openwebsearch.eu/

Prof. Dr. Michael Granitzer

Funded by European Union

Partners: 12+2, 8.5 MEur Funding

UNIVERSITÄT PASSAU

Webis.de

UNIVERSITÄT LEIPZIG

Bauhaus-Universität Weimar

Radboud Universiteit

DLR

TU Graz

lrz

CERN

VSB TECHNICAL UNIVERSITY OF OSTRAVA | IT4INNOVATIONS NATIONAL SUPERCOMPUTING CENTER

CSC ICT Solutions for Brilliant Minds

osf open search foundation

nlnet FOUNDATION

suma-ev

A1

Research

NGOs

Businesses

Infrastructure

Twofold motivation

Two properties of Web Search that don't add up

- A critical infrastructure for society, like satellite navigation
- A market oligopoly: i.e. "… market … dominated by a small number of large sellers or producers."

Effects

- Reduced User Choice
- User locked-in despite of "open" technologies
- Rich-gets-richer effects through exclusive data
- Concerning market behaviour (e.g. Jedi Blue)
- SEO optimized ranking = best information delivery?
- Limited business models
- ….

Tapping the Web as resources

- Web data as crucial innovation source
- Tapping the resource is challenging, especially for small innovators

Effects

- Huge upfront costs and high risks for innovator to use web data
- High demand on technical and technological skills (Big Data, AI etc.)
- High demand on hardware resources
- Legal and ethical uncertainties
- Web as competitive, partially adversarial environment

Goals & Objectives

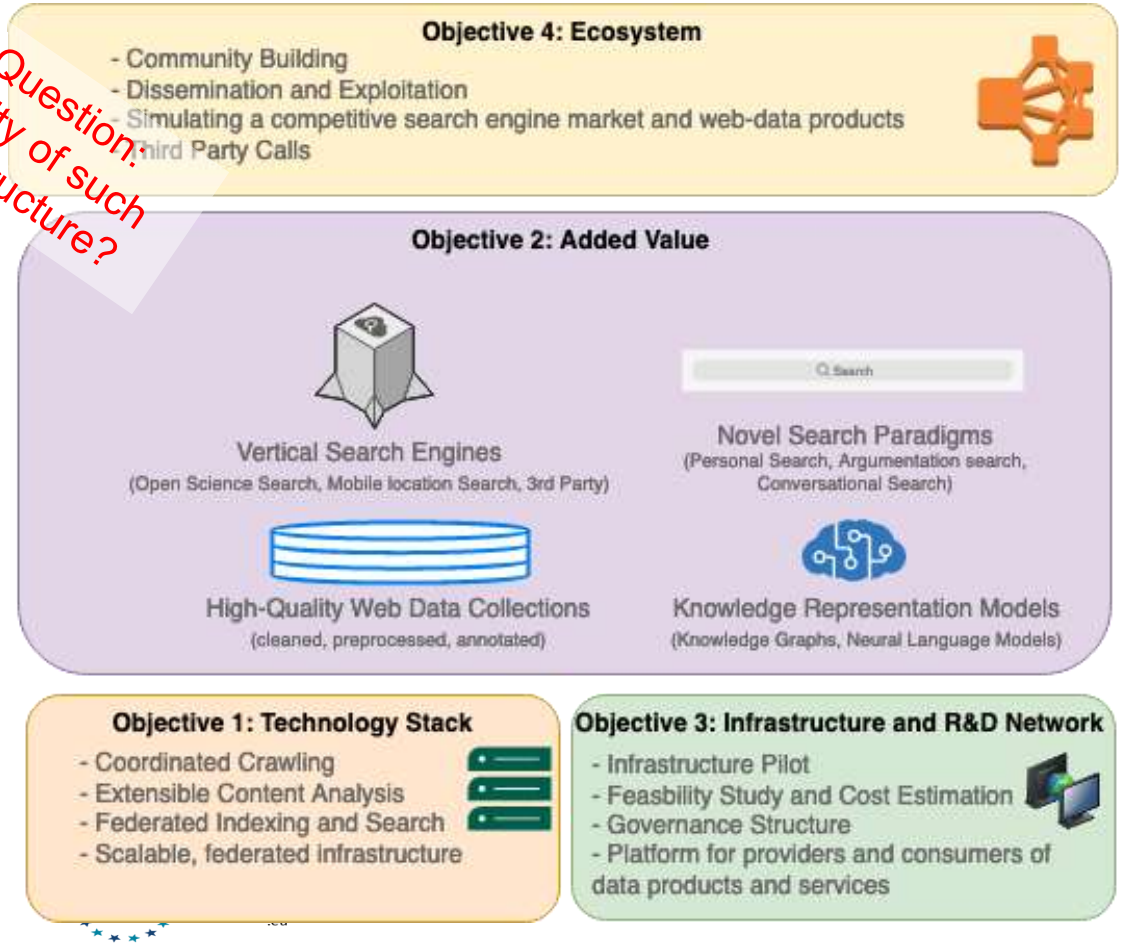
Goals

- Build an Open Web Index including the corresponding pipelines and infrastructure
- Empower users, researchers & innovators to build on top of the Index
- **FAIR Web-Data**: An Open Index should be Open Data with a transparent & legal compliant creation process and fair-use access.

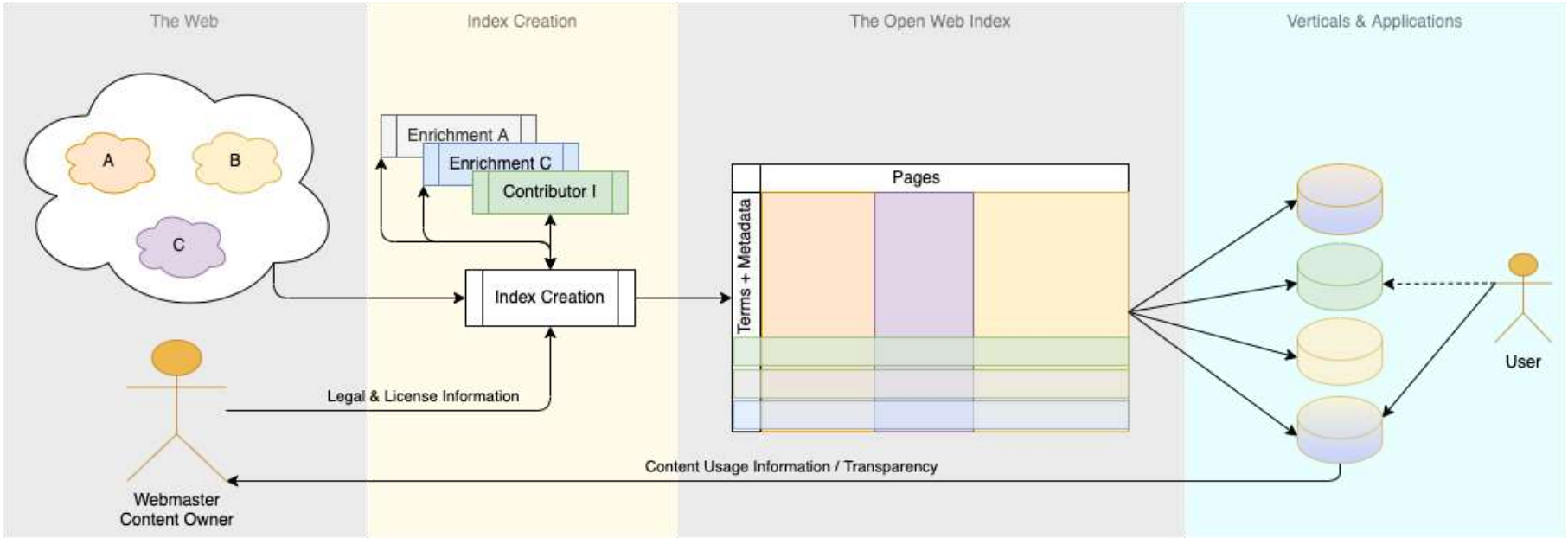
Key Innovations

- Open Management of Web**site** Data
- Automatic Ethics and Information Quality Enrichment of pages
- Open Science Search and new search paradigms as POC
- Open Search Engine Hubs
- Ethical, legal and social concerns

Key Question:
Feasibility of such an infrastructure?



Sketch for Creating and Distributing an Open Web Index



Different Stakeholders along the creation chain

Impact of an Open Web Index for EOSC

Open Science Search

- Planned Vertical Search Use Case as Proof of Concept
- Integration of potential resources available in the EOSC

Web-Data for Research

- Web-data as research resource
- Access to pre-processed, (hopefully) legally compliant Web-data

Web-Search as EOSC Service

- Curate specialised indices / search engines (e.g. Particle Physics, Computer Science, Datasets ….)
- Enrich your own specialised search engines
- Source for Altmetrics & Co. -

Empower users, researchers and innovators at scale

Conclusion

- No substitution of major players:
  (i) we can’t
  (ii) we do it differently
- Opening up the search market and tapping the web as resource
- Three Pillars: Tech, Network, Ecosystem
- Caveat: OpenWebSearch.EU can only bootstrap the approach. More efforts needed to go beyond
- EOSC: potential for interesting services

Thank You.
Questions?

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MINKE

Metrology for Integrated marine maNagement and Knowledge-transfer nEtwork

INFRAIA-02-2020: Integrating Activities for Starting Communities

Markus Konkol

Project funded by the European Commission within the Horizon 2020 Programme (2014-2020)
Grant Agreement No. 101008724

MINKE

CONSORTIUM

PARTNERS

 # 10 countries
 # 22 organisations

The project

PROGRAMME: H2020-EU.1.4.1.2. - Integrating and opening existing national and regional research infrastructures of European interest

CALL: INFRAIA-02-2020-1 . **Topic:** *Integrating Activities for Starting Communities*

Integrating Activities shall combine, in a closely co-ordinated manner 3 types of activities:

- **Networking Activities (NA)**, to foster a culture of co-operation between research infrastructures, scientific communities, industries and other stakeholders as appropriate, and to help develop a more efficient and attractive European Research Area;
- **Trans-national Access (TNA) or Virtual Access (VA) Activities**, to support scientific communities in their access to the identified key research infrastructures;
- **Joint Research Activities (JRA),** to improve, in quality and/or quantity, the integrated services provided at European level by the infrastructures.

The main goals

MINKE will integrate key European **Marine Metrology Research Infrastructures**, to coordinate their use and development and propose an innovative framework of ***quality of oceanographic data***

What to measure ?

Identifying the **Essential Ocean Variables** (EOVs) as the key parameters to monitor

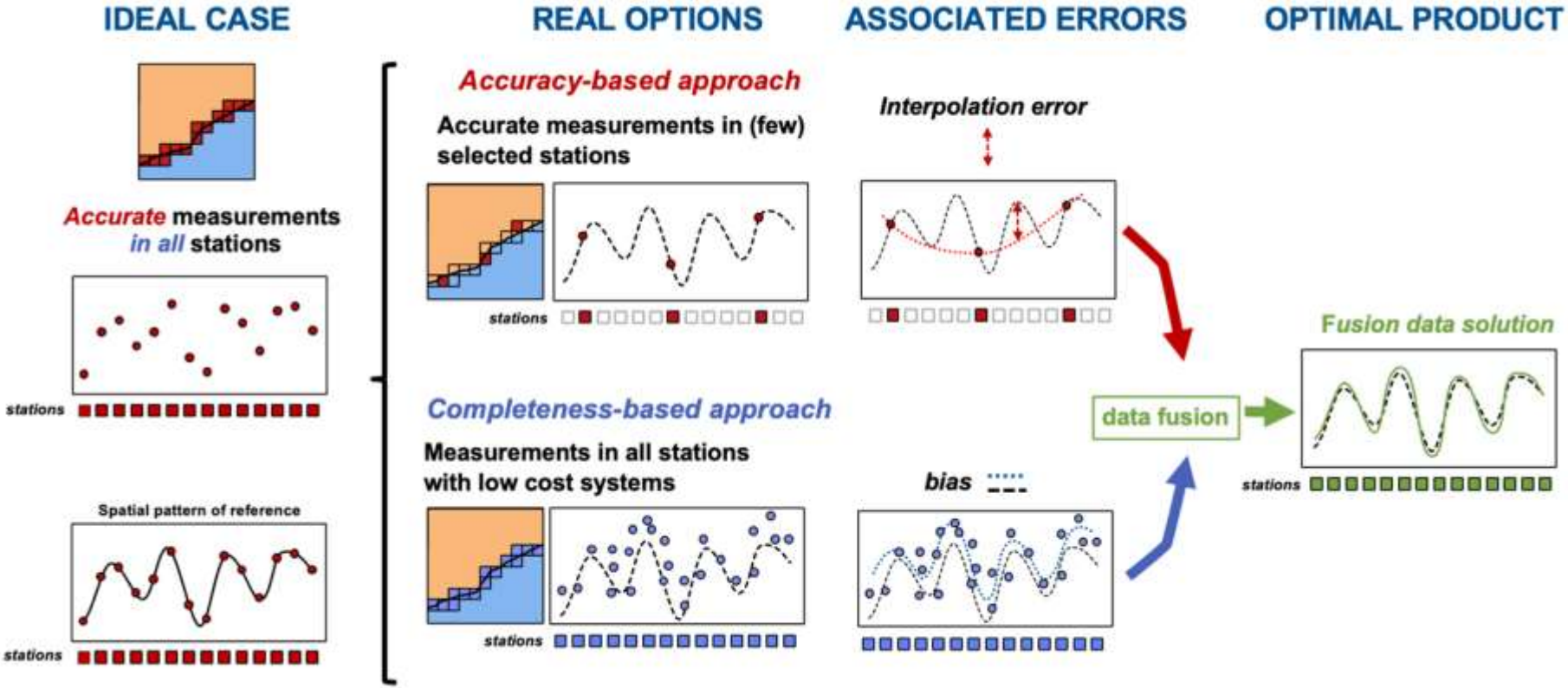
How to measure them ?

Adopting a multidimensional framework of data quality:

- **Accuracy:** Minimising the **measurement errors**
- **Completeness:** Minimising the **interpolation errors**
- **Timeliness:** Providing the observations as fast as requiered

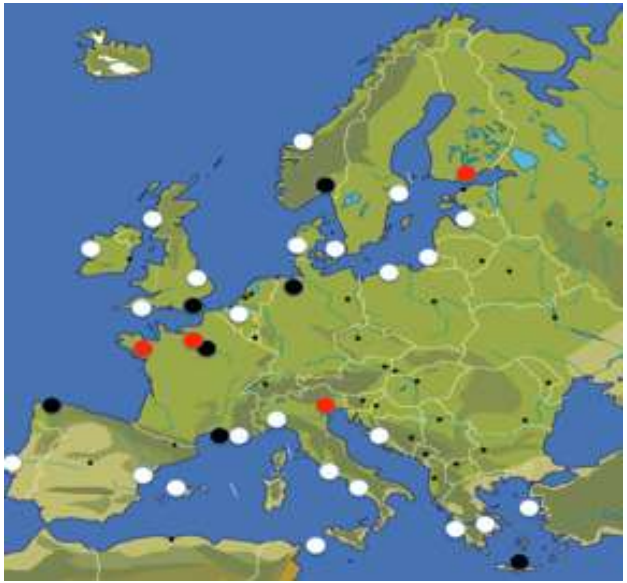
Purpose: *To retrieve (at least) the large scale features, both temporal and spatial, of the EOVs*

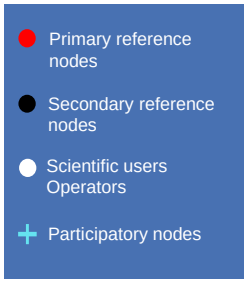
Data quality approach



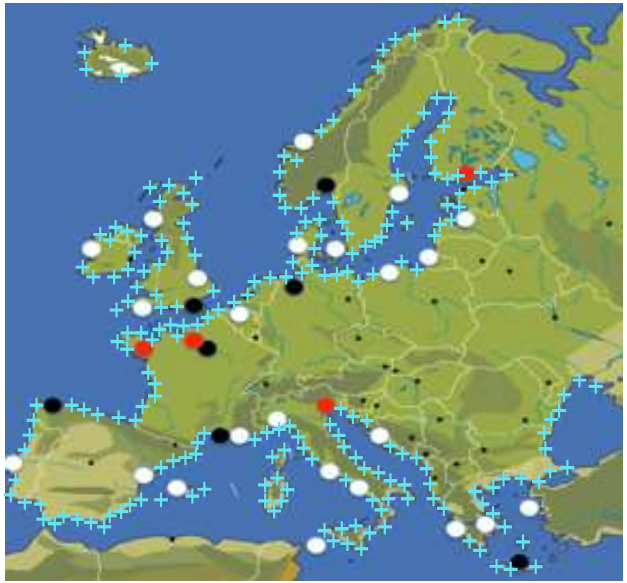
Vision

Accuracy





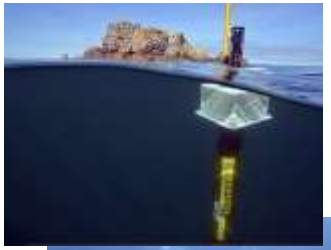
Accuracy + Completeness



MINKE Research Infrastructures

Accuracy

Advanced instrumentation & Calibration centres



Completeness

Citizen observatories & Fablabs

Test reports

ISTITUTO NAZIONALE
DI OCEANOGRAFIA E DI GEOFISICA SPERIMENTALE – OGS
SEZIONE OCE - CTMO

MINKE

Test Report
Temperature & Conductivity

SBE 37 SMP MicroCAT
Serial Number: 3287

Table. Results of the "as-received" test for temperature and conductivity following the cleaning operation described on page 2 of this report.

T Ref. (°C)	T Inst. (°C)	C Ref. (S/m)	C Ir (S/
25.0466	25.0451	5.63769	5.63
20.1492	20.1480	5.10228	5.09

Old temperature calibration coefficients[1]:

a0 = -4.078553e-05
a1 = 2.878170e-04
a2 = -3.197355e-06
a3 = 1.795368e-07

ITS-90 Temperature = 1/ {[a0 + a1 [*ln* (n)] +

T Ref. (°C)	Inst Output (n)	T
2.0351	577392.7	
5.2141	502147.0	

New temperature calibration coefficients:

a0 = 7.2754375e-06
a1 = 2.7631671e-04
a2 = -2.2808406e-06
a3 = 1.5520126e-07

ITS-90 Temperature = 1/ {[a0 + a1 [*ln* (n)] + a2 [*ln* ^{2} (n)] + a3 [*ln* ^{3} (n)]} – 273.15 (°C)

T Ref. (°C)	Inst Output (n)	T Inst. (°C)	T Inst. - T Ref.* (°C)
2.0351	577392.7	2.0352	0.0001
5.2141	502147.0	5.2140	0.0001

Quality Flags

Flag	Description
Pass=1	Data have passed critical real-time quality control tests and are deemed adequate for use as preliminary data.
Not evaluated=2	Data have not been QC-tested, or the information on quality is not available.
Suspect or Of High Interest=3	Data are considered to be either suspect or of high interest to data providers and users. They are flagged suspect to draw further attention to them by operators.
Fail=4	Data are considered to have failed one or more critical real-time QC checks. If they are disseminated at all, it should be readily apparent that they are not of acceptable quality.
Missing data=9	Data are missing; used as a placeholder.

Figure 6 - QARTOD / UNESCO IOC 54:V3 flagging scheme (source: U.S. Integrated Ocean Observing System, 2020a)

Metadata on quality

MINKE

Sensor

- Accuracy: +/- 0.002 °C
- Precision: +/- 0.002 °C
- DetectionLimit: -5 to 45°C
- BatteryCharge: 30%
- MeasurementRate: 1/s
- Coordinates: 52.1234, 7.456
- Placement: <text>
- QualityLevel: checked
- TestReports: [TestReport]
- SensorUncertainty: QualityFlag(?)

Test report

- AsReceived: <text>
- Condition: damaged
- Photographs: [Photos]
- Activities: repaired
- Workflow: <text>
- TestType: NewCalibration
- Procedure: <text>
- Date: Date
- AmbientConditions: °C, %, etc.
- MeasuredValues: [values]
- ReferenceValues: [values]
- Deviations: Measured – Reference
- MeanDeviation: 0.0002
- Satisfactory: pass

Observation

- TimeStamp: Date
- Measurement: 20°
- Validity: inconsistent
- DataProcessing: Adjusted
- Provenance: Code
- ObservationUncertainty: SensorUncertainty + Validity + Processing = QualityFlag(?)

MINKE

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AI4 | EOSC

Artificial Intelligence for the #EOSC

Co-funded by the European Union

AI4EOSC

Artificial Intelligence for the #EOSC

- Evolution of the DEEP Hybrid DataCloud platform
- HORIZON-INFRA-2021-EOSC-01-04 call
- Runs September 1st 2022 – August 2025 (36 months)
- 7 academic partners
  + 2 SME
  + 1 non-profit organization

Advanced features for distributed, federated, composite learning, metadata provenance, MLOps, event-driven data processing, and provision of AI/ML/DL services

Objectives

Objective 1
Provide feature rich services and platform to build and deploy custom AI applications in the EOSC

Objective 2
Enhance existing cloud services to support AI on distributed datasets, with a particular focus on federated learning

Objective 3
Deliver methods to compose AI tools, enabling the development of complex data-driven composite applications

Objective 4
Deliver an AI exchange in the context of the EOSC, enhancing and increasing the application offer currently available

Objective 5
Extend the service offer and the capabilities being offered through the EOSC portal, with focus on AI

Goal
Foster an AI exchange in the EOSC context, with added value, innovative and easily customizable services

Background and ecosystem

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	…

INDIGO-DataCloud
PaaS-based cloud solution for e-Science

uDocker
PaaS Orchestrator
Infrastructure Manager
Identity and Access Manager

DEEP 1 platform
DEEP 2 platform

DEEP-Hybrid-DataCloud
AI/ML/DL PaaS and services, with transparent access to GPUs

DEEP Platform and services

AI4EOSC
Enhanced AI Platform for the EOSC

DEEP 3 will become AI4EOSC 3 platform release

iMagine
AI-based imaging applications for aquatic sciences

AI Compute platform for the EOSC Compute Platform

EGI-ACE
AI services for the EOSC Compute platform exploited by additional use cases

Support to SME support in EOSC DIH

EOSC-Hub
Industry and innovate SME support

DEEP evolves in…	AI4EOSC
Training on single site, centralized dataset expected	Federated learning, split learning, gossip learning, making possible training on decentralized datasets
Single AI application, self deployed or on serverless computing	Composite AI for complex AI tools and applications through function composition and serverless computing
Central management of onboarded sites, complex on-premises deployment	Enhanced onboarding of resources, easier deployment on-premises

(some) New features

Integration with privacy tools (differential privacy, anonymity checks)

Community standards for models API (Kserve) following OpenAPI specifications

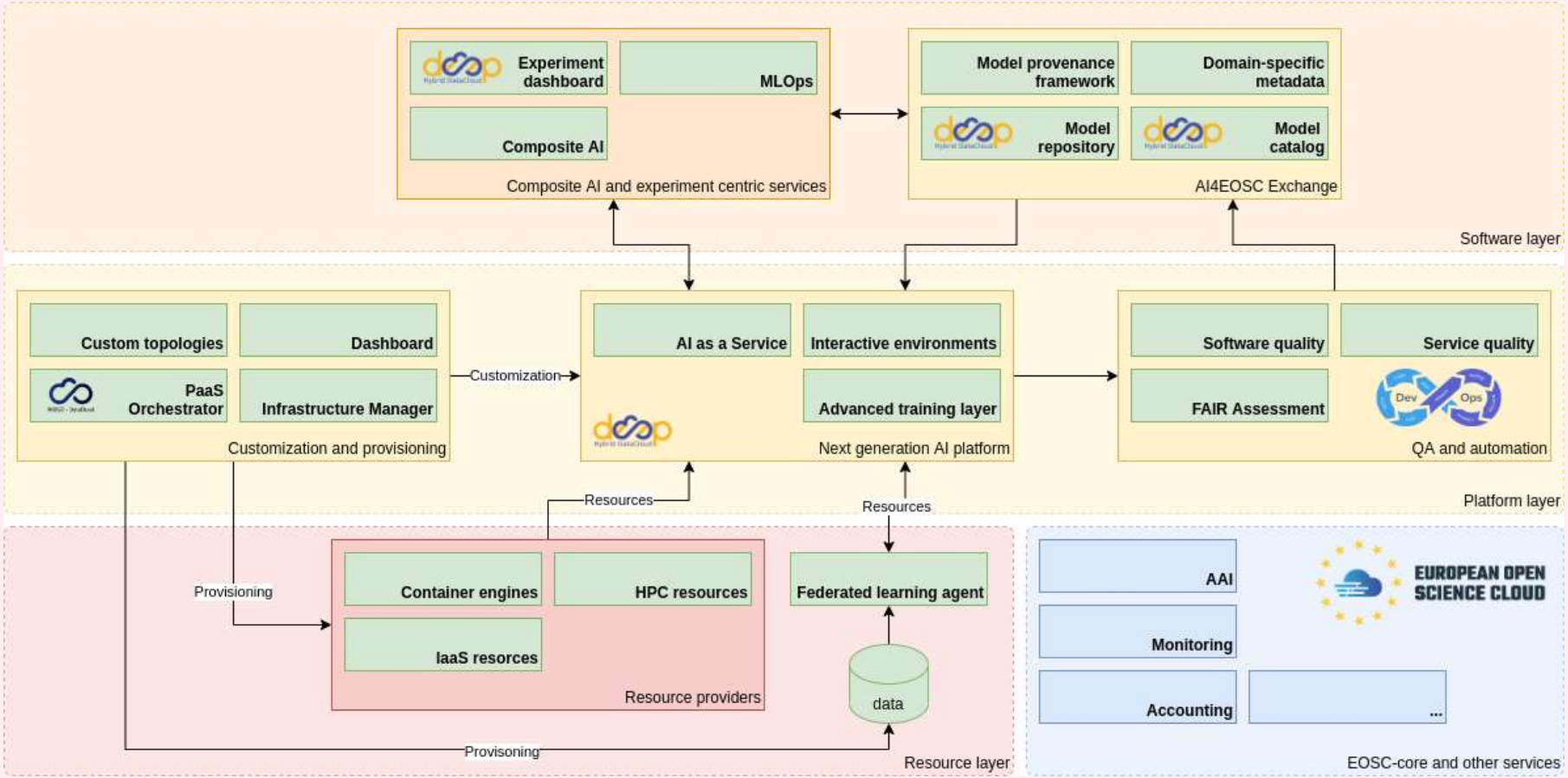
ML pipeline composition and workflows

Enhanced web user interface for applications

MLOps tools to monitor deployed models (drift detection, concept drift, accuracy and performance

Improved development environment (VS Code, JupyterLab)

AI4EOSC conceptual diagram



AI4EOSC challenges

Integration of disparate resources from different providers across EU e-Infras

Community adoption of best practices for AI code development and sharing

Data access and privacy-preserving model training on sensitive data

Correct handling of metadata and quality aspects of AI/ML/DL assets

Related task forces: FAIR metrics and data quality, semantic interoperability, Infrastructures for quality research software, Technical interoperability of data and services

AI4EOSC Expected results

Cloud based AI platform, integrated into the EOSC, with distributed training capabilities

Reusable AI/ML applications offered through AI4EOSC exchange, with easy deployment paths

Best practices and recommendations for AI practitioners and data scientists

MLOps technological framework providing drift detection capabilities

Model provenance metadata framework, covering the whole AI/M

AI4EOSC: use cases

Agrometeorology

Integrated plant protection

Automated thermography

Agrometeorology

Aim: Usage of satellite imagery, in-site measurements, and weather forecasts to generate added-value products for improving farmers activity: e.g. prediction of phenological or pest development stages.

Currently: Measurement system - TRL9, prediction system - TRL3

Within AI4EOSC: Enhancement of the prediction subsystem following a Composite AI approach to combine the different machine learning models used for the different data sources

Partners: Microstep, IISAS, Predictia

Integrated plant protection

Aim: To determine the risk of disease and pests in agricultural crops and determine the phases of plant growth and the condition of crops. The developed AI models are going to be integrated into existing national advisory platforms, operated by WODR and PSNC.

Currently: WODR and PSNC operate a national advisory platform for farmers (eDWIN), which includes a network of meteorological ground stations, the Farm Management System, and ground observations of the occurrence of diseases and pests. The current solutions are based on predictive mathematical models.

Within AI4EOSC: The plan is to add to the current mathematical prediction models the ML/DL-based models used for recognition of the plant diseases and add new sources of the data. Initial focus on wheat and sugar beats and detection of the fungal diseases.

Partners: WODR, PSNC

Automated Thermography

Aim: To identify heat losses and thermal bridges in buildings and infrastructures using drone-based images and ML/DL approach in order to provide a corresponding automated AI-based service.

Currently: The group owns a dataset of drone-based images on urban districts and drone-based thermal images on a campus district (ca. 0.8TB). The identification of thermal bridges on roofs is already possible using DL (TRL 4). The identification of leakages in district heating networks is possible too (TRL 5/6).

Within AI4EOSC: Targets enlargement of the training dataset, AI model improvement, optimisation of the workflows, and creation of a cloud-based automated service

Partners: KIT (IIP, SCC)

AI4 | eosc

Co-funded by the European Union

AI4EOSC

ai4eosc-po@listas.csic.es

ai4eosc.eu

↑↑ Reach us! ↑↑

Thank you for your attention

Project Coordinator: Álvaro López García
aloga@ifca.unican.es

Contributions to the EOSC MVE beyond EOSC Future and the INFRAEOSC07

Agenda

9:00 Introduction, Per Oster (CSC)

09:05 Talk #1: A membership and inventory app for the food metrology research infrastructure METROFOOD-RI, Karl Presser, Premotec GmbH

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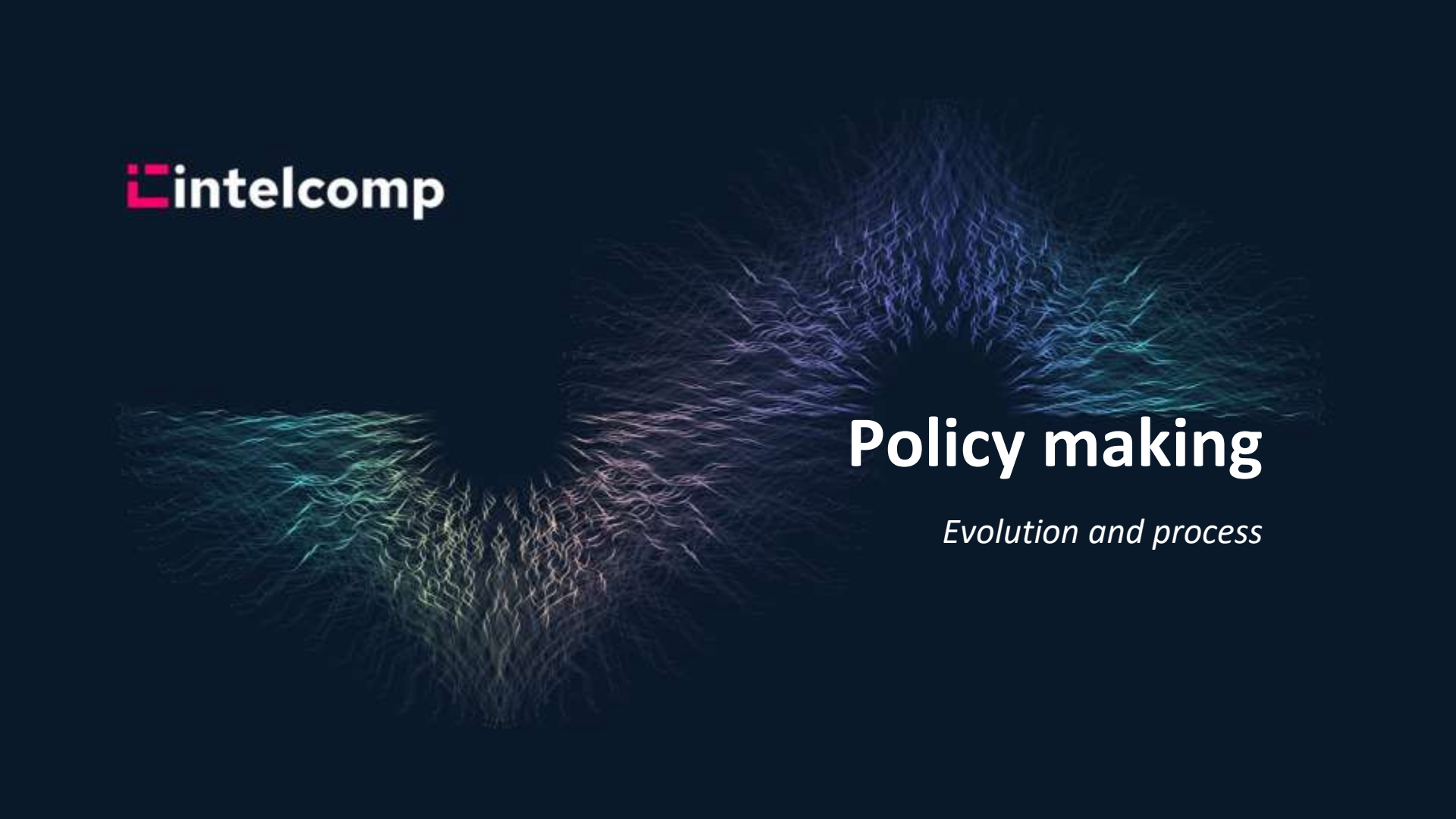
AI driven policy making using open scientific data

Androniki Pavlidou (Athena Research and Innovation Center)

17th November 2022

EOSC Symposium 2022

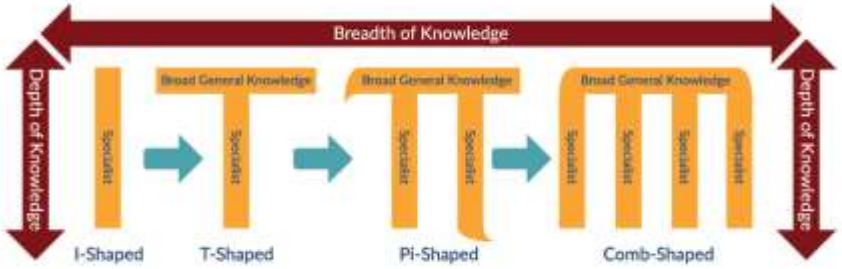


Policy making

Evolution and process

Policy making evolution

Human factors



Science, Technology and Innovation (STI) policymakers need to design and implement a new generation of STI policies that contributes to sustainability transitions

A **human in the loop** is crucial

Science, Technologies, Data factors

The evolving context in STI policies is calling for:

- New **data** sources (heterogenous, unstructured, structured), with scientific validity
- New **tools** to collect, analyze and visualize the big data
- Automated & timely **processes of heterogeneous data**
- Comprehensive & granular – **360o view** across multiple facets of R&I activities
- Transparent, replicable and trustworthy **outcomes**
- Sustainable **solutions**

The European R&I

R&I activities

- **310 Billion EUR**: EU expenditure in R&D in 2020 (EC)
- Is a **priority** across different players
- Drives large share of Europe's economic **growth**
- Creates new jobs
- Is key in addressing **societal** challenges

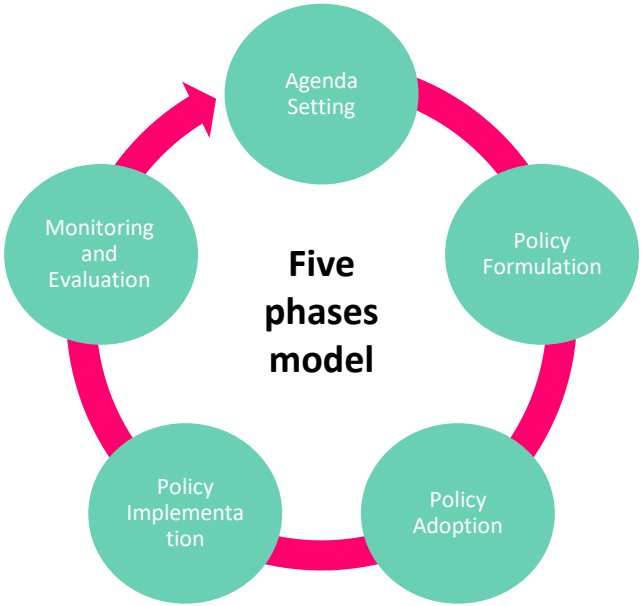
R&I policy making

- **Align** with priorities
- **Sustainable Development Goals** (SDGs)
- **Open** and **inclusive**
- **Transparent**, **evidence-driven**, **accessible** and **responsive** to as wide a range of citizens as possible (OECD)
- Up-to-date

The policy cycle process

Policies build up on past knowledge and experiences and as long as you exploit past evidence your policy gets better (policy is not formulated in a vacuum).

- **Agenda setting: Definition of the problem(s) to address**
- **Policy formulation: Explore different courses of action**
- **Policy adoption: Make a choice**
- **Policy Implementation**
- **Monitoring and Evaluation**



intelcomp

IntelComp

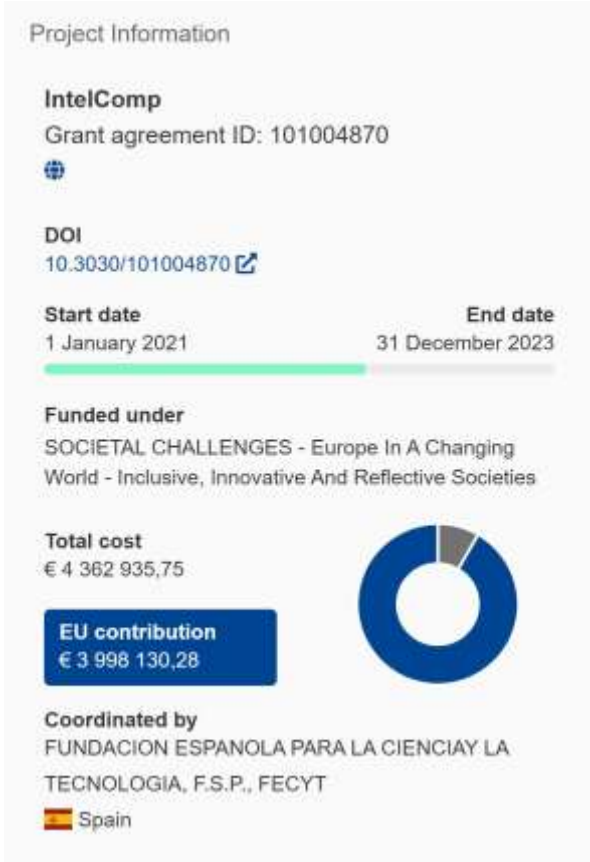
An Open Science driven solution

Introducing IntelComp

About: A Competitive Intelligence Cloud/High Performance Computing Platform for Artificial Intelligence-based Science, Technology and Innovation Policy Making.

Partners

Website: https://intelcomp.eu/



The objectives of IntelComp

1. Understand the challenges of STI policy making via the development of a co-designed framework with policy makers, funders, analysts, public administrators, citizens
2. Create a Data Space of STI related data sources
3. Develop a suite of analytical tools for STI analysis
   a. NLP and Machine Translation
   b. Subcorpus selection tools using relevance feedback
   c. Topic Modeling
4. Analyse and Validate STI Policy models
5. Deploy in HPC/HTC environment ensuring connection with EOSC standards
6. Co-develop policies via domain specific Living Labs - AI (Spain), Health (France), Climate change (Greece)

The STI policy making challenges

- Examination of research and innovation factors
- Formation of STI policy questions
- Mapping of R&I factors with questions
- Definition of R&I indicators with the questions

For **agenda setting** these indicators provide granular information about scientific and technological trends, and social needs (STI for health, environment, etc.)

- Where should I invest in next?
- Research topic, organization, country, etc
- Opportunities
- Alignment with societal goals

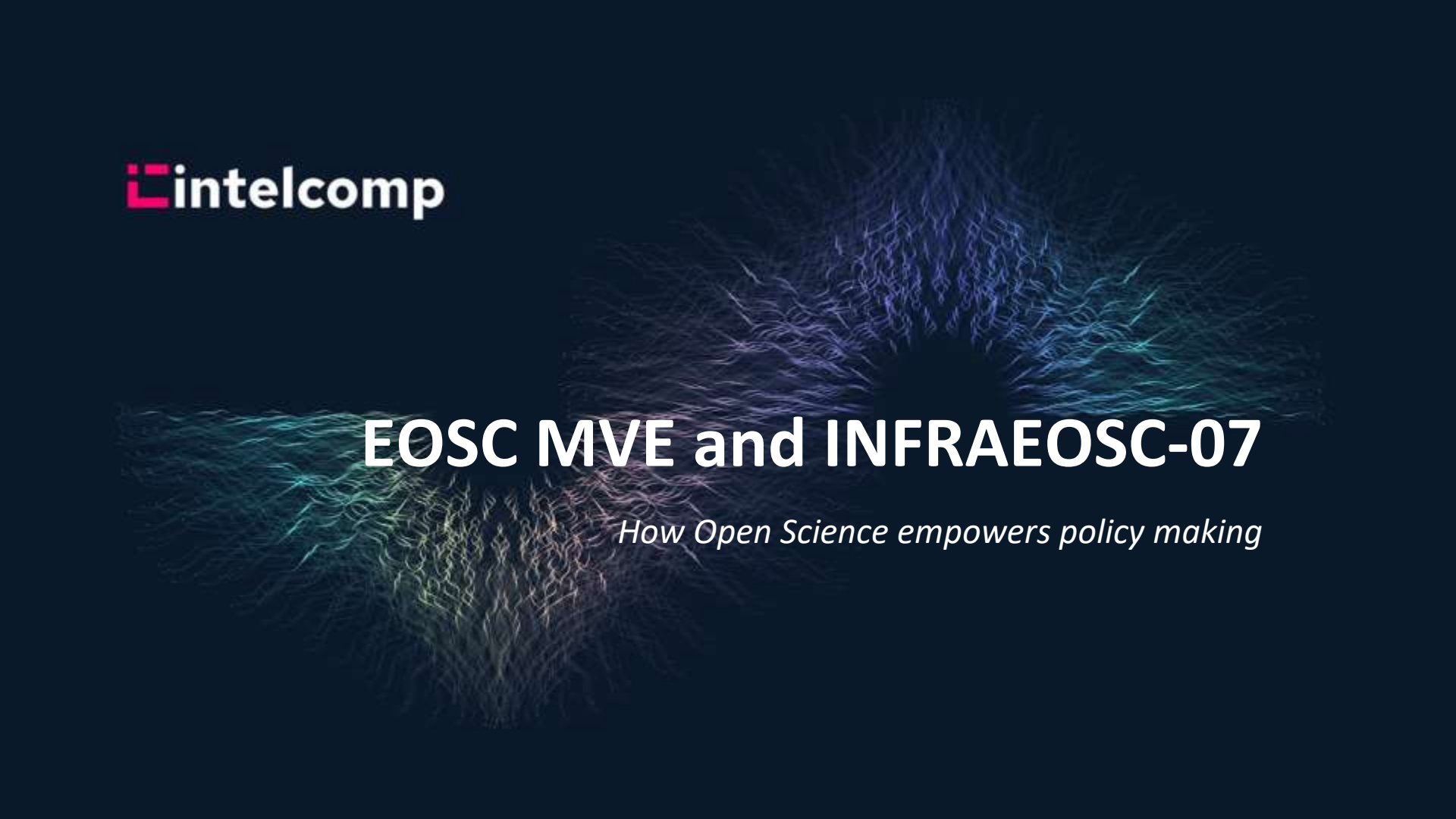
For **impact evaluation**, these indicators provide granular information for already identified outputs and outcomes

- What is the impact of R&I activities on the society different sectors/areas timing (short, medium, long-term)?
- How did (my) funding/policy/approach contribute?

From information needs to concrete policy questions

	Phase 1. Agenda setting	Phase 2. Policy formulation	Phase 3. Policy adoption	Phase 4. Policy implementation and monitoring	Phase 5. Evaluation
Function 1. Entrepreneurial activity					
Function 2. Knowledge creation					
Function 3. Knowledge diffusion through networks					
Function 4. Guidance (creating legitimacy for stakeholders, visibility and clarity)					
Function 5. Market formation (create markets through regulation of incentives)					
Function 6. Human and financial Resources mobilisation					
Function 7. Creation of legitimacy for society/counteract resistance to change					

160 domain agnostic questions


intelcomp
EOSC MVE and INFRAEOSC-07
How Open Science empowers policy making

EOSC MVE Utilization

EOSC

- IntelComp is by design compatible with the EOSC Core provider: OpenAIRE Graph (OpenAIRE)
- Will follow the EOSC Interoperability Guidelines
- Runs on High Performance Computing environment provided by an EOSC Provider EuroHPC member (BSC)
- Will use AAI service, offered by an EOSC provider

EOSC CORE at IntelComp - The OpenAIRE Graph

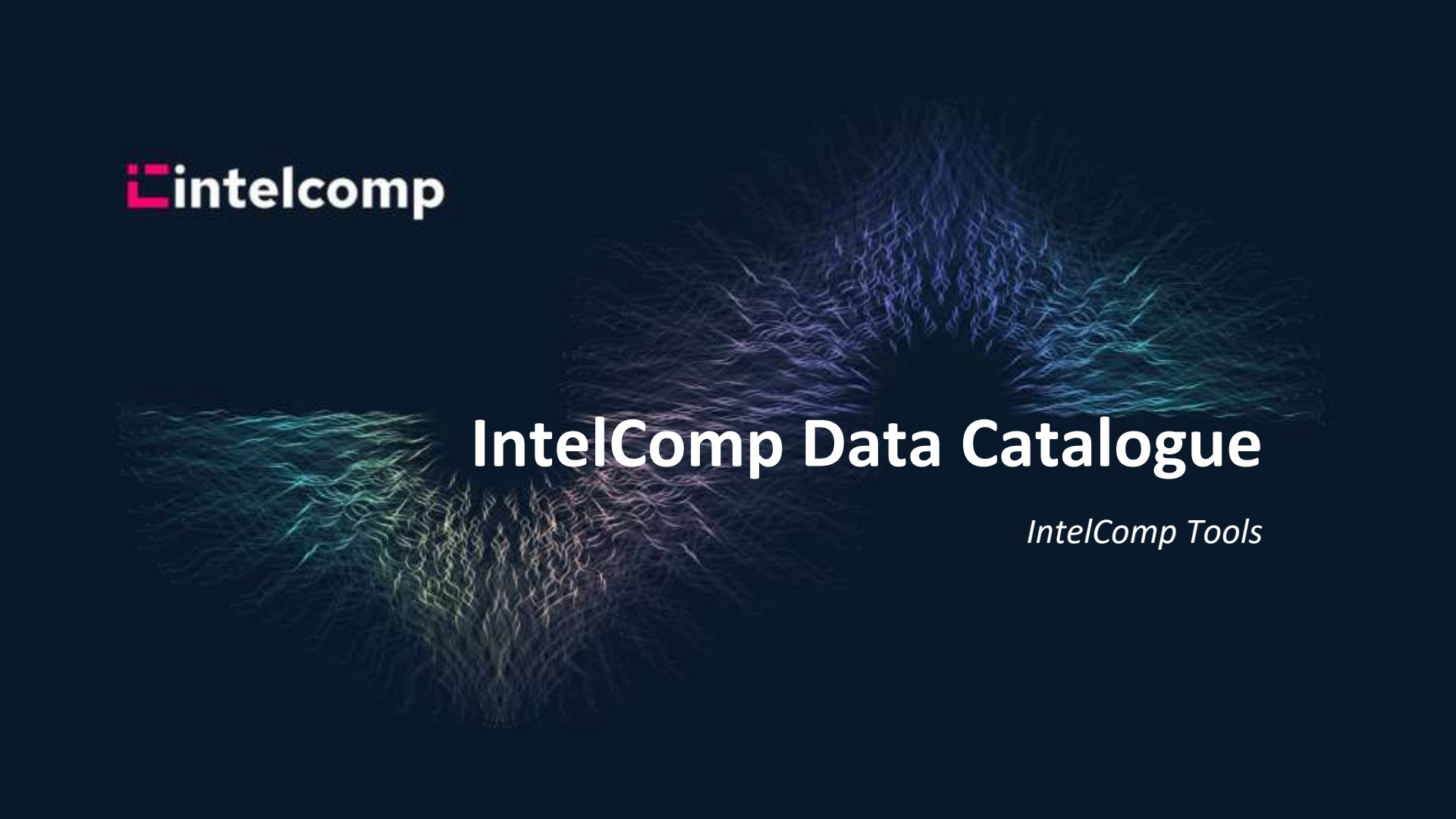
- Is the major **Open Science data source collection** for agenda setting (what's going on in science?), on IntelComp **STI Data Lake**
- Provides information critical to **impact** assessment (what did this project directly create?)
- It provides a broad **Coverage, Readiness, Timeliness**
- It offers access to scientific research **outputs** + **links** to each other and projects
- It includes **rich metadata** (organizations, data sources, citations, APCs, etc.)
- It is a fully operational Open Science infrastructure, fully embedded in **EOSC infrastructure**
- Is **inclusive**, **transparent**, **replicable**, **open**

IntelComp Tools

Data Catalogue-STI Viewer

THE INTELCOMP CONTEXT – END USER TOOLS

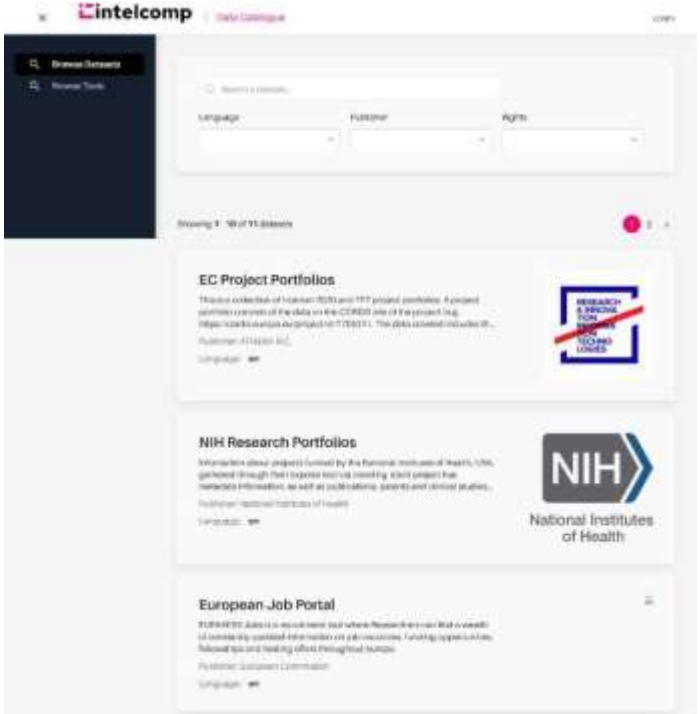
	STI Viewer	STI Policy Participation Portal	Evaluation Workbench
Targeted Organization	Public administration (Ministry), funding agency	Ministry, funding agency, academic, business and citizen organizations	Funding Agency
Targeted user	Policy & STI analyst	Policy officer, STI managers/agents for organizations, citizens	Call Manager
Main functionality	Analyze, compare and visualize a comprehensive set of STI related KPIs	To provide a synthetic list of measurements for participatory STI policy making	To assist in the ex-ante evaluation of STI proposals for funding
Stage of the policy-making cycle	Agenda setting, Evaluation	Agenda setting, Evaluation	Implementation
Previous Tool	Data4Impact	*(simplified)* STI Viewer	Corpus Viewer

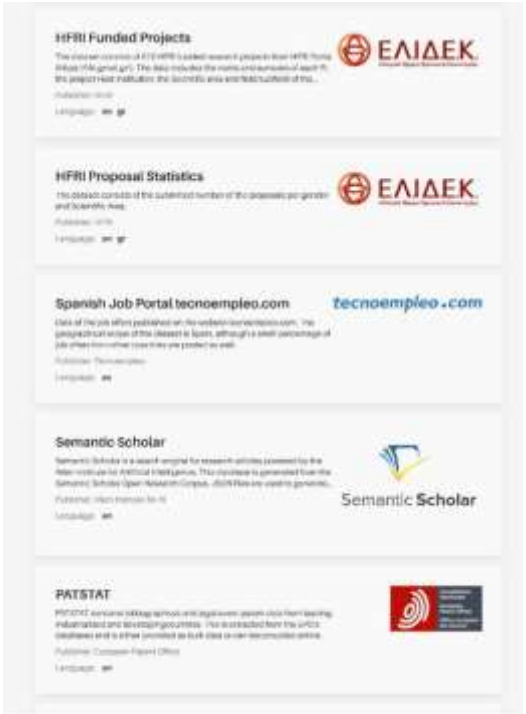


IntelComp Data Catalogue

IntelComp Tools

IntelComp STI Data Catalogue



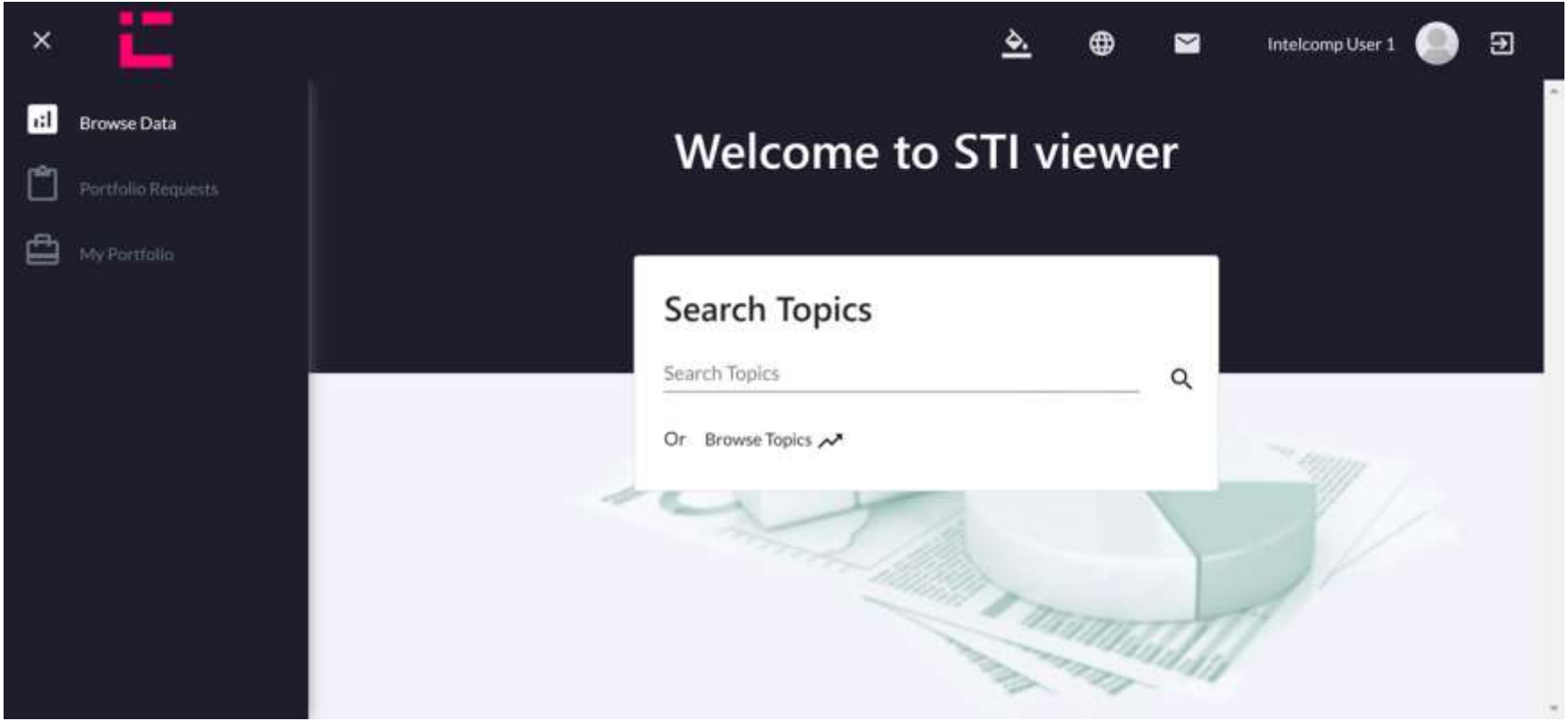


Website: http://catalogue.intelcomp.bsc.es/search

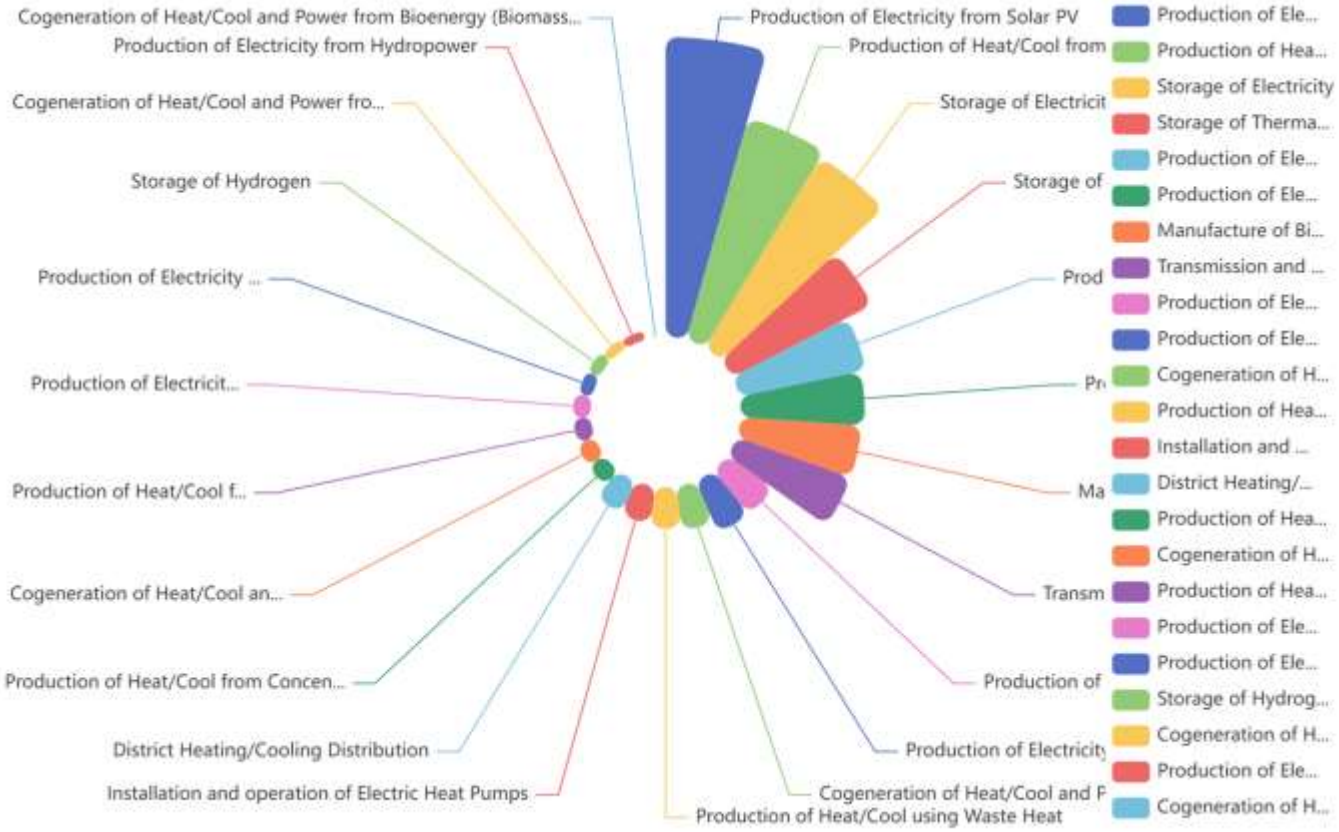
STI Viewer

IntelComp Tools

IntelComp tools - STI Viewer



International collaborations by topic



intelcomp

What’s next

IntelComp workshops

- Domain specific living labs workshops
- Information: https://intelcomp.eu/events

- National events (Spain, Greece, France) focusing on AI, Climate Change, Health respectively

- Dissemination events, Register!

intelcomp

Sustainability

In practise

Overview

Tools & Projects

IntelComp re-uses two existing platforms for STI policy:

- A national (Spain) Corpus Viewer tool
- Data4Impact (H2020 Funded project)

Utilizes OpenAIRE-Nexus (H2020 Funded project) services

- OpenAIRE Graph
- ARGOS
- Zenodo

Indirectly through the OpenAIRE Graph

- OpenAPC
- Episciences
- OpenCitations
- MONITOR

EOSC

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https://intelcomp.eu/

Androniki Pavlidou (Athena Research and Innovation Center)
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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101004870. H2020-SC6-GOVERNANCE-2018-2019-2020 / H2020-SC6-GOVERNANCE-2020

Contributions to the EOSC MVE beyond EOSC Future and the INFRAEOSC07

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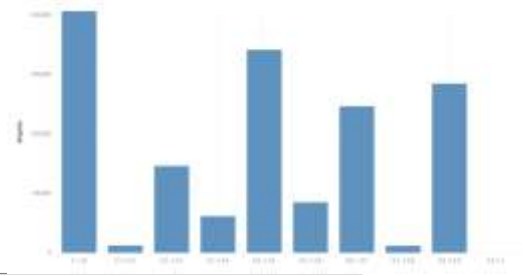
Involving researchers in Open Science
SoVisu an innovative solution

D. Reymond, MCF-HDR - Library and Information Science - david.reymond@univ-tln.fr

IMSIC (Institut Méditerranéen des Sciences de l'Information et de la Communication)

EA 7492, Université de Toulon, Aix Marseille Univ, Toulon, France

The researchers points of views



- Ok, its already done in several disciplines: maths, physics, medicine… But is it well done in a LIS point of view : metadata are often missing (left side of graphic: no title, abstract, kwds).
- But, most **are also afraid** of the huge work do, or legacy rights […]
  - The several harvesting processes are not known (many publications are already present in HAL)
  - metadata of many publications are missing

  → no keywords, abstracts, title, and furthermore the full text,

  → many errors in database persist (names, institutions)

→ the need for a dispositive to help researchers to check **their visibility** and ensure the quality of **their** data to open up **their readability**, comes as must be.

SoVisu : self-archiving, self-diffusion & trust

- Integrated system in UTLN ‘s IS
- Documentation and policy markers, steering

Objectives :

- Incitation to self archive in **HAL** (**visibility**)
- Facilitate the **quality management** (**readability**)
- Participate in a **collaborative building** process of expert index
  - → Synthetic cartographies
  - → Data checked by experts
  - → Aggregations and indexations

UNIVERSITÉ DE TOULON

Statements

The best way to **enter open science** is:

1. get a **researcher Id** (Orcid) : international identification

2. get an **archive Id** (halid) : to **claim** several forms (misspell or not) of the author's name and attached publications

That’s where comes SoVisu.

Once done, one get access to all publications, and can check consistency, check quality of description and **repair, clean** and **fashion** **own informational expert profile**

Results

- Release prototype in nov 2021 → one mail information to the whole community
  - 30% of them did connect and custom their profile in one week,
  - 50% did connect (curiosity)
- Second mail in january with one main function (and less bugs) : automatic data export for HCERES (evaluation of research) → nearly **80% of the community**

→ It works:

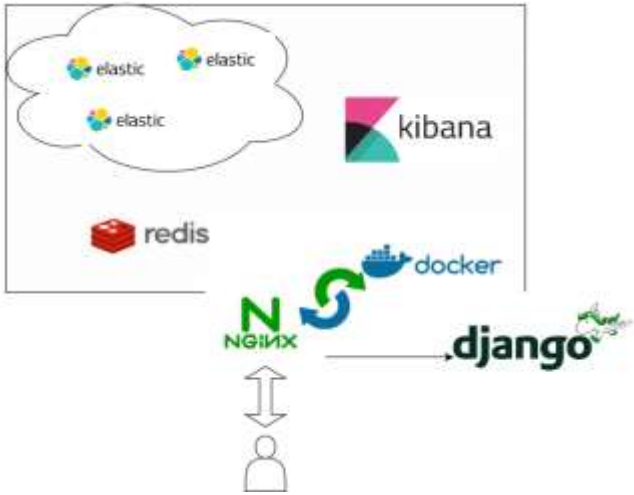
- → because researcher's ego is directly affected and most want to fashion **their profile**
- → It is **useful for the whole community locally** (resarchers, policy makers, etc.)
- → This can be a **fine-tuned** direct window from EOSC ecosystem services and backloop (cleaned data)

Open source, flexible, robust, scalable

- Cloud friendly (<epsilon), online documentation (FR)

  docker, elasticsearch, kibana → distributed Full REST API, nginx (proxy, security), Python, django (Front)

- quite easy to install, to configure in **short term process**
- The community accepts easily the help provided
- We plan to improve several features:
  - Granularity (thesis, patents, data),
  - Recommender system,
  - **Lexical completion suggestion**

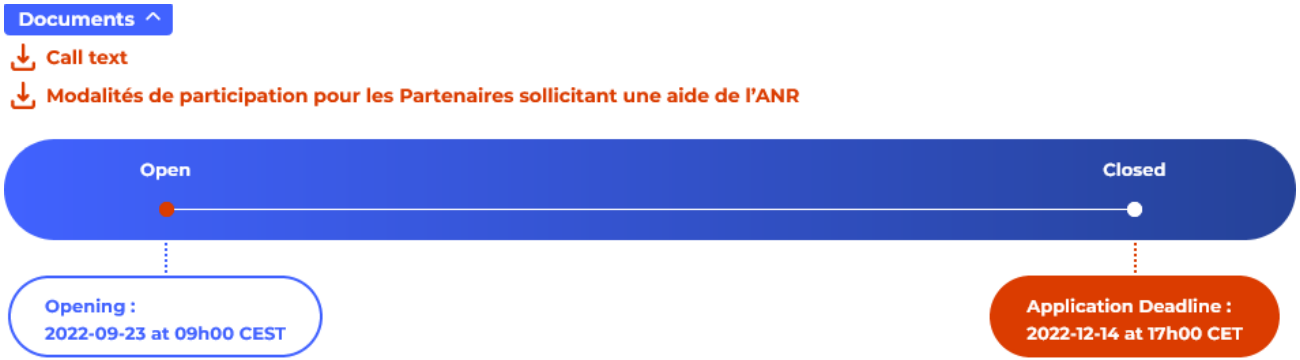


Collaborate we us for EOSC integration (interoperability and services) ?

Anyone in? mailto:david.reymond@univ-tln.fr

- Firsts steps are quite easy: **interface translation** and connection **to specific archive and IS**
- The ANR participates in the **Call Open & Re-usable Research Data & Software (ORD)** of the CHIST-ERA ERA-NET consortium bringing together 11 countries,
- Can be found under Call ORD on the official CHIST-ERA website: https://www.chistera.eu

anr agence nationale de la recherche
AU SERVICE DE LA SCIENCE



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But this is not all

- The state-of-the-art technology besides SOVisu allows:
  - Aggregations by laboratories
  - Indexations and an exploration motor
  - Interconnexions and API support (reversing qualified data to the OS ecosystem)

} Fine tuned dashboard specific to governance objectives

- The connection to the information system of university allows automatic information completion, **could be the missing (users) part** of a *Current Research Information System* (**CRIS**),
- allowing to capitalize, trace and dynamically index the knowledge of experts with the **singularity of inviting the expertise actors** of the ecosystem to check the quality of their own data and **to participate** to this indexation (crowd qualifying system ?).
  - if used as an evaluation system, researchers takes part in their evaluation
  - if installed across the European academic sphere it will be able to stimulate collaborations, cross complete lexical expertise of profiles, and feed up **valuable information in IR systems: a breakthrough in automatic corpora constitution** (cross disciplinary and linguistic)

Extensions ?

- Not just a locale french initiative, a direct open door to researchers
- Use the rich european ecosystem and tackle interoperability, service integration
- Start building **together** a collaborative integration to EuroCRIS and involve researchers ?
- Interconnect most EOSC services up to researchers and get valuable feedack

...

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An interdisciplinary Digital Twin Engine for science

Xavier Salazar, interTwin Innovation Manager

17th November 2022

interTwin is funded by Horizon Europe under grant agreement n° 101058386

Why interTwin

eosc

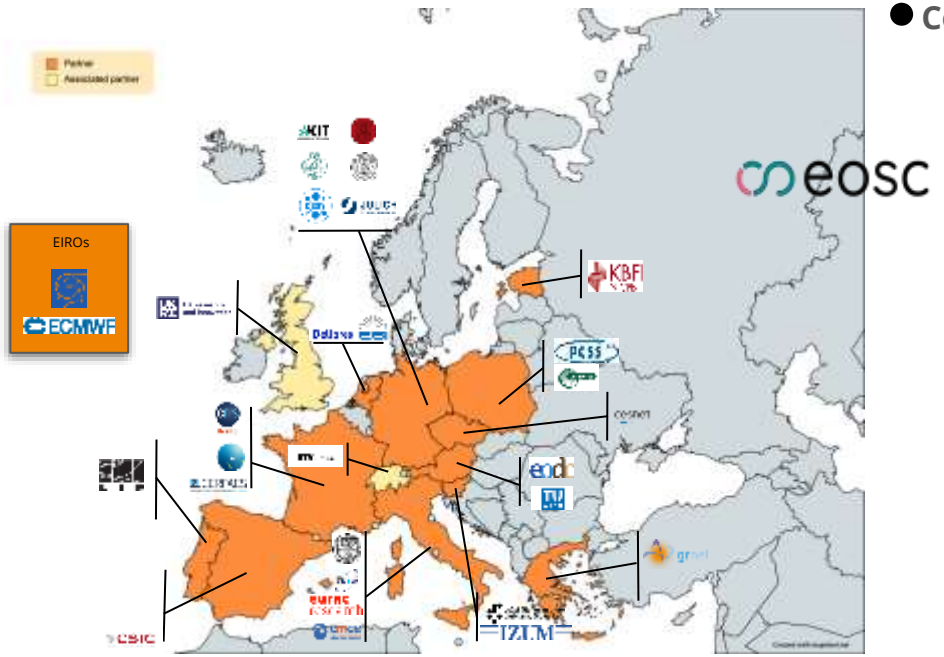
interTwin overall objective

HORIZON-INFRA-2021-TECH-01- 01: Interdisciplinary digital twins - Expected outcomes

- prototype of an interdisciplinary Digital Twin, using a combination of the latest digital technologies, to address complex challenges;
- support interoperability of data and software, integration and collaboration across different scientific domains;
- A framework enabling Researchers to ensure the quality, reliability, verifiability of the data available through the Common European Data Spaces and the **European Open Science Cloud**

Co-design and **implement** the prototype of an **interdisciplinary Digital Twin Engine** - an open source platform based on open standards that offers the capability to integrate with **application-specific Digital Twins**. Its functional specifications and implementation are based on a **co-designed interoperability framework** and conceptual model of a DT for research - **the DTE blueprint architecture**.

General Information



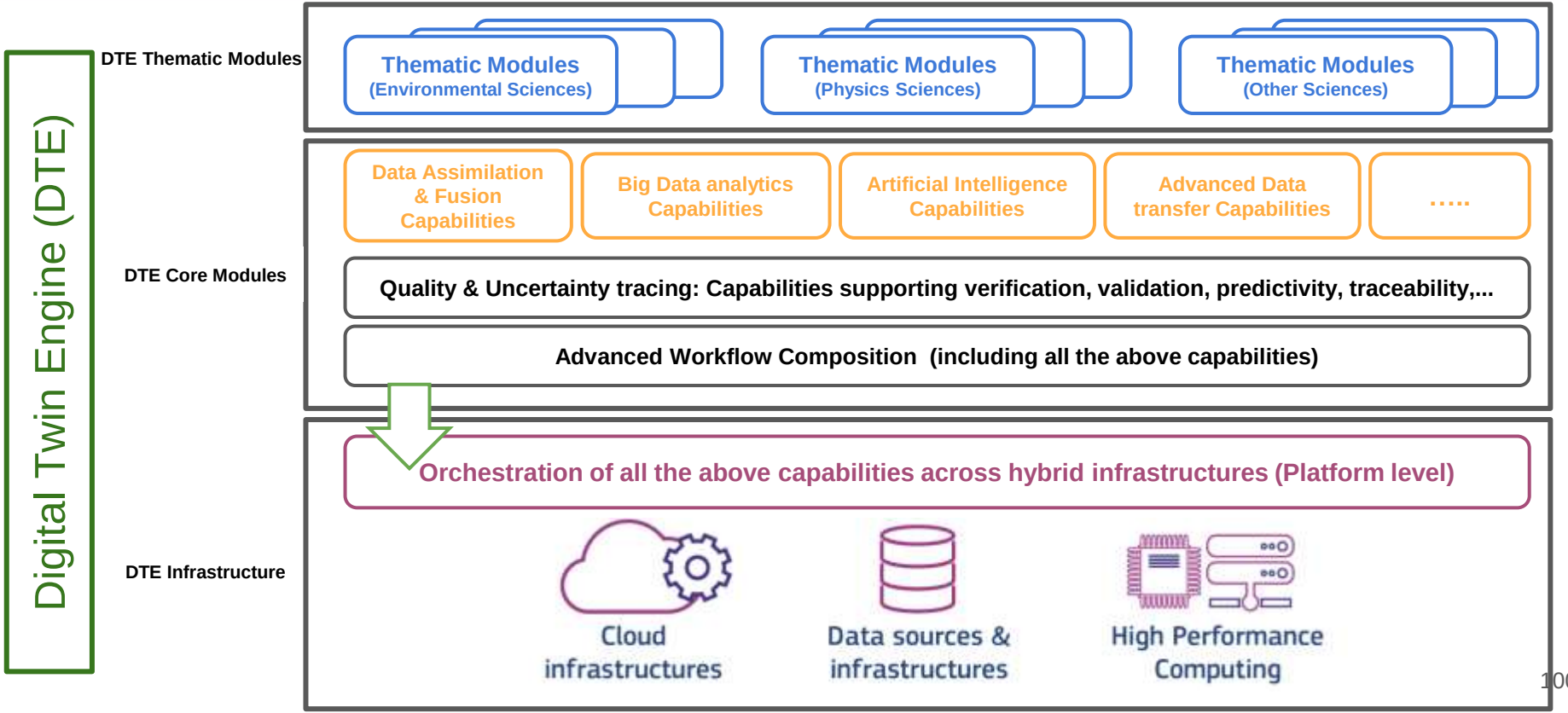
- EGI Foundation as coordinator and 30 partners
- Consortium at a glance
  - 10 partners to deliver cloud, HTC , HPC resources and access to Quantum systems
  - 11 open source technology providers delivering the DTE infrastructure and horizontal capabilities
  - 14 partners representing research communities from 5 scientific areas bringing requirements and developing DT applications and thematic modules.

Duration	36 months
Start date	1 September 2022
End date	31 August 2025
Budget	11,731,665 EUR
PMs	1481.5

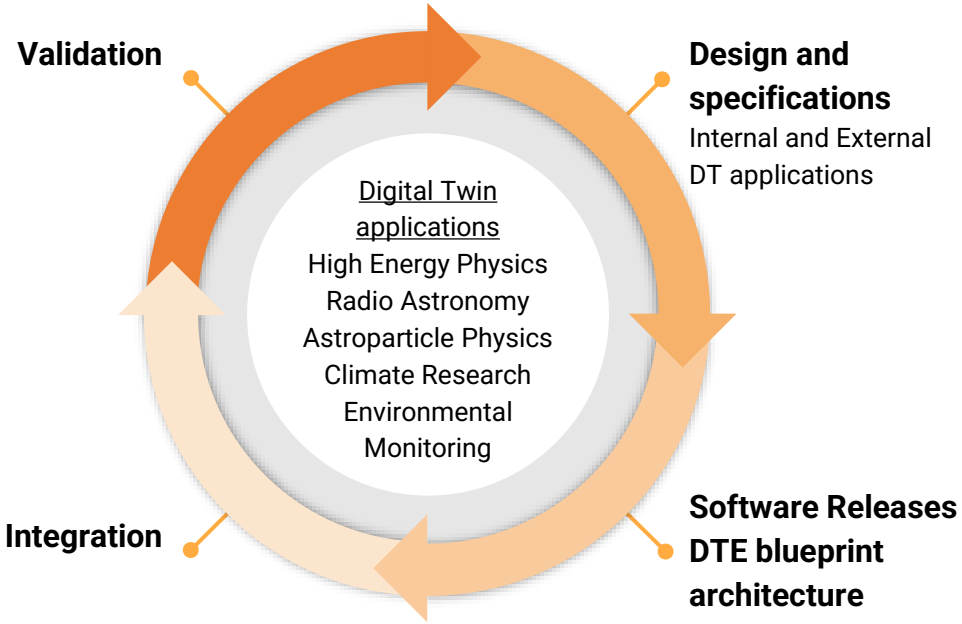
1. Co-design, develop and provide a Digital Twin Engine that simplifies & accelerates the development of complex application-specific DTs that benefits researchers, business and civil society
2. Co-design a Digital Twin Engine blueprint architecture that provides a conceptual framework for the development of DTs supporting interoperability, performance, portability & accuracy.
3. Extend the technical capabilities of the European Open Science Cloud with modelling & simulation tools integrated with its compute platform
4. Ensure trust and reproducibility in science through quality, reliability and verifiability of the outputs of Digital Twins
5. Demonstrate data fusion with complex modelling & prediction technologies
6. Simplify DT application development with tools to manage AI workflows and the model lifecycle while reinforcing open science practices

interTwin Specific Objectives

Digital Twin Engine - Strawman Concept



DTE Development Cycle



Aim:
Pre-operational software of a DTE at TRL 6 or 7 depending on the components

eosc

Objective: To get results onboarded and available via EOSC marketplace:

- DTE components reaching higher TRL > 7 onboarded as EOSC resources
- DT applications as Software Research Product

Timeline

Project Year 1

04.2023 — **Design and specifications**

Deliverables: Report on requirements for all use cases

05.2023 — **DTE blueprint architecture**

Deliverable: DTE blueprint architecture, functional specifications and requirements analysis v1

Project Year 2

10-12.2023 — **Software Releases**

Deliverables: Software releases for all use cases and modules

01.2024 — **DTE blueprint architecture**

Deliverable: DTE blueprint architecture, functional specifications and requirements analysis v2

04.2024 — **Validation**

Deliverables: First version of the thematic module

09.2024 — **Design and specifications**

Deliverables: Updated report on requirements for all use cases

Project Year 3

10.2024 — **DTE blueprint architecture**

Deliverable: DTE blueprint architecture, functional specifications and requirements analysis v3

01-04.2025 — **Software Releases**

Deliverables: Final Software releases for all use cases and modules

07-08.2025 — **Validation**

Deliverables:
DT application development and integration report
Report on software architecture concepts based on DestinE and InterTwin
Final Architecture design of the DTs capabilities

Cooperation with other external initiatives

https://digital-strategy.ec.europa.eu/en/policies/destination-earth

Projects in HORIZON-INFRA-TECH-01

https://dtgeo.eu/
A Digital Twin for GEOphysical Extremes

https://biodt.eu/
A Digital Twin prototype to help protect and restore biodiversity

https://www.ebrain-health.eu/
Actionable Multilevel Health Data

https://www.ai4europe.eu/

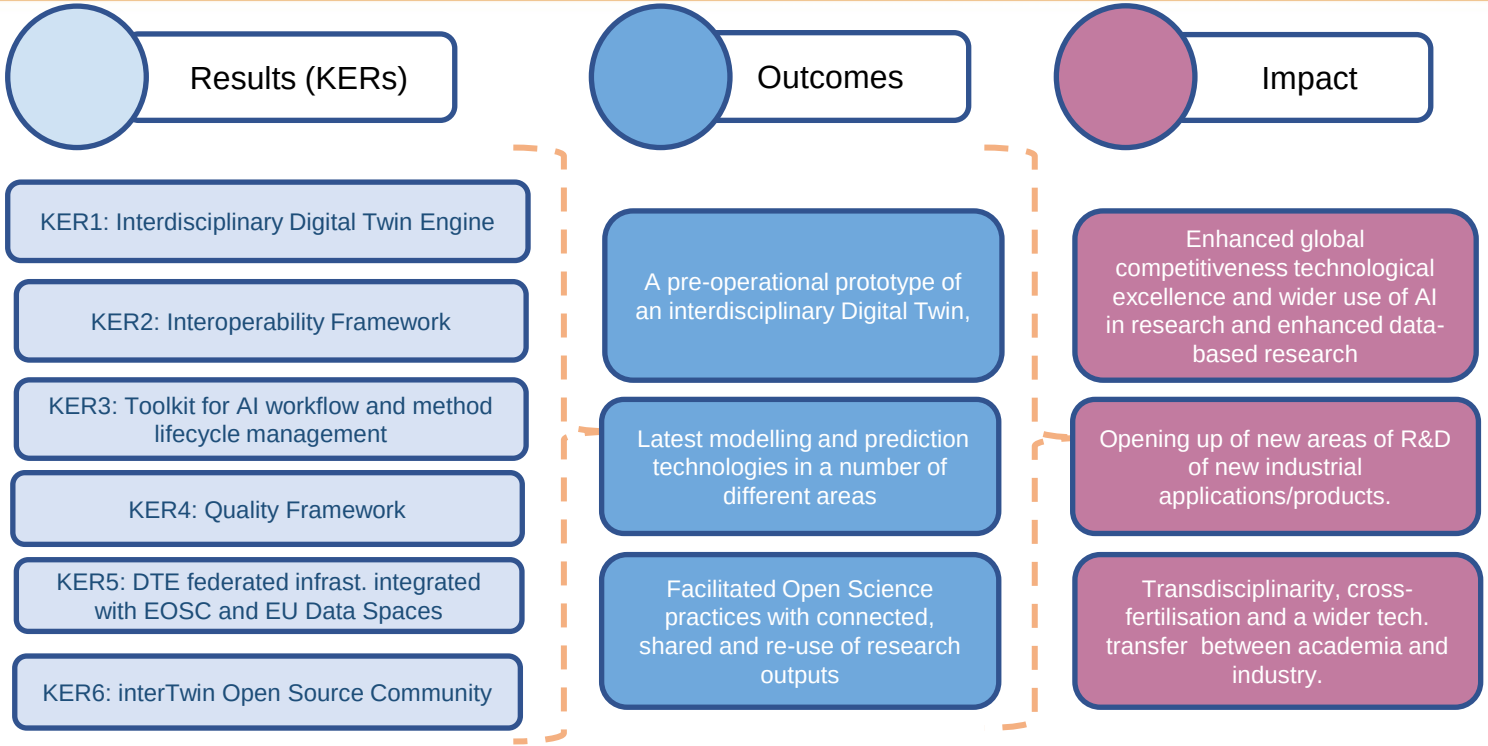
https://gaia-x.eu/

External Expert Advisory Board (EEAB)

https://www.plattform-i40.de/

https://eosc.eu/

KERs and Expected Pathway to Impact



Main contributions for EOSC

- One of our main channels for community & ecosystem development
- Main computing providers partners are also EOSC providers
- An important exploitation path to become part of EOSC marketplace / portfolio of available technologies and services
- Committed to support Interoperability guidelines for access and orchestration
- DTE make use of the EOSC computing platform
- Extension to EOSC accounting to support HPC resources

Call for action

We would like to hear feedback from you:

- We expect to engage with more communities having similar approaches / wanting to use or implement digital twins (early adopters)
- We aim to engage with external communities to discuss about the Blueprint Architecture (internal co-design within the project, to be extended during the project)
- We aim to engage experts in Digital Twins to join the External Expert Advisory Board - want to contribute & join

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https://www.intertwin.eu/

Thank you!

https://www.intertwin.eu
info@intertwin.eu

Contributions to the EOSC MVE beyond EOSC Future and the INFRAEOSC07

Agenda

9:00 Introduction, Per Oster (CSC)

09:05 Talk #1: A membership and inventory app for the food metrology research infrastructure METROFOOD-RI, Karl Presser, Premotec GmbH

09:15 Talk #2: OpenWebSearch.EU: Towards an open Web Search Infrastructure, Michael Granitzer, University of Passau

09:25 Talk #3: Considering data harmonisation and quality information in European marine metrology research infrastructures, Markus Konkol, 52°North Spatial Information Research GmbH

09:35 Talk #4: AI4EOSC: towards a scientific exchange for AI researchers in the EOSC, Alvaro Lopez Garcia, CISC

09:45 Talk #5: IntelComp: AI driven policy making using open scientific data, Androniki Pavlidou, Athena Research Center

09:55 Talk #6: Involving researchers in Open Science: the SoVisu innovative solution, David Reymond Université de Toulon

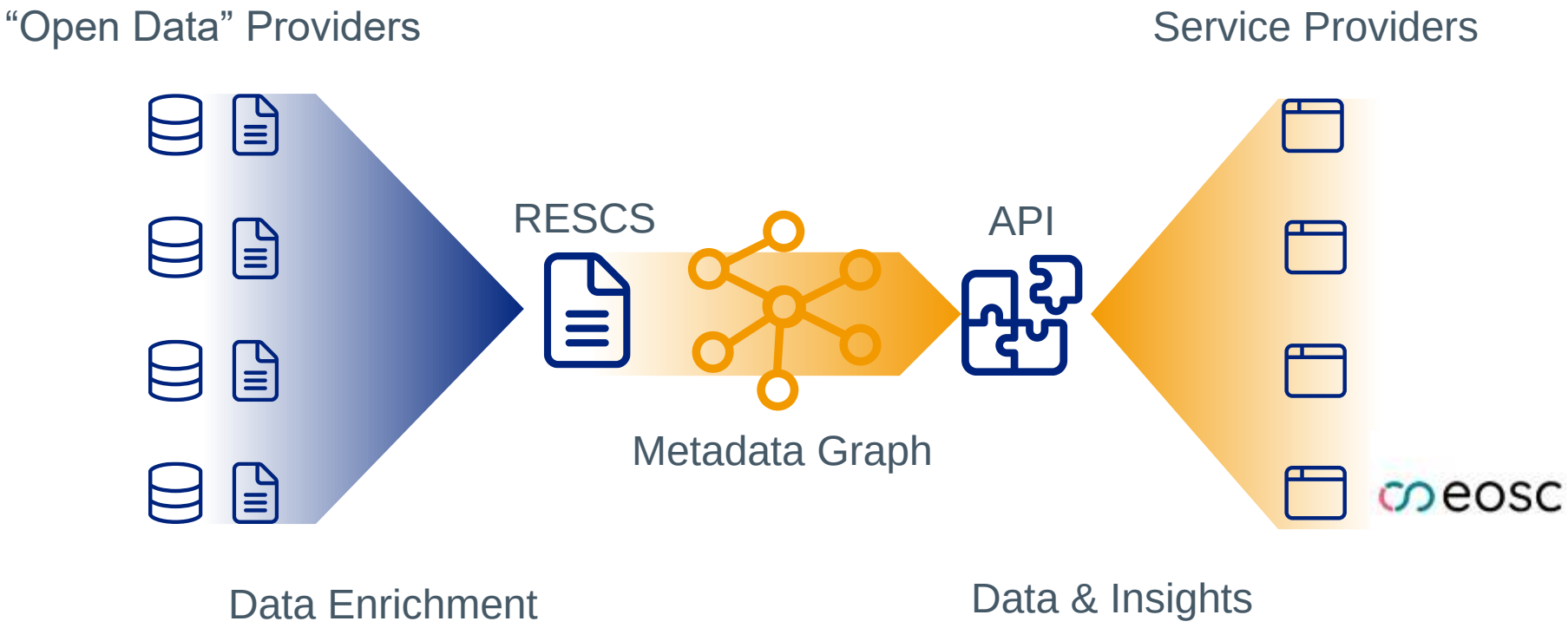
10:05 Talk #7: InterTwin: extending the technical capabilities of the EOSC with modelling and simulation tools (Digital Twin Engine) integrated with EOSC compute platform, Xavier Salazar, EGI Foundation

10:15 Talk #8: Which open data are relevant for my research?, Sebastian Sigloch, SWITCH

10:25 Conclusion and wrap-up, Per Oster (CSC)

Connectome – Project
EOSC Symposium 2022

SWITCH


“Open Data” Providers
Service Providers
RESCS
API
Metadata Graph
eosc
Data Enrichment
Data & Insights

Metadata “Crosswalks”

Crosswalks implemented:

→BCUL Patrinum MARCXML -> RiC-O
→RiC-O (Archives) -> RESCS
→Patrinum MARCXML -> RESCS
→SLSP MARCXML -> RESCS
→CORDIS XML -> RESCS
→OpenAlex JSON -> RESCS
→SNSF CSV -> RESCS
→Opendata.swiss JSON -> RESCS

Technology

→RDF – Mapping: Non-RDF to RDF.
→preprocessing & specific mapping needed

EOSC TF Semantic Interoperability

→Scope Landscape Overview

Objective

→Exchangeable crosswalks (target) to achieve DevOps flexibility

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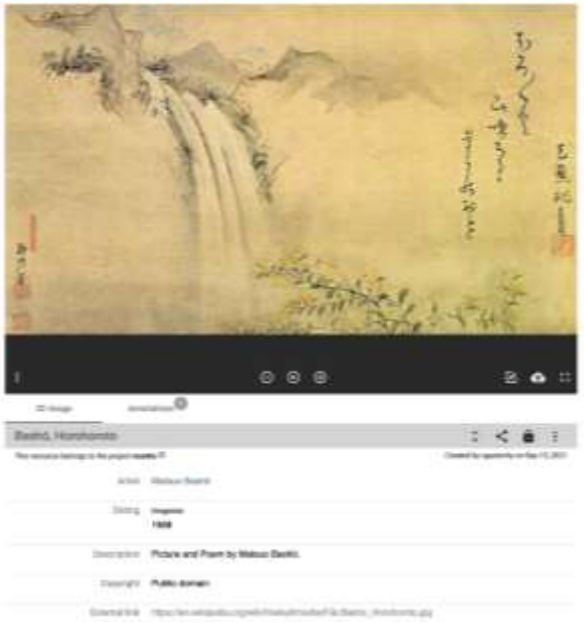
Data Enrichment Use-Cases

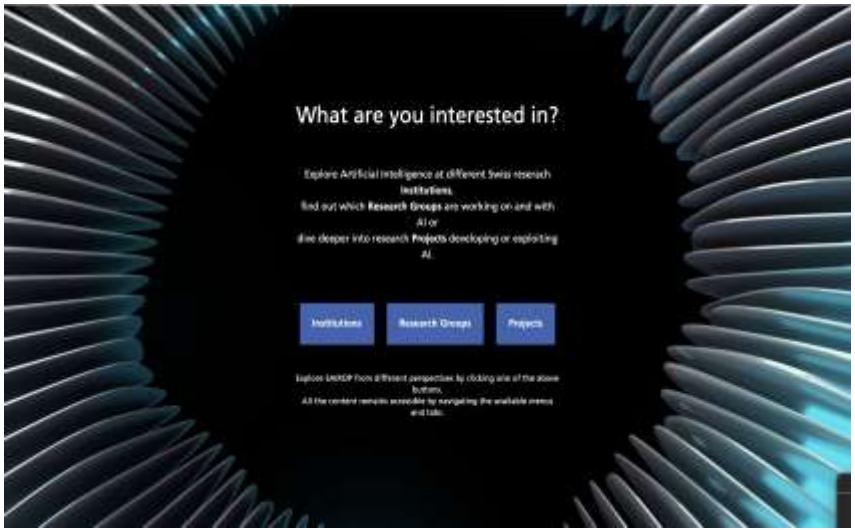
→Linked Archival & Bibliographic Metadata with BCUL and FHGR.

→Named Entity Recognition and Disambiguation with Memobase and DaSCH.

→Development of various crosswalks for data aggregation purposes.



SAIROP.swiss



→AI research projects, people, organizations for exploration purposes.

→Swiss (SNF, ARAMIS), and European (CORDIS, in dev) project data.

→API allows integration of metadata (using their data structure).

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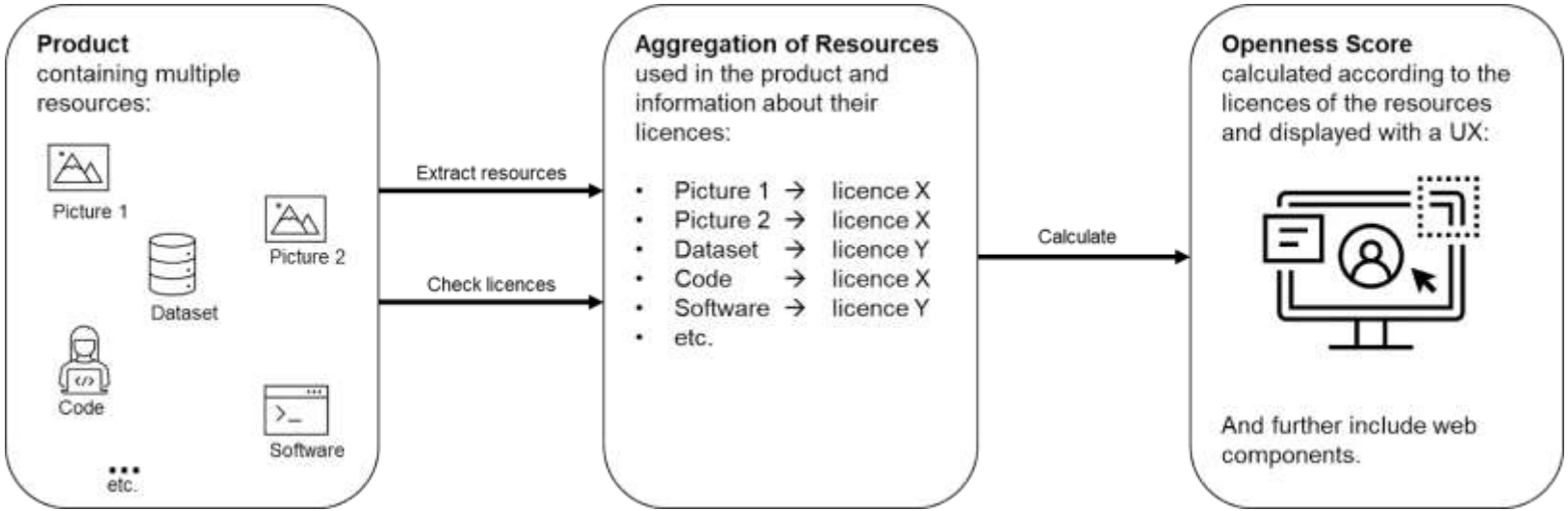
Openness Score

Swissuniversities funded project with University of Applied Sciences Graubünden & Université de Fribourg



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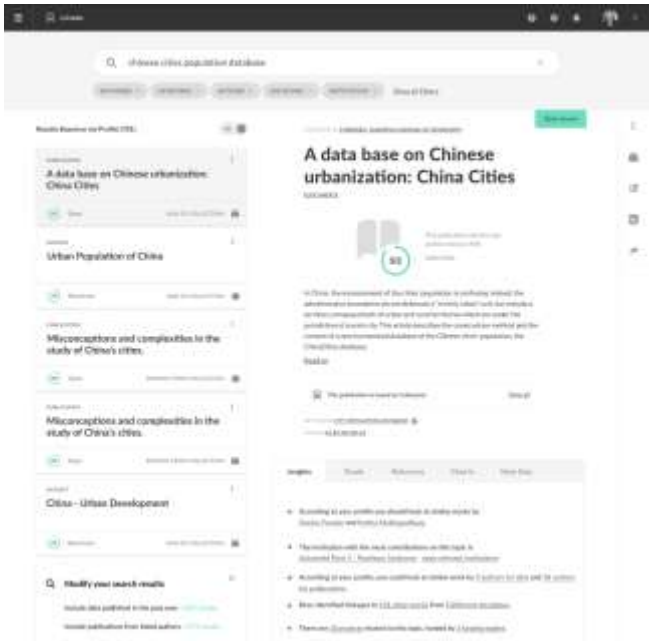
Discovery & Insights Platform



→For students & scholars to discover and use open data from different disciplines.

→Data Insights
- →Visualisations
- →Recommendations
- →automated summaries
- →simplifications of abstracts

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Want to collaborate?

We are looking for joint projects in...

- →Metadata & crosswalks registries (FAIRCORE4EOSC / EOSC-A TF-SI).
- →Data Enrichments.
- →EOSC Research Discovery Graphs & Platforms.
- →Infrastructure Federations.
- →CH-Node for exchanging metadata to EOSC.

Participation in Horizon Europe Projects

- →Switzerland is currently a non-associated third-country.
- →Participation via EU partners still possible.
- →Funding from Swiss Secretariat for Education, Research and Innovation (SERI).

Partners for CHIST-ERA

- →Joint project for Open Research Data call.

SWITCH

Contact us

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Dr Andrea Bertino
Senior Project Manager Open Science / Connectome Project
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EOSC Task-Forces, we’re participating in:
→ Semantic Interoperability (Kurt Baumann)
→ FAIR metrics and Data Quality (Andrea Bertino)

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