Reinforcing the AI4EU Platform by Advancing
Earth Observation Intelligence, Innovation & Adoption

The AI4Copernicus Project Overview

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The Copernicus programme

- Copernicus is the European programme for monitoring the Earth

- Set of systems that collect data from satellites and in-situ sensors

- Free and openly accessible to users

- To facilitate and standardise access to data, the EC has funded the deployment of five DIASes
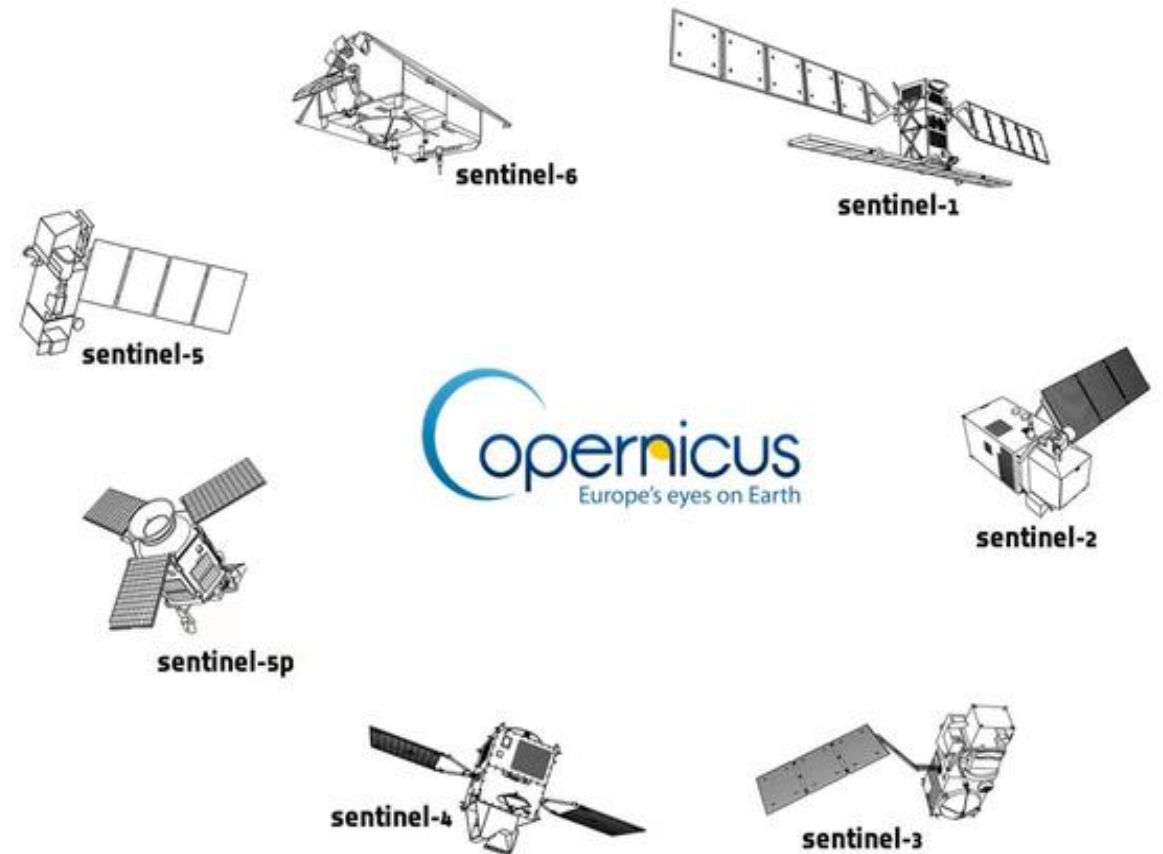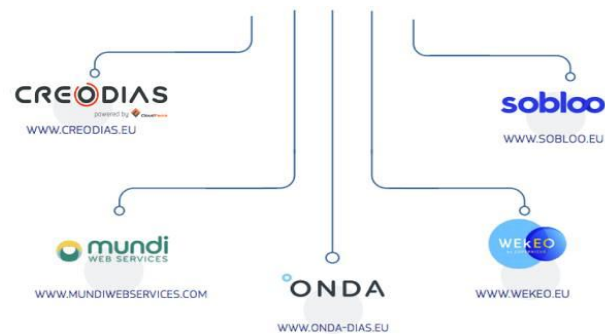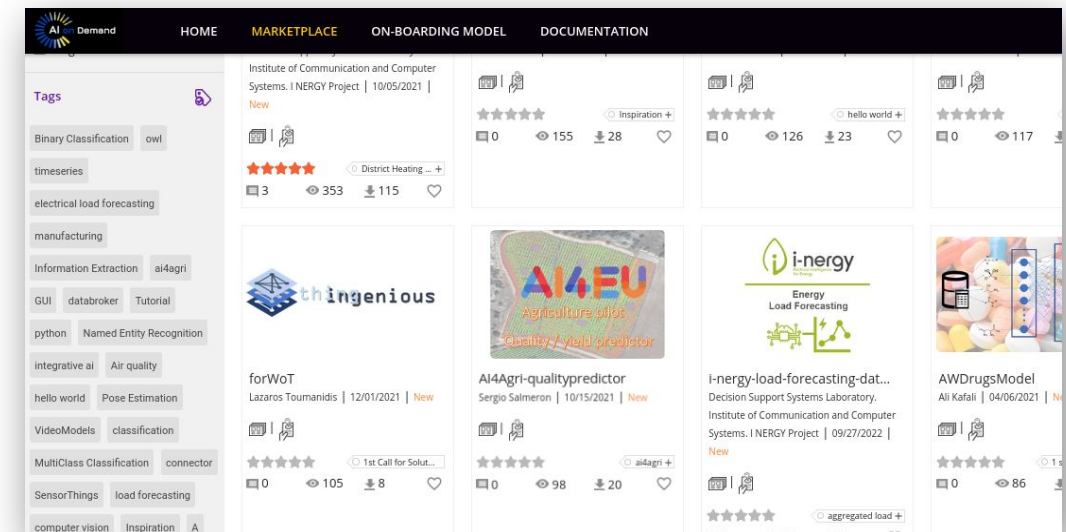
The AI-on-Demand platform

The AI on-Demand Platform https://www.ai4europe.eu/ (AIoD) is a platform for sharing AI resources produced in European projects, including high-level services, expertise in AI research and innovation, AI components and datasets, high-powered computing resources. It offers a catalogue of AI assets an open source platform for experimenting and deployment of AI pipelines.
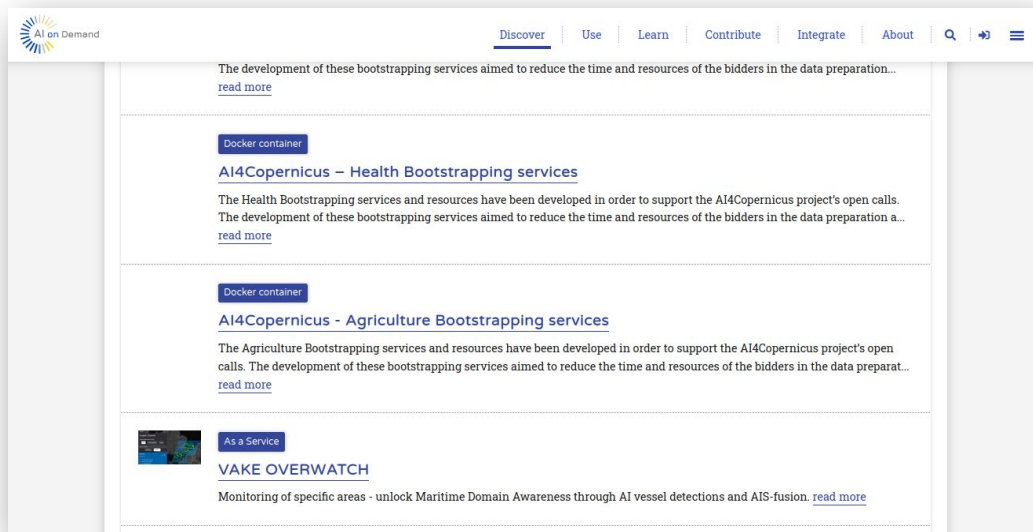
AIoD Catalogue

AI4Experiments

AI4Copernicus in a nutshell

AI4Copernicus Aims

AI on Demand Platform aims to be the one-stop shop for AI methods, datasets and community in Europe

EO data and services have reached a significant level of maturity via the **DIAS (Data & Information Access Services)** platforms and produce value in various domains

AI4Copernicus aims to bridge these two worlds:
Make the AI on Demand Platform, the platform of choice for users of Copernicus data along the value chain (scientists, SMEs, non-tech sector)

AI4Copernicus consortium
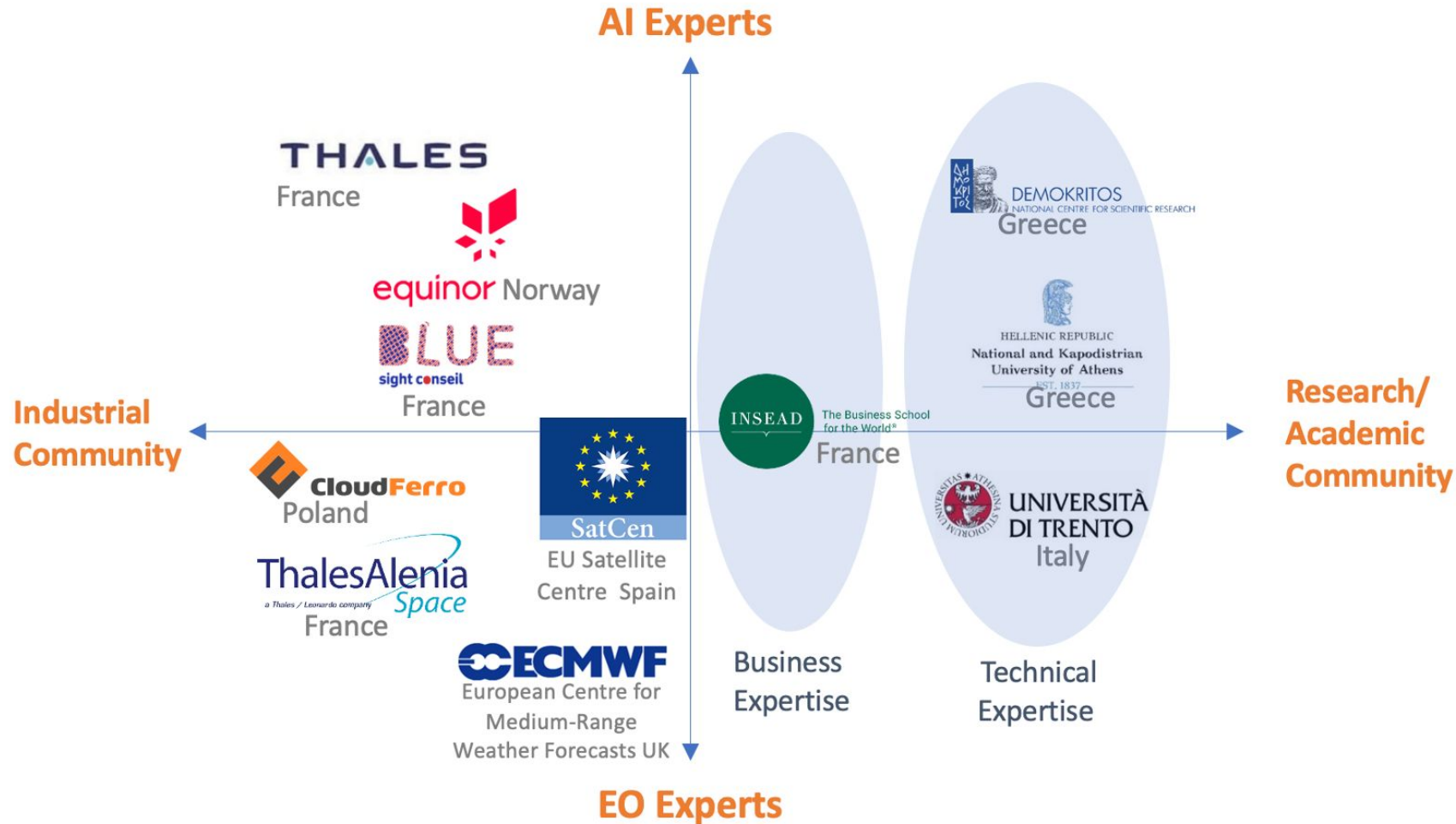
Main objectives

- Expand and deepen the integration of AIoD with DIAS platforms to enrich the AIoD service offering and enable far-reaching innovation.

- Kickstart the innovation cycle by incentivising diverse communities pertinent to the AIoD platform and Copernicus to solve real problems of business and societal value.

- Drive the evolution, uptake and impact of all involved platforms (AIoD, WEkEO, CREODIAS).

AI4Copernicus architecture

✔ Provision of services & resources (e.g., preprocessing tools, ML algorithms and models for EO data) to bootstrap the development of AI+EO applications

✔ Option to use AI4Experiments to create deployable AI pipelines, which users can deploy directly on DIAS

✔ Copernicus ontology, Semantic Web tools, and EarthQA question answering engine for annotating and discovering Copernicus data and services.
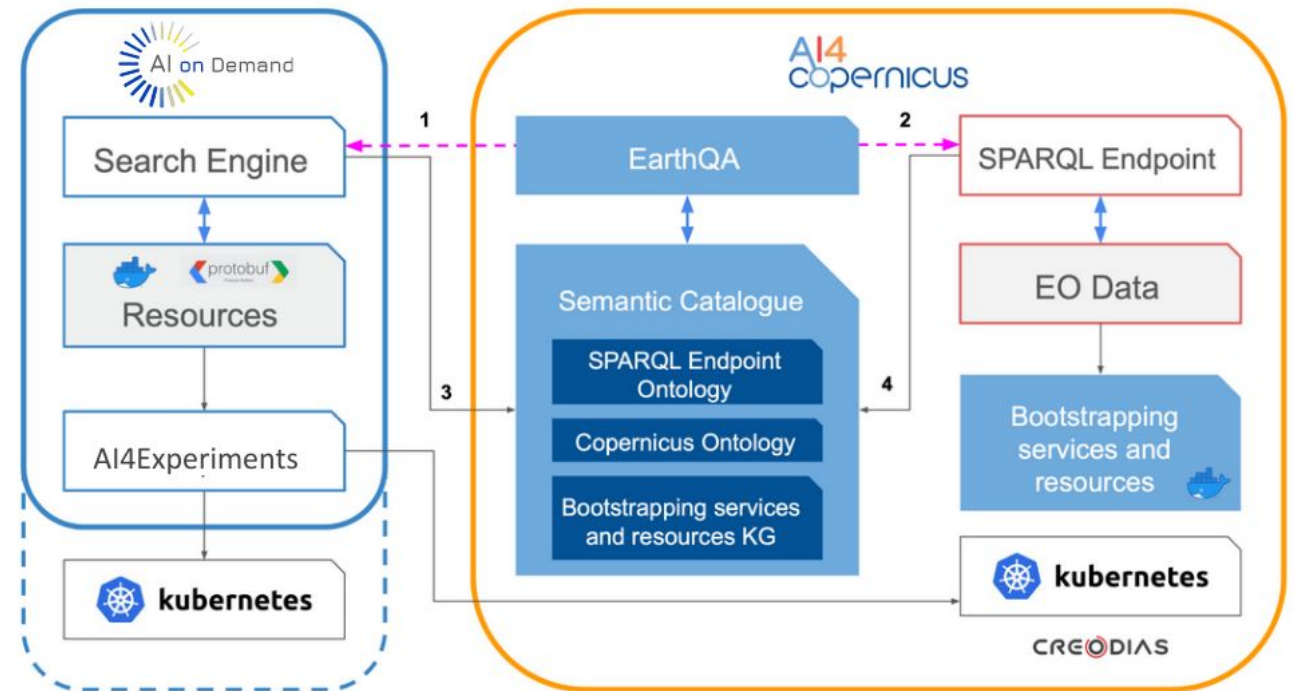
Bootstrapping services

- The bootstrapping resources include a set of services made available from the Security, Agriculture, Energy, & Health domains for the Open Call winners.

- The aim is to reduce the time and resources in tasks as data access, pre-processing, labelling datasets, ML algorithm definition, etc.

- Most services are available as dockerized applications that can be executed in any environment with a properly configured docker client.

Domain	Resource
Security	Sentinel-1 GRD pre-processing
	Sentinel-1 SLC pre-processing
	Sentinel-2 pre-processing
	Sentinel-1 change detection–ACD and MTC
	Sentinel-2 change detection
	Vector data of human features
Agriculture	Deep network for pixel-level classification of S2 patches
	TimeSen2Crop Dataset
	Harmonization of pre-processed time series of Sentinel-2 data
	LST Memory Neural Network for Sentinel-2
	Pre-Trained LST Memory
Energy	Energy Datasets
Health	Probabilistic downscaling of CAMS air quality model data
General	Semantic-Web toolkit (Tools for transformation, querying, interlinking, federating and visualizing big linked geospatial data)
	EarthQA question answering engine

AIoD catalogue and AI4Copernicus

Open calls

Open Calls for Use Cases in 4 Industrial Domains
30th Sept. 2021 € 150K — 1st

Open Call for Citizen Social Challenges
31st Oct. 2021 €5K — 2nd

Open Call for Experiments
30th Apr. 2022 €80K — 3rd

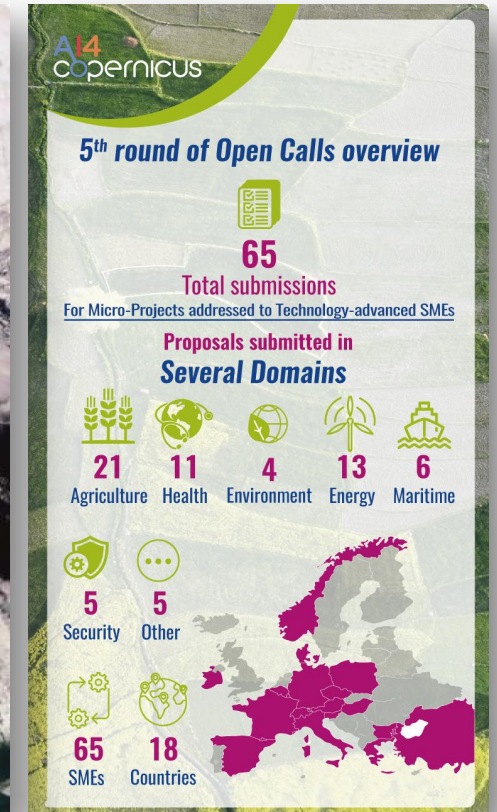Open Call for Use Cases based on the Citizen Social Challenges
30th Apr. 2022 € 150K — 4th

Open Call for Micro-Projects
31st Mar. 2023 €30K — 5th

Open Calls Results
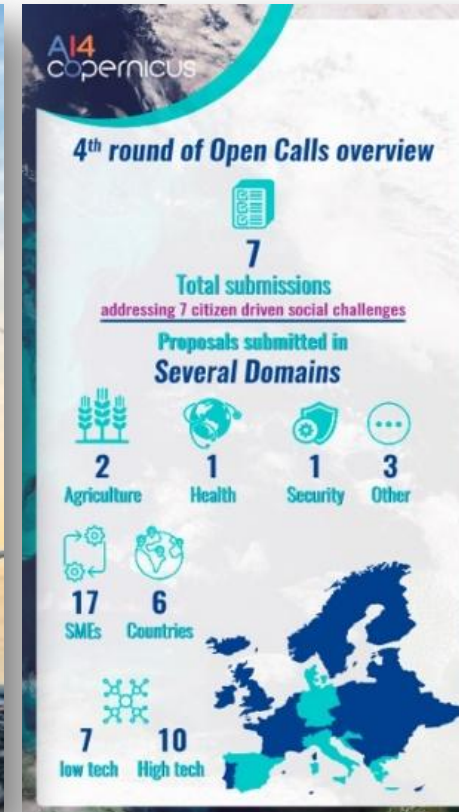
Open Calls Projects summary

Open Call	#projects	Domains & #projects per domain	Status
1st	6	Security:3, Agriculture:2, Energy:1	Completed
3rd	8	Agriculture:5, Health:1, Maritime:1, Safety/Disaster risk reduction: 1	Completed
4th	3	Urban Monitoring & Planning:1, Security:1, Agriculture:1	Completed
5th	10	Agriculture:3, Health:3, Energy:2, Environmental:1, Education:1	In Progress
total	27	Security:4, Agriculture:11, Health:4, Energy:3, Other:5	In Progress

Services from the Open Calls in AIoD

Project	Open Call	Domain	Project / Service summary	# Organizations	# AI Assets
SR4C3	1	Security	Urban monitoring and abandoned crop detection in conflict areas	2	2
SCAVIHO	1	Agriculture	NDVI monitoring and harvesting forecasting	2	2
SLIDE	1	Energy	Short-term irradiation prediction in solar farms	2	1
VALENS	1	Security	Persistent anchorage monitoring and vessel detection	3	1
Sen4Weeds	1	Agriculture	In-fields weed detection using super-resolution	3	3
HumanityWatch	1	Security	Land and water monitoring for humanitarian crisis areas	2	1
ODFuse4Ship	3	Maritime	Ocean Data Fusion for short-term route optimization through current maps	1	1
Lobelia Air	3	Health	Hourly high-resolution air quality monitoring and forecasting	1	1
EO4NOWCAST	3	Security	Natural hazard prediction for river/urban floods and landslides	1	3
ESFA	3	Agriculture	Empirical season forecast for agriculture	1	2
PLANET	3	Agriculture	Climate Risk assessment for land suitability	1	1
FertiRec	3	Agriculture	Fertilizer rate recommendation system	1	1
OPTIMAL	3	Agriculture	Irrigation area monitoring and forecast, water resources usage optimisation	1	1
LIVE4ENV	3	Agriculture	Optimizing natural resources usage and reducing the negative effects of livestock farming	1	1
Urbalytics	4	Urban	Urban Heat Island Assessment and Climate Change Adaptation	2	1
AI4EO.Green	4	Agriculture	Green space monitoring for Golf courses & Urban green space management	3	1
AI-RON MAN	4	Security	Short-term wildfire risk assessment	3	3
			Total:	**30**	**26**

Current: CREODIAS Deployer

- Deployment service for [AI4Experiments](#), enabling automated deployments of pipelines to CREODIAS platform

- Developed by CloudFerro with the help of FHG

- Tested and available in the production platform

Thank You!

Any Questions?