Towards the European AI on demand platform

Barry O'Sullivan and Gabriel González Castañé

Event EC – presentation of ADR-e and AI4Europe

17th October 2022

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 101070000

The AI4EU project in a nutshell

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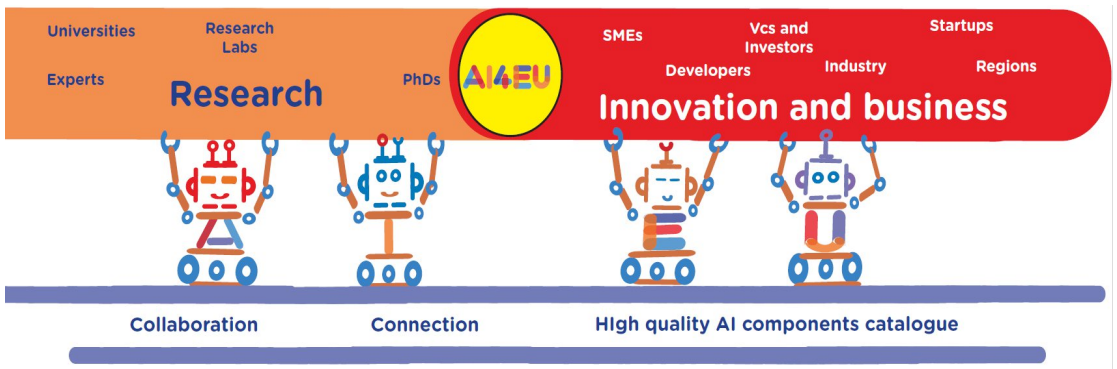
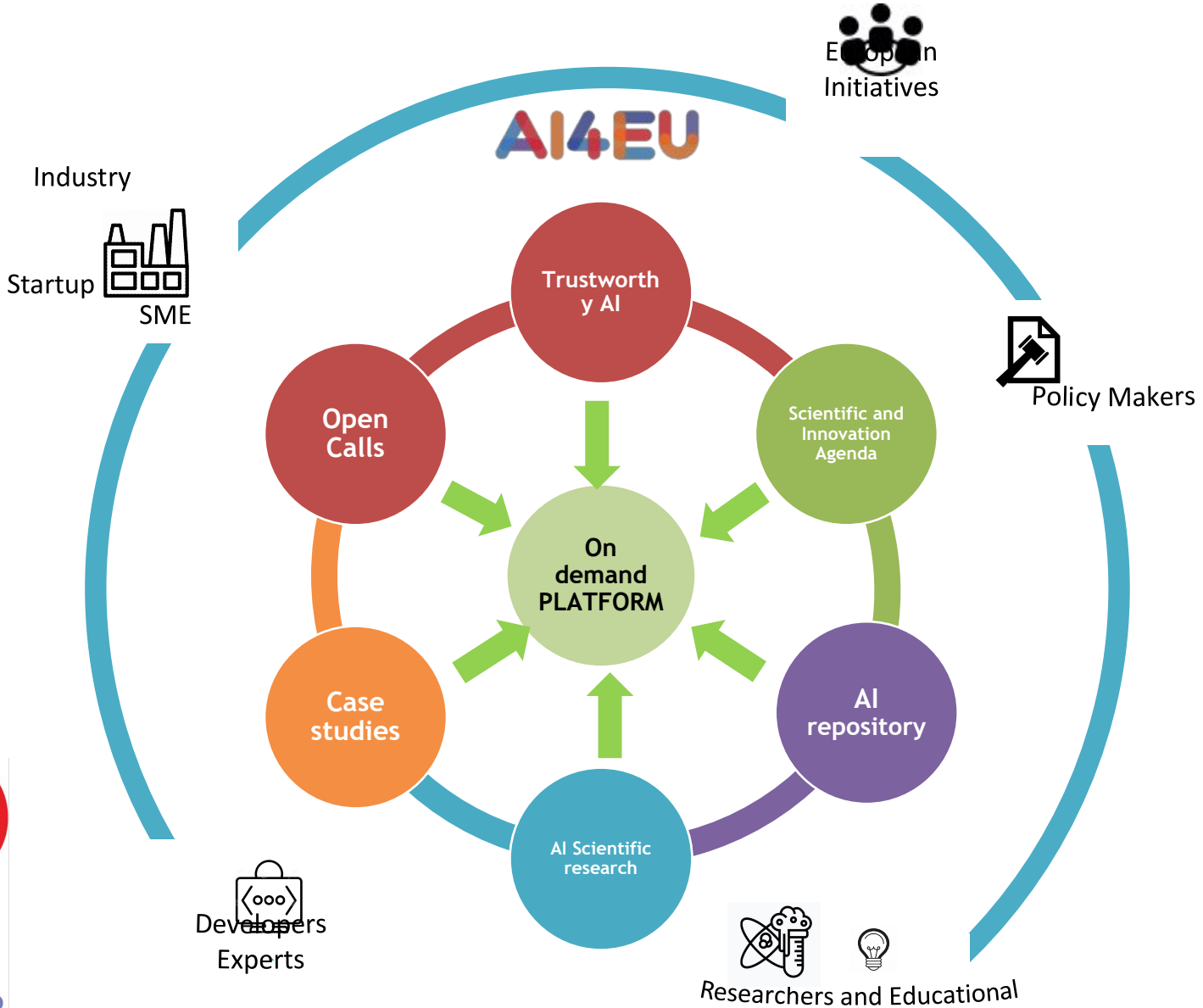
AI4EU high-level vision

Core objectives of AI4EU

- **Avoid fragmentation in Europe**
- **Create a supportive platform on AI for European stakeholders**
- **Construct a EU shared repository of AI knowledge – tools / assets**
- **Facilitate the use and uptake of AI by SMEs and industry**





Completing the AI4EU picture and services

AI technology transfer

Research support / monetize research

Research

Innovation

AI4EU

TAILOR

AI4media

HUMANE AI NET

elise

Populate / use

Services

Use/create exploit

Industry

Developers

Experts

Startup

SME

Policy Makers

Networks of Excellence and lighthouse

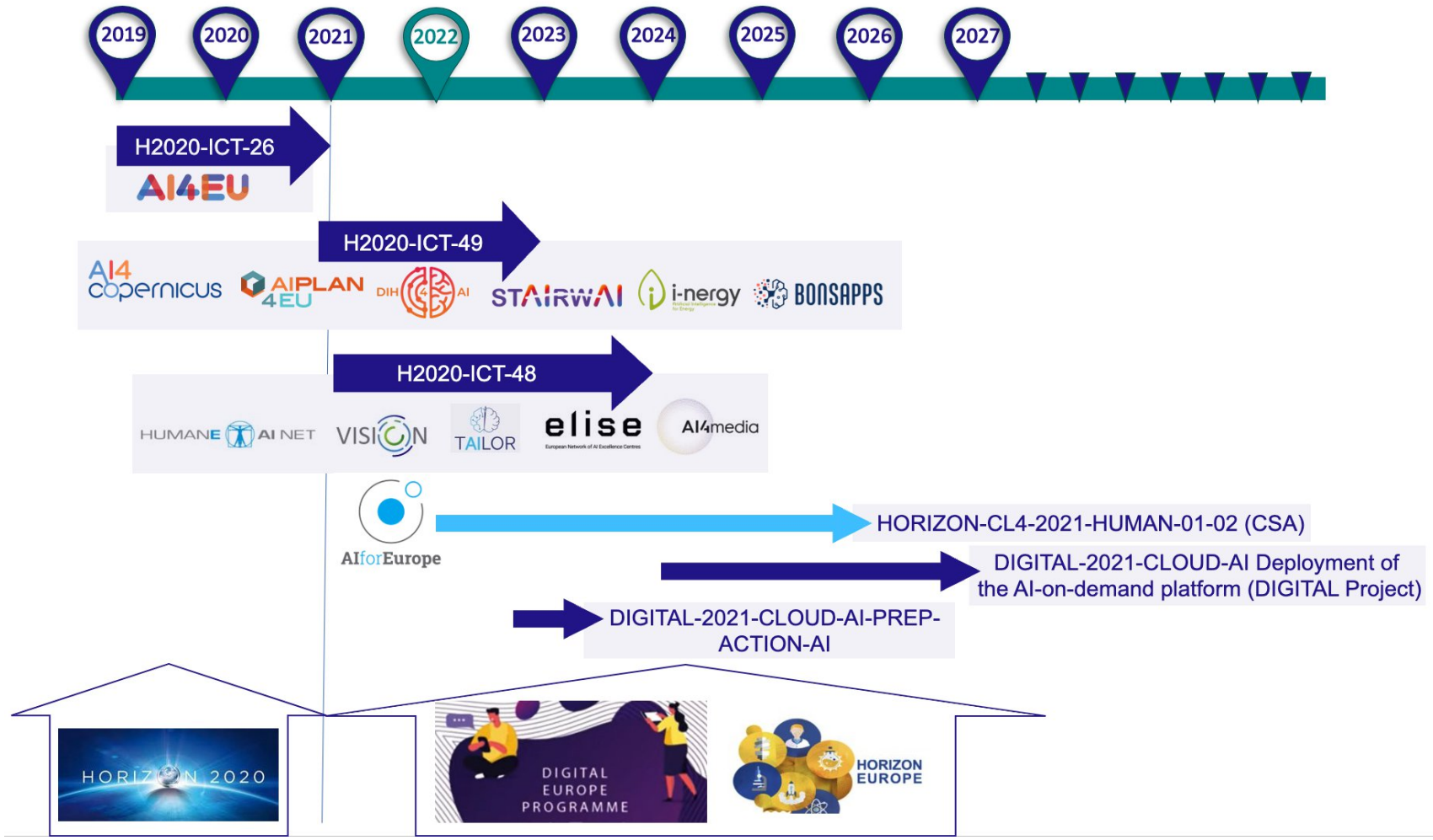
AI4EU Experiments

AI4EU services and Exploitation channles

Researchers and Educational

European Initiatives

Time line to bootstrap the AI on Demand



AI4Europe

Vision and plans

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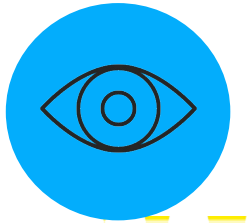
Approach

Separating the project from the platform

- Our project is just one of many that is tasked with advancing the AI-on-demand platform.
- Ongoing ICT49 projects, ICT48s, forthcoming DIGITIAL Preparatory project, forthcoming DIGITIAL project (€27m) and 40+ other Horizon Europe that have been funded under calls that make explicit reference to need to engage with the platform.
- The AI4Europe project has a plan to technically advance the platform and to build a community of supporters to enrich it – but the project and the platform are two separate entities.
- The platform will outlive AI4Europe and the project will need to share responsibilities with existing and forthcoming projects.

Motivate engagement with the platform

- To motivate the AI research and innovation community to engage with the platform there is the necessity to demonstrate **that the platform is a community asset** and **not controlled by any project, organization or group of organizations.**
- The platform needs to be designed to enhance and integrate with existing communities/initiatives, not replace them or undermine their identity or communities.
- The measure of success of the project will be the extent to which organizations/communities not connected with consortium partner embrace and use the platform.



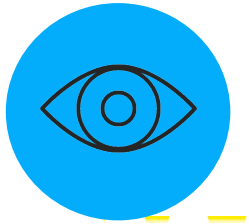
The Project Objective & Context

Objective:

- Support and facilitate a sustainable digital platform and experimentation environment through the creation of open research channels and mechanisms that foster the European AI research ecosystem, academic and industrial, and that maximizes the academic, social, and industrial impact while it seamlessly integrates other projects, platforms, and solutions.

Context:

- The EU is advancing efforts to establish an **AI ecosystem of excellence**.
- A pillar of this strategy is the creation of an **AI on-demand repository of experts, tools, and services supported by a set of distributed platforms**.
- **These platforms must be seamlessly used as a resource for the research community** to support the European AI model based on the principles **Trustworthy AI**.



What will the platform do?

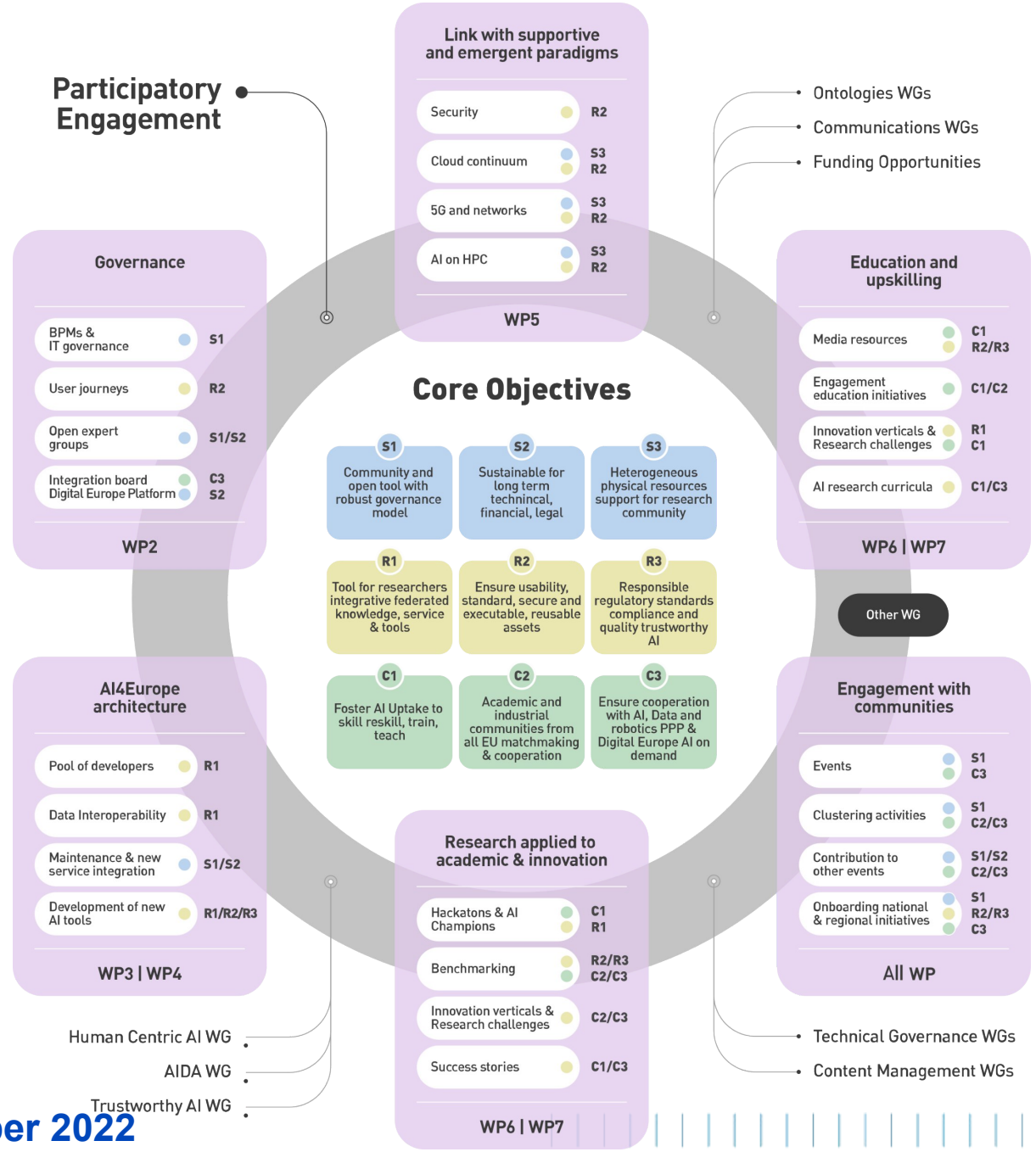
- The **platform will showcase the state-of-the-art science** being developed by leading AI research centres and laboratories, tackling topics including Human Centered AI, Explainable AI, AI for Good etc.

- **The trustworthiness of resources and the ethical design of AI tools** will be embedded within the Platform's publication process, providing an **ecosystem of trust** within which public bodies and companies can uptake the assets produced by researchers.

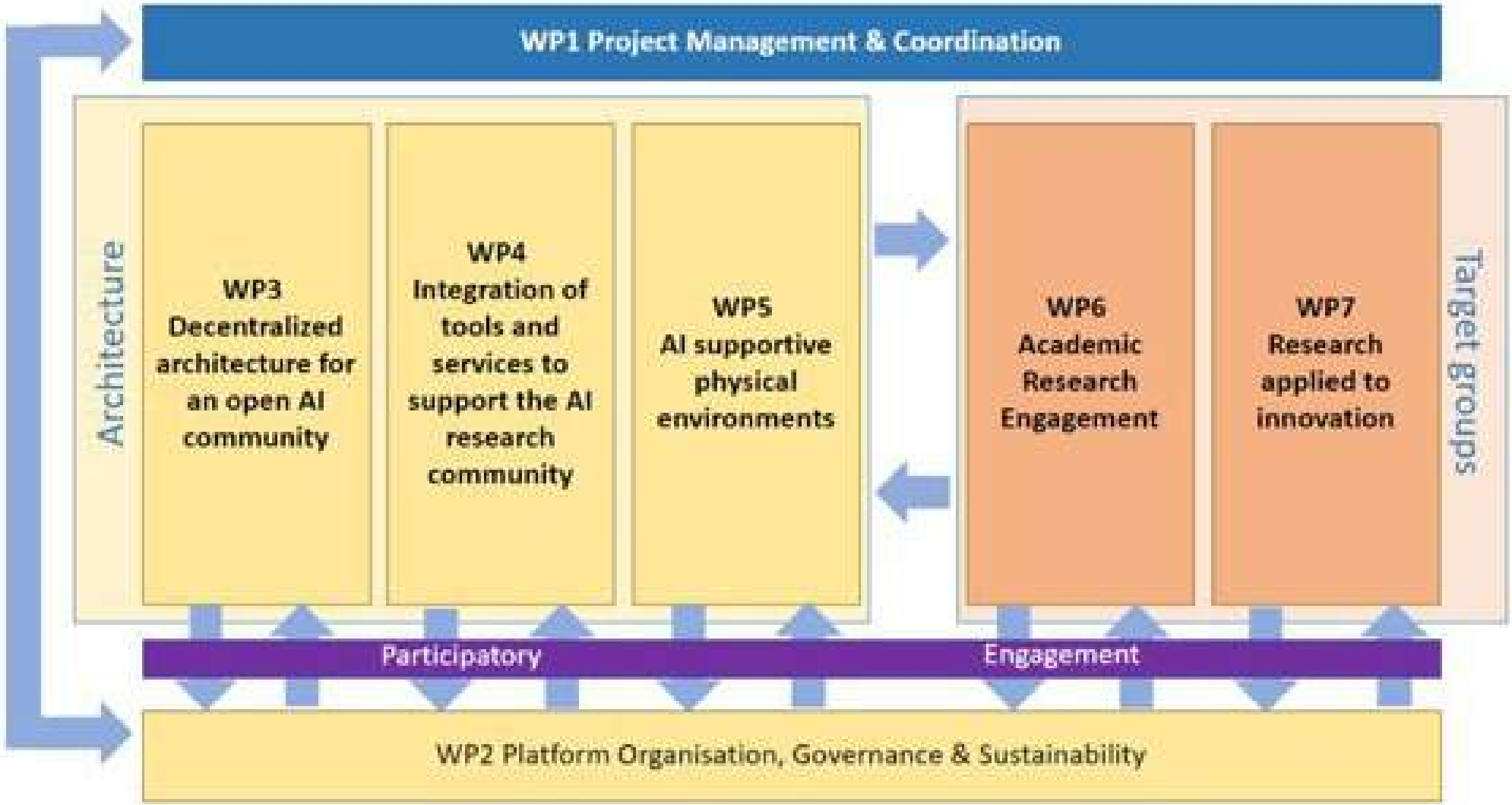
Dimensions of the objectives

Sustainability	Technical Development	Collaboration
S-1. Ensure platform support from the research community fostering a cooperative and transparent Governance model open to contribution from all stakeholders to address their real needs.	R-1. Advance the Platform as an open distributed tool that can be extended by the community with new services / tools and ensure interoperability with (and customizable to support) other EU platforms focused on AI research	C-1. Foster the AI uptake in European research community, industry, and society at large by mobilizing and enriching efforts in AI education, upskilling and reskilling in Europe.
S-2. Design and execute a business sustainability plan that supports and ensures the long-term viability of technical, financial, and legal features of the AI on-demand platform.	R-2. Enhance the accessibility and usability of the excellence science of Europe's AI research community, and to ensure standard, secure, and executable reusable research assets.	C-2. Enhance access, sharing, training and mobility for all European nations, ecosystems, and communities, with special attention on AI Juniors scholars, facilitating cooperation and matchmaking.
S-3. Integrate hardware resource provisioning into the platform to provide underlying computation resources, establishing it as a place to do AI research.	R-3. Embed tools and mechanisms to facilitate the development and use of Trustworthy AI aligned with policy and regulatory developments in Europe.	C-3. Ensure cooperation with the AI, Data and Robotics PPP and Digital Europe related topics, to support them and ensure impact of the AI on-demand platform.

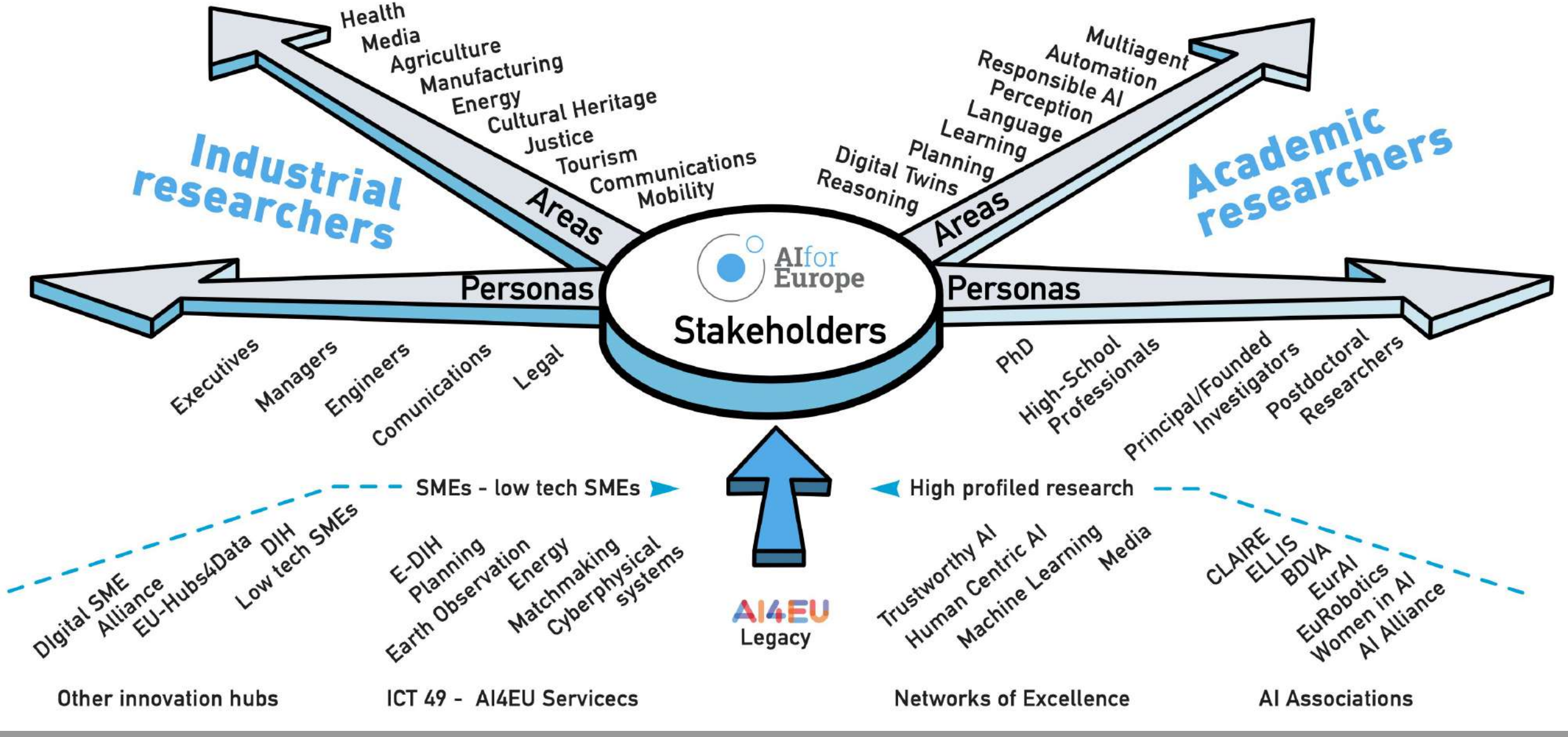
AI4Europe main components



Project structure



"Such platform should support the **research community** in providing modules, codes, tools, knowledge base to share and continuously strengthen the S&T excellence." HORIZON-CL4-2021-HUMAN-01-02



Mechanisms for engagment with the AI on demand

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Why cooperate with AIoD?

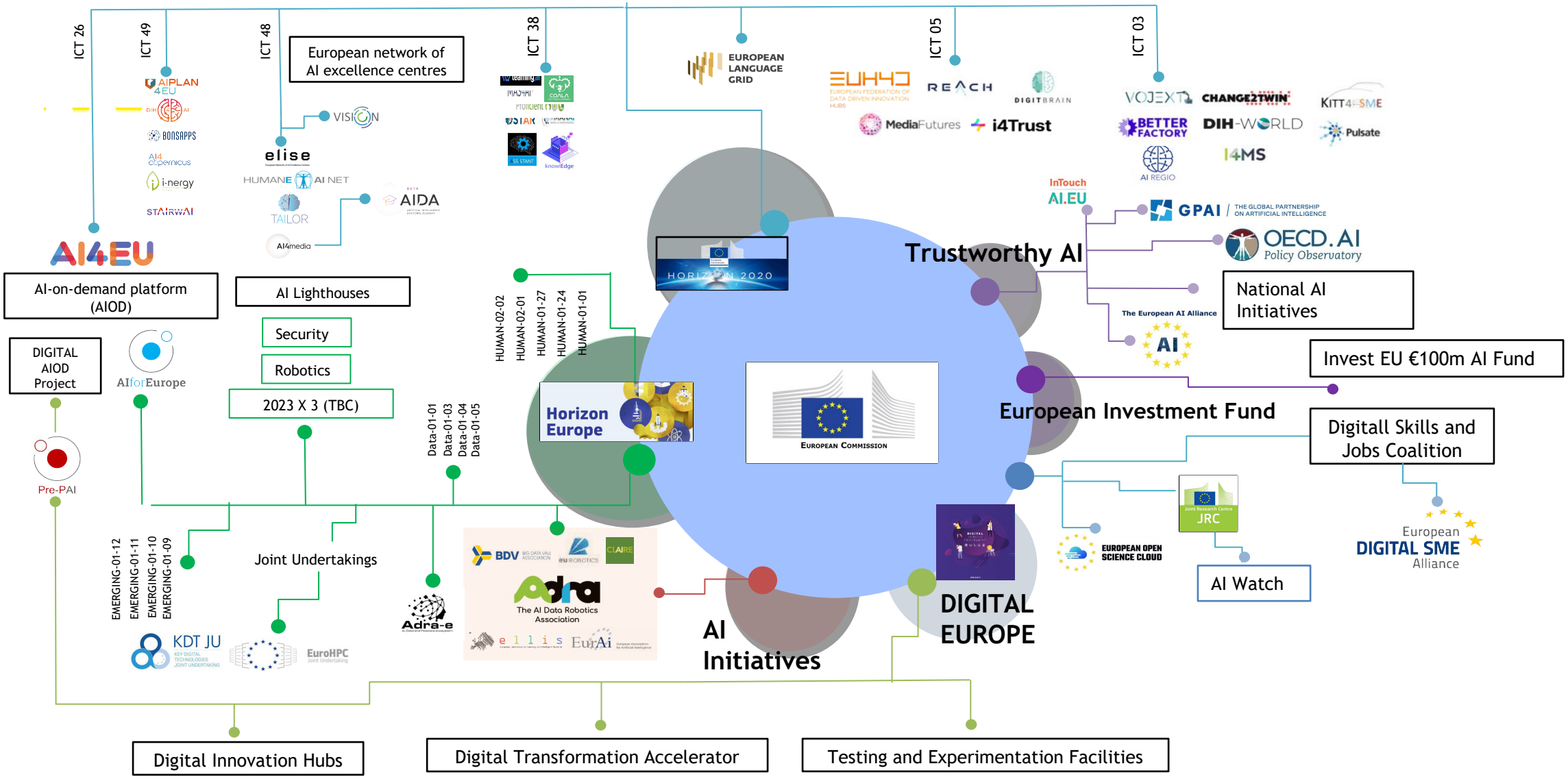
- **Rely on communities** and established entity. Reaching the target audience effectively.
- **Cooperation** with research institutions and industry to facilitate the progress and development
- **Flexible to adapt** to the needs of the stakeholders
- Build on the European principles of **Excellence and Trustworthy**
- **Sustainability**. AIoD does not have an end date.

Communicate your project activities to a wider audience. Make use of a ready-made community of users to disseminate results. Rely on a sustainability mechanism to ensure that outputs are available to stakeholders beyond the life of your project.

Potential contributions

- **Communities and communication**. Branding and micro-sites
- **Content**: Contributing to the AI assets –research bundles, containers, tools, tutorials..
- **Development** of the platform / connectors / backend / APIs
- **New technical services**

Communities – The European AI Landscape



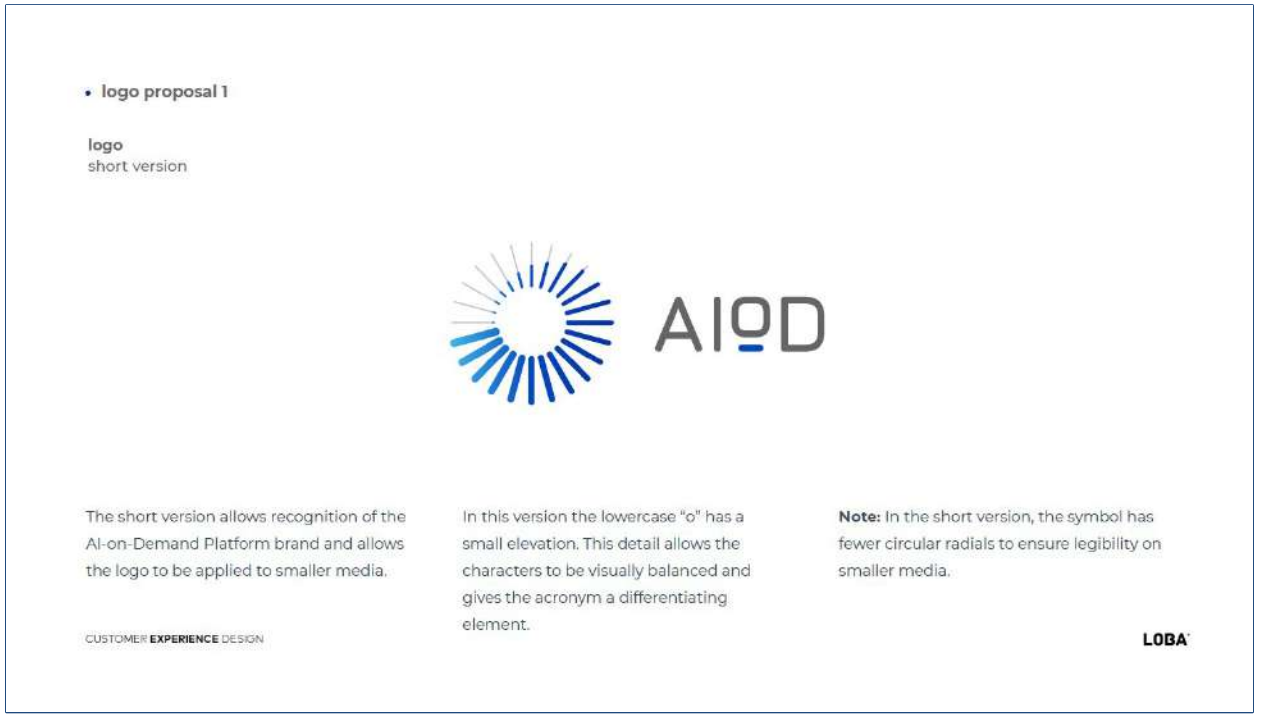
Communication Cooperation

Communicate your project activities to a wider audience. Make use of a ready-made community of users to disseminate results. Rely on a sustainability mechanism to ensure that outputs are available to stakeholders beyond the life of your project.

- **Social Media:** Mechanism for posting on AIoD (Buffer), AIoD mention for a chance to share; paid targeted campaigns
- **Newsletters:** Shared newsletter; Mechanism to create your own newsletters
- **Press releases:** Announce new projects, tools and results
- **Events:** Hold your AIoD web cafes; Joint Events; Support to your event in terms of identifying speakers
- **Monthly meetings:** To discuss strategies and action plans

Communication & Dissemination support: AI4Europe has a communication team that will be at the service of the projects to support them with the integration of the various guidelines, making sure that its implementation is done smoothly. A chat mechanism will be implemented to send feedback and make questions directly to AI4Europe.

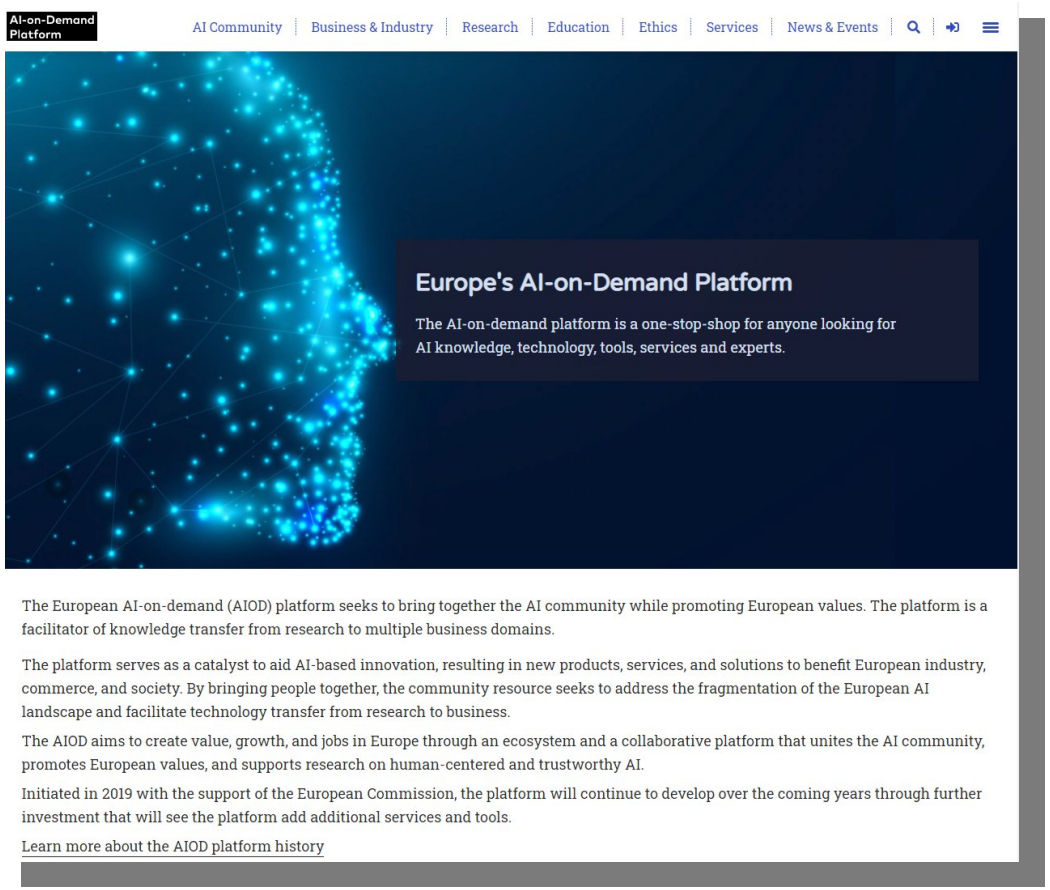
Branding & websites (Microsites)



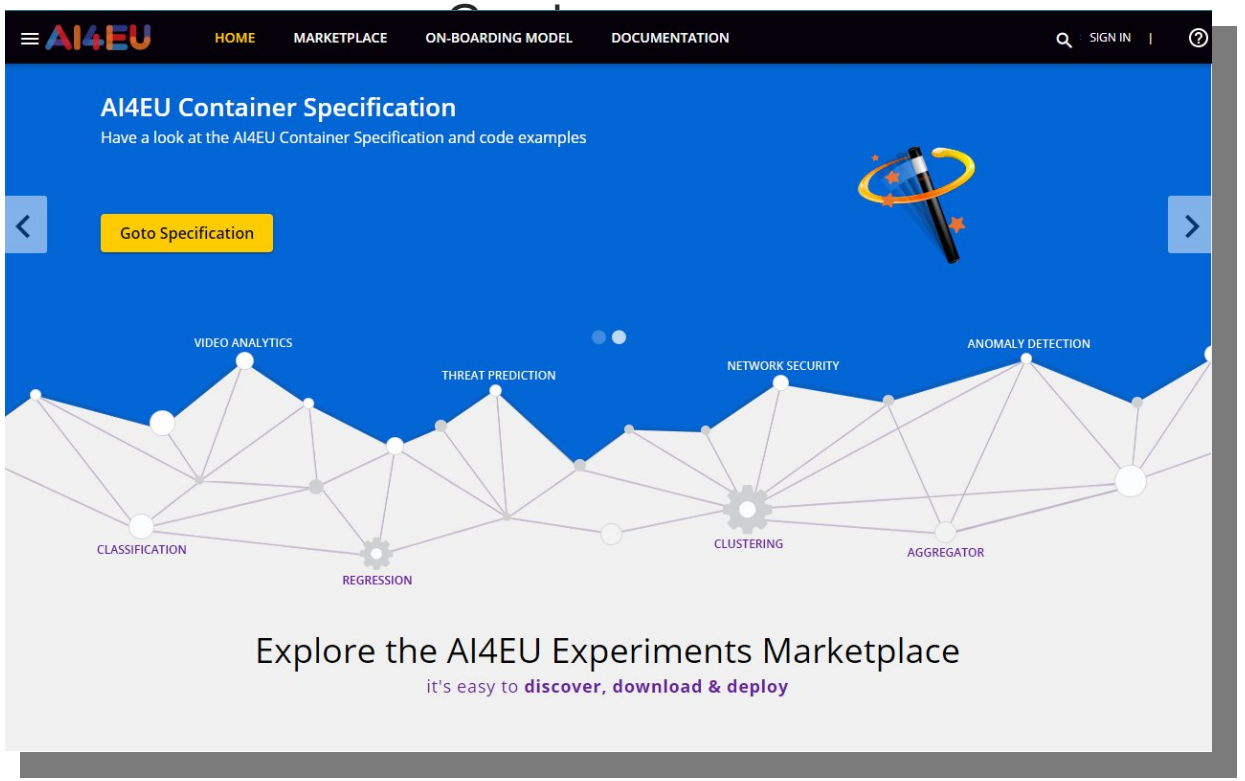
- **Website:** Create and nest your website under the AIoD domain; use AIoD website to share open calls, experiments, news, events, project results, etc.; media corner for all press announcements
- **Common Branding:** Possibility of using AIoD "stamp" (AI4Europe will send guidelines)

Systems and services

Portal



Eclipse



Research bundles

AI-on-Demand Platform

AI Community | Business & Industry | Research | Education | Ethics | Services | News & Events

- Any - | Micro-project in Humane-AI-Net | PhD project | Student project

Technical categories: - Any - | Technology readiness: - Please select - | Sort by: Title | Order: Asc

Research Bundles

"Research bundles" give you a space in the AI on-demand platform where you can collect and publish the outputs of a small research project in a compact way. A research bundle collects in a single place all the assets (code, data, tutorials, examples, ...) produced by your project and published on the AI on-demand platform. Of course, you can also put links to assets published elsewhere, like Github or Zenodo.

INESC TEC - Instituto de Engenharia de Sistemas e Computadores, Tecnologia e Ciência

A Graph-Based Drift-Aware Data Cloning Process

This project investigated a data generation methodology that, given a data sample, can approximate the stochastic process that generated it. The methodology can be useful in many contexts where we need to share data while preserving user privacy. read more

INRIA

A Hierarchical Framework for Collaborative Intelligent Systems

The research bundle describes a hierarchical framework for collaborative intelligent systems developed by T7.3 Working Group on Collaborative AI of AI4EU and incorporated in the Strategic Research Agenda of Humane AI Net. read more

IIIA-CSIC

A tale of two consensus. Building consensus in collaborative and self-interested scenarios.

A study of consensus building under two different hypotheses: truthful annotators (as a model for most voluntary citizen science projects) and self-interested annotators (as a model for paid crowdsourcing projects). read more

Brno University of Technology

Adaptation of ASR for Impaired Speech with minimum resources (AdAIS)

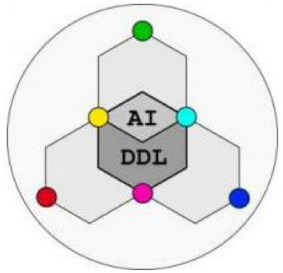
This micro project studied the adaptation of automatic speech recognition (ASR) systems for impaired speech read more

Home > Research > Research Bundles > AI Integration Languages

AI Integration Languages

A Case Study on Constrained Machine Learning

Micro-project in Humane-AI-Net | gitsvn-nt.oru.se



Short description

The tangible objective of this micro-project is develop a modular implementation in AIDDL of the Moving Targets algorithm, for injecting constraints in ML mode.

The moving targets method integrates machine learning and constraint optimization to enforce constraints on a machine learning model. The AI Domain Definition Language (AIDDL) provides a modeling language and framework for integrative AI.

We have implemented the moving targets algorithm in the AIDDL framework for integrative AI. This has benefits for modeling, experimentation, and usability. On the modeling side, this enables us to provide applications of "moving target" as regular machine learning problems extended with constraints and a loss function. On the experimentation side, we can now easily switch the learning and constraint solvers used by the "moving targets" algorithm, and we have added support for multiple constraint types. Finally, we made the "moving targets" method easier to use, since it can now be controlled through a small model written in the AIDDL language.

Additional information

This micro-project was joinly performed by Uwe Köckemann, Fabrizio Detassis and Michele Lombardi. The project is part of the Humane-AI-Net network of excellent research centers in AI. It contributes to this network in the following respects:

- Linking Symbolic and Subsymbolic Learning (Task 1.1): Moving targets provides a convenient approach to enforce constraint satisfaction in subsymbolic ML methods, within the limits of model bias. Our AIDDL integration pulls this idea all the way to the modeling level where, e.g., a fairness constraint can be added with a single line.
- Compositionality and Auto ML (Task 1.4): The moving targets method, combined with an easy way of modeling constraints via AIDDL may increase trust in fully automated machine learning pipelines.
- Dealing with Lack of Training Data (Task 2.6):Training data may be biased in a variety of ways depending on how it was collected. We provide a convenient way to experiment with constraining such data sets and possibly

Tangible outcomes:

1. Example Jupyter Notebooks (3 data sets)
2. Experiments Jupyter Notebooks (3 data sets)
3. Moving targets tutorial
4. Python library
5. Short video presentation (2:20 minutes)

Tangible outcomes

Technical categories

Constraints and satisfiability | Machine learning

Technology Readiness Level

TRL 3-5 (Technology development)

Lead institution

Örebro University

Last updated

Wed, 10/13/2021 - 00:44

Contact details

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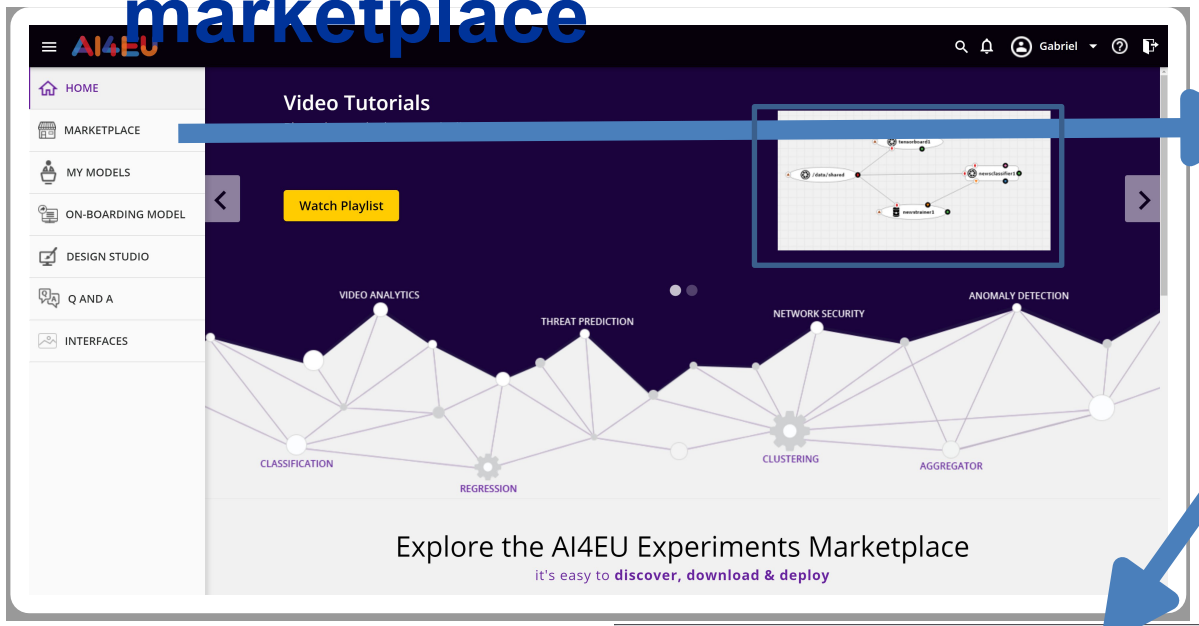
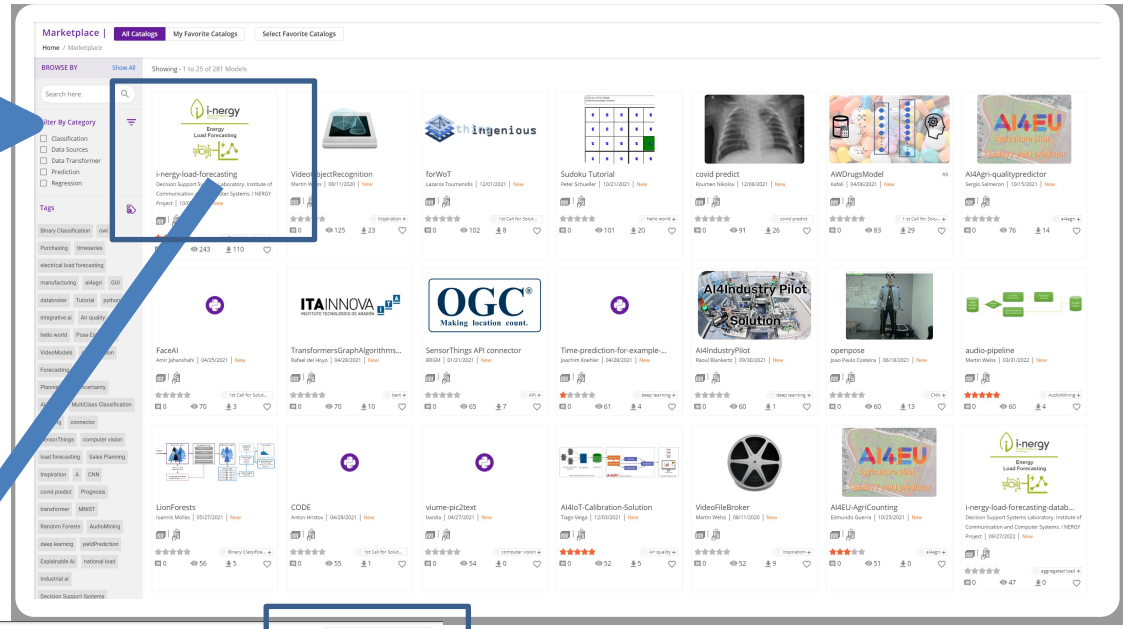
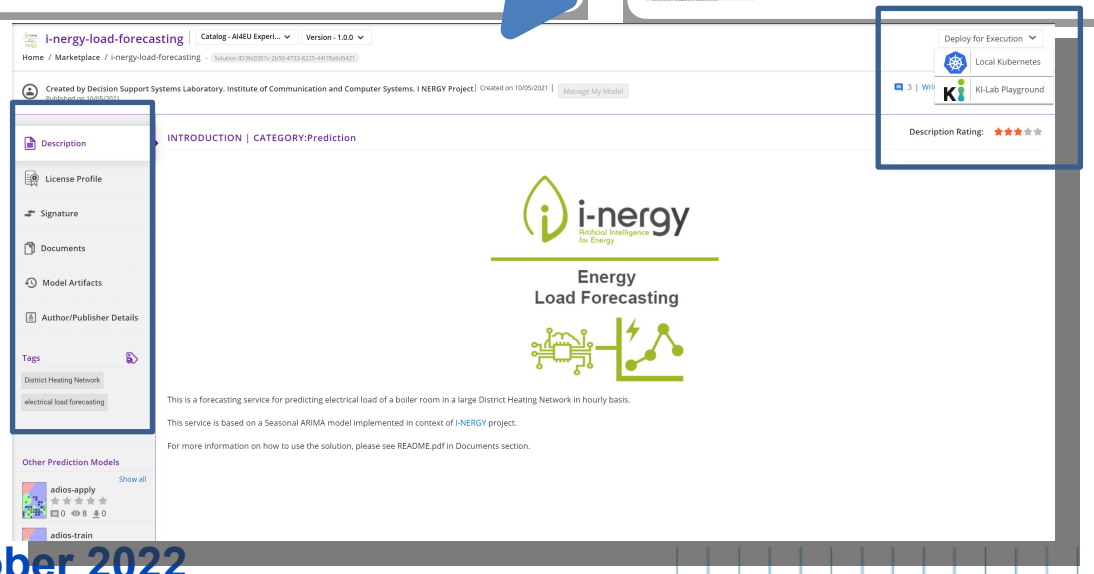
Composition of AI assets and solutions marketplace

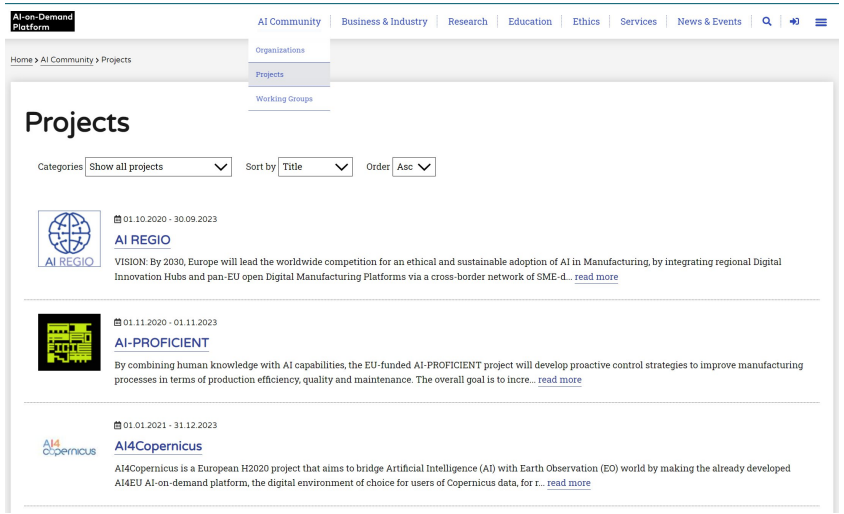


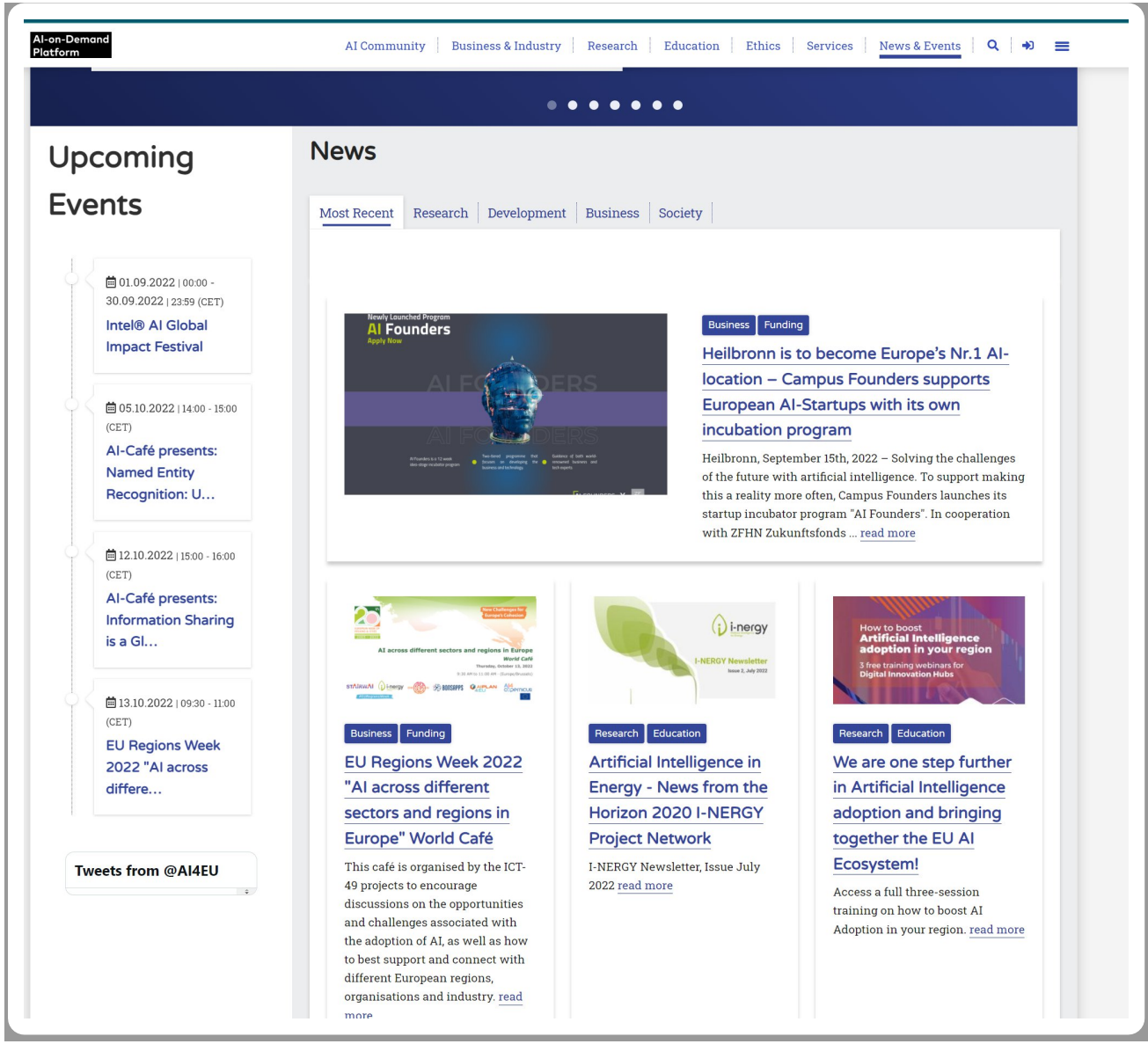




Service for Newsletters

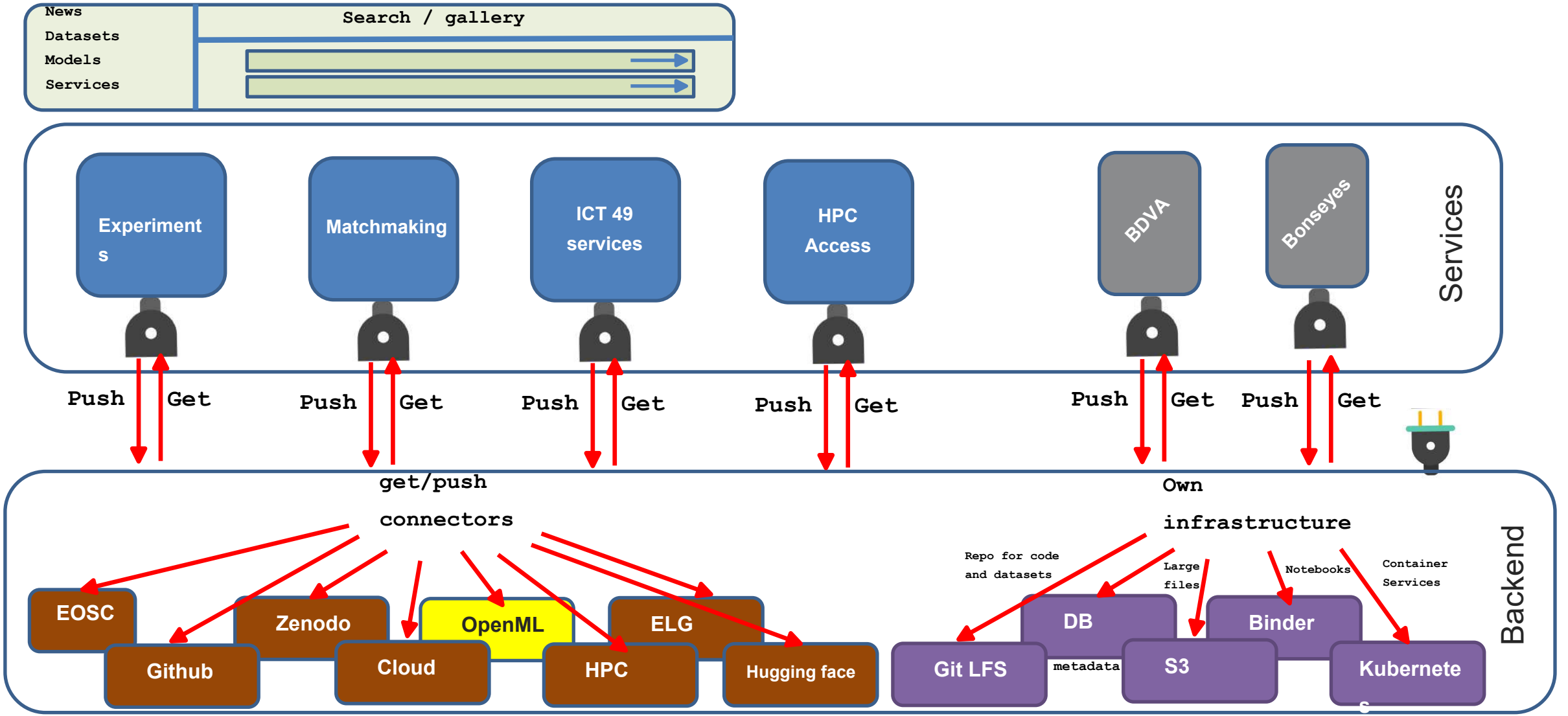
- Registration of projects and participants
- Upload of items (news, events, documents)
- Control panel to circulate the newsletters



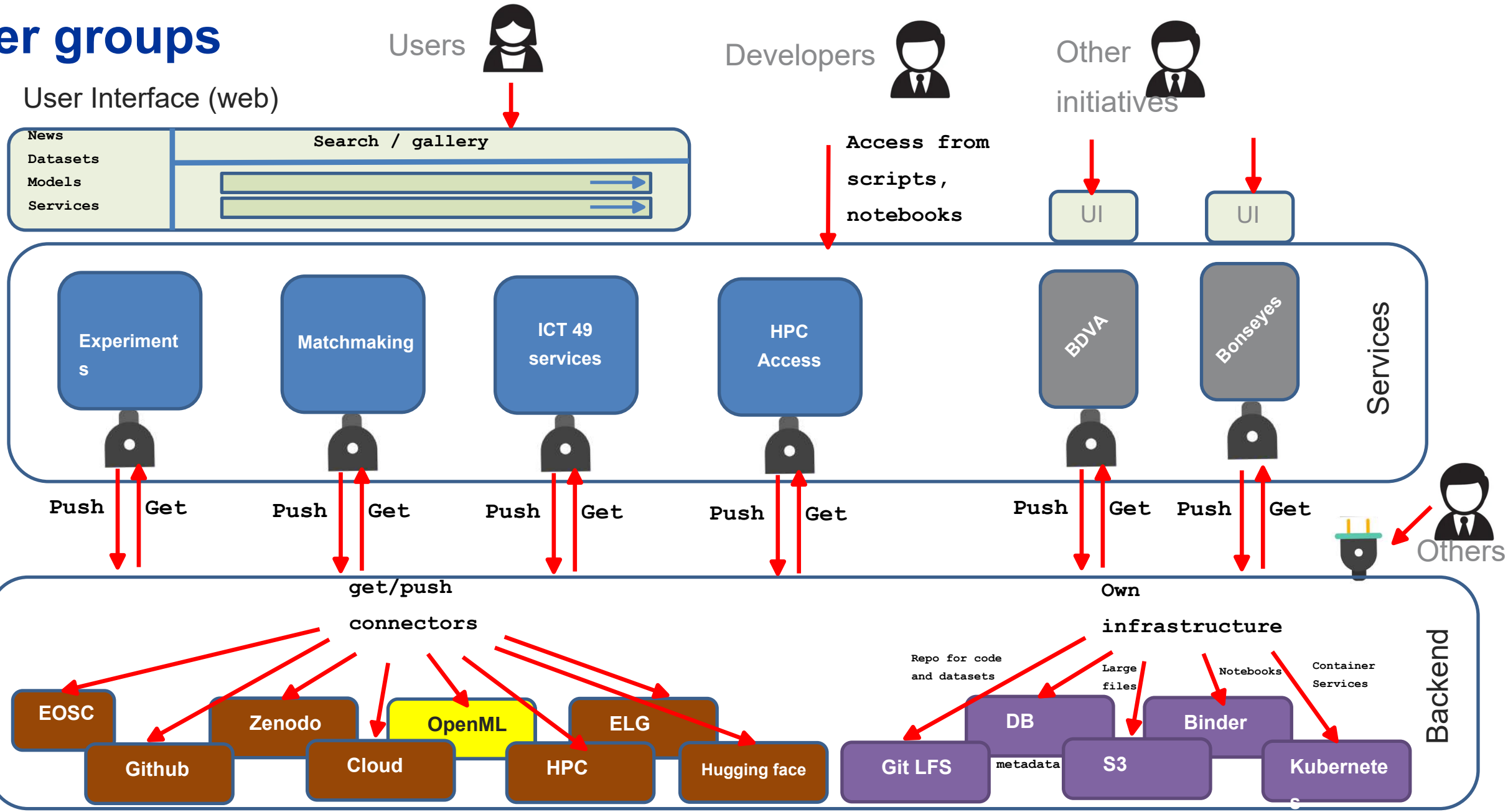


Development of the platform & New services

User Interface (web)



User groups


Users
Developers
Other initiatives
User Interface (web)
News
Datasets
Models
Services
Search / gallery
Access from scripts, notebooks
UI
UI
Experiments
Matchmaking
ICT 49 services
HPC Access
BDVA
Bonseyes
Services
Push
Get
Push
Get
Push
Get
Push
Get
Push
Get
Push
Get
Others
get/push connectors
Own infrastructure
EOSC
Github
Zenodo
Cloud
OpenML
HPC
ELG
Hugging face
Repo for code and datasets
Large files
Notebooks
Container Services
DB
Binder
Git LFS
metadata
S3
Kubernetes
Backend

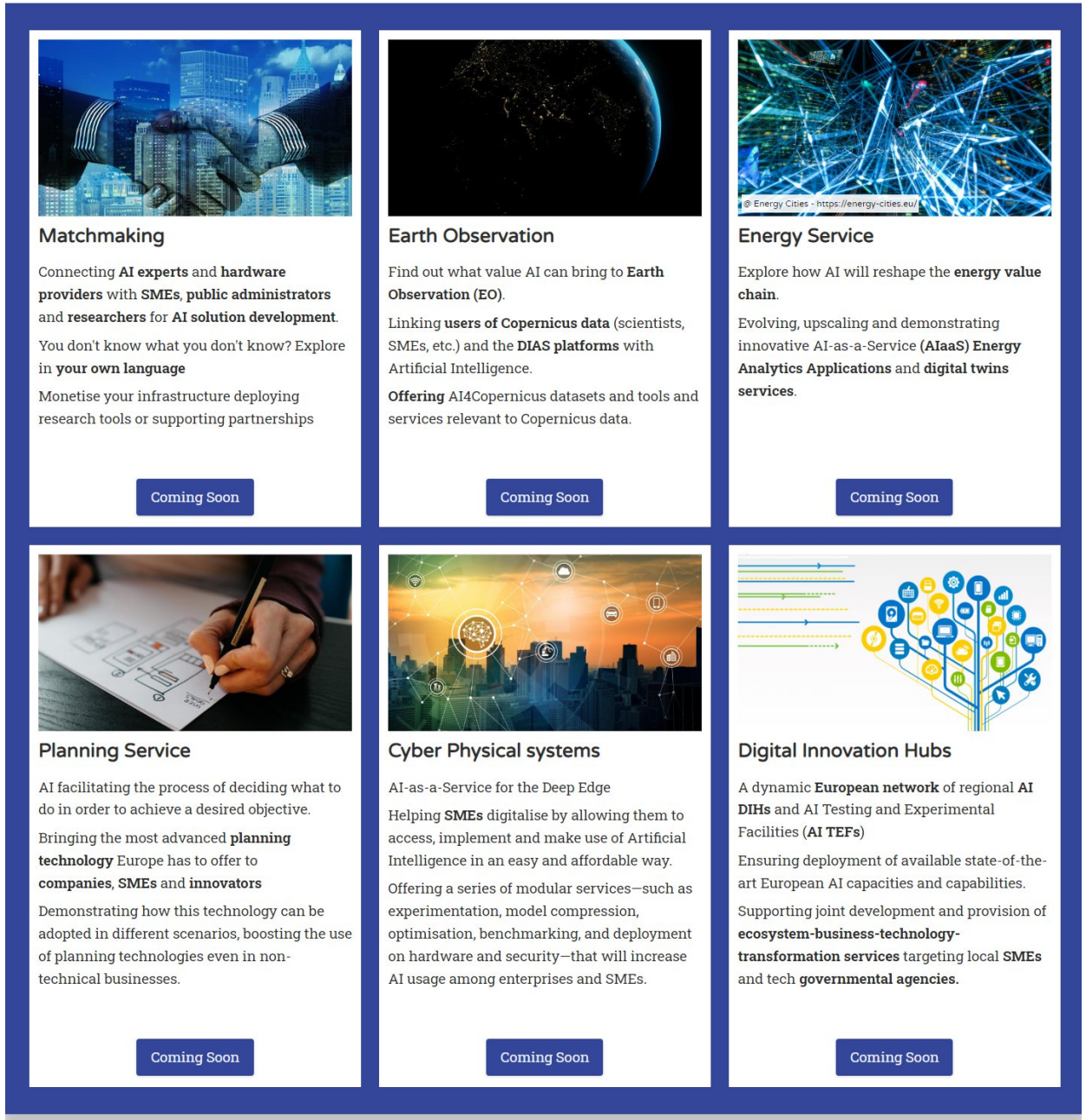
Upcoming services

ICT 49

- Matchmaking
- Earth Observation
- Energy service
- Planning – logistics, smart transport
- Cyber physical systems – IoT
- DIHs

AI4Europe

- Reproducibility
- Benchmarking
- Upskilling and AIDA



How to proceed - Contacts

- Please direct queries to: coordination.aiod-csa@insight-centre.org
- If you wish to join the general AIOD Forum for periodic updates on the platform and interaction with other interest parties, please contact: tanvir.badwal@insight-centre.org

AI4EUROPE

Thank you!

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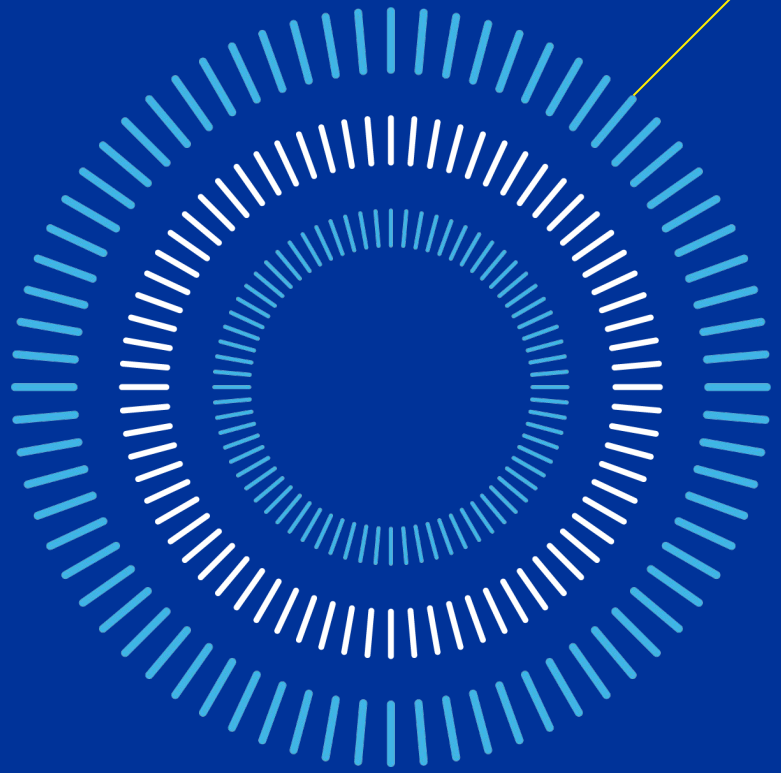

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