EOSC DIH

BUSINESS PILOT SUCCESS STORIES

EOSC DIH
DIGITAL INNOVATION HUB

EOSC Future

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DEAR READER,

I am delighted to extend a warm invitation to explore the success stories featured in this brochure, highlighting the collaborative achievements within the European Open Science Cloud Digital Innovation Hub (EOSC DIH).
As the coordinator of this initiative, I have had the privilege of witnessing the convergence of creative minds and advanced technologies under the EOSC Future project.

These case studies offer insights into challenges, solutions, and tangible outcomes, showcasing the impact of EOSC DIH across various sectors, from agriculture to energy.
Our mission is to catalyse innovation, bridging the gap between EOSC and the private sector, propelling Europe into a future where open science boundaries are continuously pushed. These stories reflect not just achievements but the collective change we can bring to the world.

Elisa Cauhé - EOSC DIH Coordinator and Senior Strategy and Innovation Officer at EGI Foundation

It has been a great pleasure to work closely with innovative SMEs that are part of the growing EOSC DIH Community. Many new innovative services have been developed or extended, using the EOSC services and provided expertise. The pilots represent a variety of domains, requirements, and expectations. Provided support allowed to increase Technology Readiness Levels of the solutions, providing a positive impact for the SMEs. The community activities are not limited to technical support, but provide a networking environment, finding new funding opportunities, or meeting new inspiring personalities.
We want to thank all the pilots for their engagement and valuable feedback that helped us mature the EOSC DIH services toward satisfying pragmatic business-oriented views and requirements.

Marcin Plociennik, EOSC DIH Pilot manager and Head of IoT Systems Department at PSNC

DIGIFARM

DETECTING THE WORLD'S HIGHEST ACCURACY FIELD BOUNDARIES TO POWER PRECISION AGRICULTURE

ABOUT

DigiFarm is a Norwegian based ag-tech startup established in 2019.

DigiFarm's core vision is to detect the world's most accurate field boundaries and seeded acres to power precision agriculture. This is achieved through developing deep neural network models for automatically detecting field boundaries through super-resolving Sentinel-2 satellite imagery (to 1 metre resolution). DigiFarm has successfully validated the model on 450 million hectares of fields achieving detection accuracies of above 96%, 12-15% higher than existing boundary data (Cadastral, LPIS in EU and CLUs in US).

DigiFarm has over 50 clients in over 17 countries with 1.5M+ EUR in ARR and a team to 58 in just over a year.

CHALLENGE

The aim of the pilot included developing and training a deep neural network model for detection of entire-country sized regions including Germany, Austria, Belgium, and the United Kingdom.

HOW THEY USED EOSC SERVICES

DigiFarm utilised the EGI-ACE enabled GPU and HPC resources to train and develop a highly accurate AI-model (image segmentation). Furthermore, DigiFarm also leveraged technical consultancy, visibility, and funding opportunities services provided by the EOSC DIH.

RESULTS

The deep neural network model developed with the support of the EOSC DIH can automatically and accurately detect agricultural field boundaries based on the deep-resolution Sentinel-2 at 1m per pixel resolution Satellite Earth Observation data.

DigiFarm managed successfully to delineate field boundaries and seeded acres across the AOIs including Germany, Austria, Belgium, and the United Kingdom. DigiFarm also managed to achieve the targeted accuracy (IoU) of 0.94+ across all the regions. This resulted in achieving 10-12% higher accuracy than LPIS (Land Parcel Identification System) Cadastral data which was benchmarked against field boundary delineation assessed across 200k hectares in England, Belgium, and Austria.

IMPACT

With the new data and the model, DigiFarm has managed to attract new potential clients and has also applied successfully for next round of funding.

DigiFarm also generated a lot of know-how around model training, GPU-setup and on how to build and develop a scalable, automatic, and cost-efficient data processing pipeline.

The TRL increased from TRL5 to TRL6.

COUNTRY: NORWAY

SECTOR: AGRITECH

TRL 6

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

DigiFarm

EOSC SERVICE PROVIDER

EGI-ACE

EOSC DIH
DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

BIGCOLDTRUCK

BIG DATA ANALYTICS FOR COLD CHAIN LOGISTICS OPTIMISATION IN REFRIGERATED TRUCKS

COUNTRY: SPAIN

SECTOR: LOGISTICS

TRL 6

1 2 3 4 5 6 7 8 9

ABOUT

Odin Solutions (OdinS) is a SME founded in August 2014 in Spain. OdinS is an accredited as an innovative ICT company (EIBT) by MINECO and ANCES. OdinS has a strong background in the R&D fields of Internet of Things, Security and Data Analytics.

The BIGcoldTRUCKS dashboard provides a breakthrough for logistics 4.0, helping to better understand refrigerated truck trips by studying product groupings, duration and seasonality of product demand and forecasting. This solution helps to identify bad practices by looking for anomalies in consumption and journey times.

CHALLENGE

The aim of the pilot is to contribute towards the development of the supply chain 4.0, specifically the cold chain so as to contribute to the emergence of smart environments.

HOW THEY USED EOSC SERVICES

OdinS leveraged the Deep Hybrid DataCloud for deploying a Jupyter instance in the DEEP CLOUD testbed with a GPU to develop and train machine learning models for the prediction of the demand of different products (multivariate approach) and in the detection of anomalies by means of univariate predictive algorithms.

OdinS were also provided with technical consultancy service in Big Data to improve the speed of the descriptive analysis that is shown in their Dashboard.

RESULTS

The pilot started in the context of the EOSC-hub project and was continued and finalised in the EOSC-Future project.

OdinS developed a solution that provides a variety of information to the users: Ranking of the products, Trip Duration statistics, Seasonality of products' demand, Geographic Representation of the trips. With the consultancy provided by EOSC DIH, OdinS started indexing their data using Elasticsearch and connected their dashboard to it using the Elasticsearch package. Through this they are able to provide real-time daily and weekly predictions on the demand of each of the products for the management of the products.

OdinS also studied and detected anomalies in fuel consumption and in trip durations to provide predictive maintenance information in order to support optimising the trucks' transportation routes.

IMPACT

Through the collaboration with EOSC DIH, OdinS significantly improved its product offerings for it customers. It was also successful in reducing the computation time for the machine learning models.

TRL increased from TRL4 to TRL6.

BUSINESS PARTNER

OdinS

EOSC SERVICE PROVIDER

deep Hybrid DataCloud

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

MICADO

ORCHESTRATION FRAMEWORK FOR CLOUD RESOURCES AND APPLICATION CONTAINER

ABOUT

CloudSME is a German Cloud Native Technology Provider and operator of emGORA workspace, a European marketplace for collaboration, providing services for the digitisation of European manufacturers.

MiCADO is an auto-scaling framework for Docker containers, orchestrated by Kubernetes. The open-source engine MiCADO extends the default functionalities of state-of-the-art technology, like Kubernetes, to safeguard the implementation of more complex scaling rules and advanced security features. It automates deployment, scaling, management and monitoring of containerised microservices in multiple cloud interfaces, like OpenStack, Google Cloud Platform, Azure, AWS and many more.

It supports autoscaling at two levels. At virtual machine (VM) level, a built-in Kubernetes cluster is dynamically extended or reduced by adding/removing cloud virtual machines. At Kubernetes level, the number of replicas tied to a specific Kubernetes Deployment can be increased/decreased.

CHALLENGE

The aim of the pilot is to demonstrate the scaling capability of MiCADO by an example application (StressNG).

HOW THEY USED EOSC SERVICES

CloudSME utilised the EGI compute resources to test their cloud resource adapter. They were also provided with EOSC DIH technical consultancy support to use the EGI infrastructure.

CloudSME was also provided visibility through the EOSC DIH communication activities.

RESULTS

CloudSME ran a feasibility study to use EOSC computing services, developing a cloud resource adapter allowing MiCADO to run on EGI compute resources. This adapter was required by MiCADO to start and configure cloud instances. The result of the feasibility study demonstrated some limitations and security constraints on using the infrastructure.

IMPACT

The collaboration helped CloudSME to market the MiCADO solution and to gain valuable experiences for operating it on international infrastructures. The collaboration also allowed them to explore a new market.

TRL increased from TRL4 to TRL6.

COUNTRY: GERMANY

SECTOR: IT

TRL 6

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

cloudSME

EOSC SERVICE PROVIDER

EGI-ACE

EOSC DIH
DIGITAL INNOVATION HUB

SUPPORTING PROJECT

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TRANGO

TRIP AND GO: THE BEST LOCATION FOR CAR SHARING

COUNTRY: SPAIN

SECTOR: MOBILITY

TRL 7

1 2 3 4 5 6 7 8 9

ABOUT

Agilia Center is a Spain based company focused on developing custom software development since 2015.

RANGO is a service developed by the Agilia Center R&D team under the umbrella of the ARTICONF project.

Trango provides a platform that combines carsharing with the ridesharing model within a social network to facilitate the interactions among users and their communication with service administrators. This service provides transparency between car owners, drivers and passengers who want to hire the vehicle, adding enormous benefits to the owners and to the passengers and drivers. A demand prediction functionality for each city suggests locations to car owners or fleet administrators to improve their revenues. Additionally, an incentivisation service offers escrow and price discounts based on user behaviour and selects travel partners based on their reputation.

CHALLENGE

The aim of the pilot was to further develop the Trango service and to run a pilot with users in the city of Huelva.

HOW THEY USED EOSC SERVICES

Agilia Center utilised the EGI Cloud compute resources for over a period of one year. Agilia also leveraged the EOSC DIH network to share knowledge with other pilots.

RESULTS

Agilia Center ran a user validation pilot for Trango for 10 days in the city of Huelva in September of 2023 with actual users. During this pilot over 61 users registered on the platform and completed 28 trips with 58 occupants.

During the collaboration with EOSC DIH, Agilia Center continuously improved the Trango service with a variety of features like Automatic and decontrolled assessment of the service through Smart Contracts (Blockchain), Providing assurance of payments and Escrow by using Blockchain, and Demand prediction and Dynamic pricing through Artificial Intelligence .

IMPACT

The collaboration and the provisioning of the cloud resources allowed Agilia center to test different solutions at the same time, increasing the number of concurrent market tests. TRL notably increased from TRL3 to TRL7.

The collaboration also fostered cross-pollination between the pilots allowing for sharing of knowledge around topics like business models and opportunities for future.

BUSINESS PARTNER

agilia

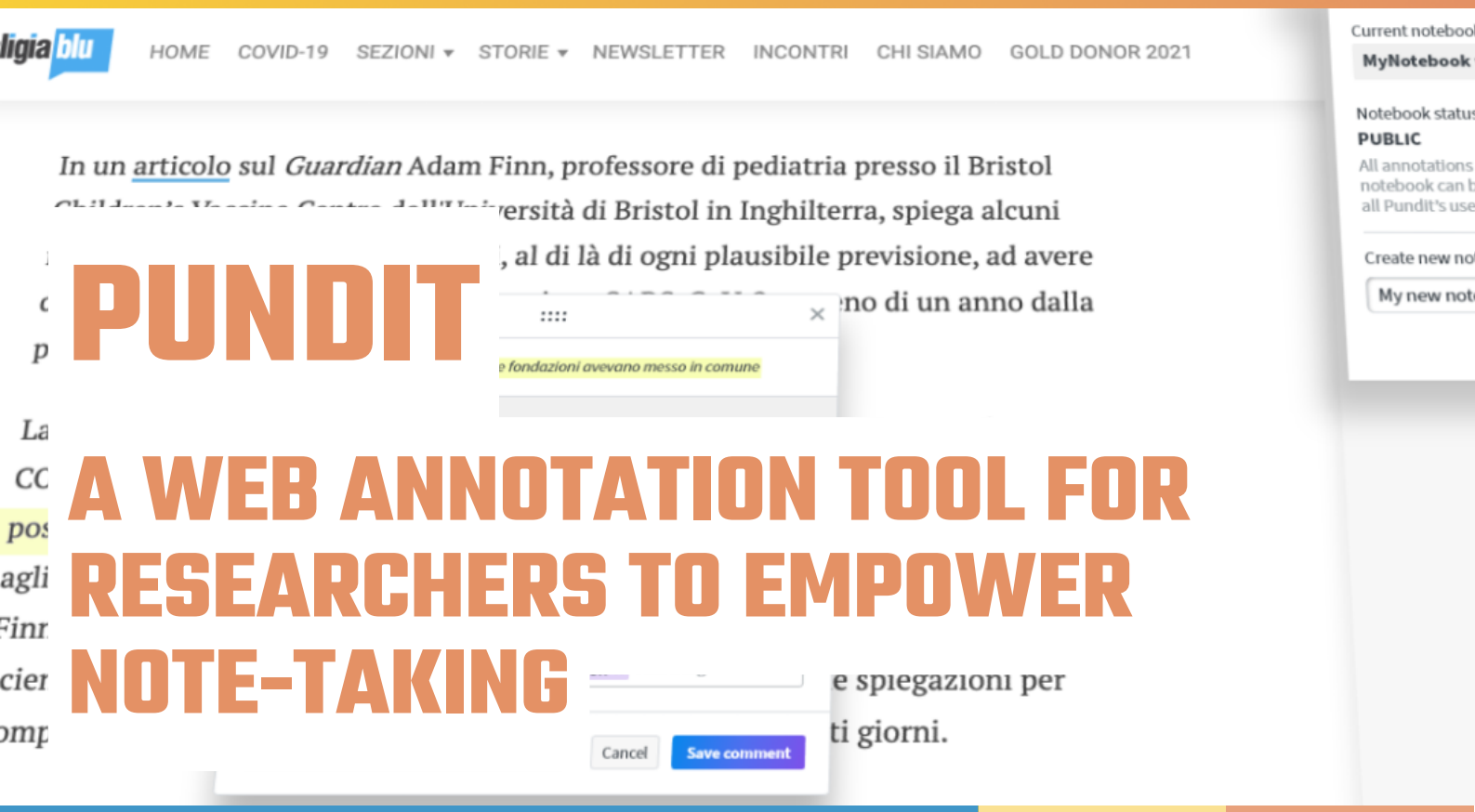
EOSC SERVICE PROVIDER

EGI-ACE

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future



PUNDIT

A WEB ANNOTATION TOOL FOR RESEARCHERS TO EMPOWER NOTE-TAKING

ABOUT

Net7 Srl is an Italian IT company founded in 2002 in Pisa, focusing on Open Source technology-based solutions and applied research, particularly in Text Analytics, Data Processing, and Semantic Web technologies within the domains of Social Sciences and Humanities.

Pundit, a Net7 product, is a cloud service that allows users to "take notes" on web documents, like a web page or a PDF file. It consists of a set of components, amongst them the Annotator, a free extension for the Google Chrome browser used by users to create the annotations.

Annotations can be highlights of text parts or comments, applied either on a selection of the text or on the whole document. It is also possible to create annotations to tag a selected text or an entire web page. This creates a free-form personal category that can be reused in other annotations.

CHALLENGE

The aim of the pilot was to validate and test the moving the Pundit solution from AWS towards other infrastructures. Net7 also wanted to analyse the possible use cases and business exploitation options for Pundit including onboarding to EOSC.

HOW THEY USED EOSC SERVICES

Pundit utilised the EOSC Computing infrastructure to test and validate moving away from AWS infrastructure to other infrastructures. Net7 were also provided with business consultancy through the EOSC DIH along with technical support to onboard Pundit to the EOSC Marketplace.

RESULTS

During the pilot, Pundit was successfully integrated with the EOSC Computing infrastructure.

At the same time, Pundit was successfully onboarded as a service in the EOSC Marketplace giving it a significant boost in visibility, especially amongst European researchers. In addition, business exploitation options for Pundit were considered from which solid, viable, and long-term sustainability model for this service was developed.

IMPACT

From the technical perspective, the successful integration with EOSC infrastructure has paved the way for migrating away from AWS to other infrastructures. Onboarding to the EOSC Marketplace has provided a significant boost to the visibility of the service. Long term sustainability plan provides Net7 with possible business exploitation pathway for Pundit.

COUNTRY: ITALY

SECTOR: IT

TRL 9

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

net7 create develop amplify

EOSC SERVICE PROVIDER

EGI-ACE

EOSC DIH DIGITAL INNOVATION HUB

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ELD-ADVANCE

OPENAIRE ELD – ENRICH LOCAL DATA VIA THE OPENAIRE GRAPH – ADVANCE

COUNTRY: ITALY

SECTOR: OPEN SCIENCE

TRL 6

1 2 3 4 5 6 7 8 9

ABOUT

4Science, an Itway company, provides outstanding solutions for research information & data management and for cultural heritage. Their solutions include DSpace and the extension 4Science created (DSpace-CRIS and DSpace-GLAM) and Dataverse,and THEIR services range from installation and configuration to maintenance, customization and consultancy.

In spring 2021, OpenAIRE ELD released two new services: Data Correction (based on the OpenAIRE Notification Broker), to enrich repository data by exploiting the vast amount of information made available by OpenAIRE, and the Publication Claim (based on the OpenAIRE Graph), to ensure that the repository stays up-to-date by automatically discovering new content produced by the institution's researchers in the OpenAIRE Graph, thus reducing the manual input from researchers. OpenAIRE ELD produced a merge in DSpace-CRIS code for version 7, and a proposal for inclusion in DSpace code.

CHALLENGE

The aim of the pilot was to improve the integration between OpenAire services and the most widely used tool and repository system in the world, DSpace. This will make the OpenAire services available out-of-box in the latest releases of DSpace.

HOW THEY USED EOSC SERVICES

4Science made OpenAIRE services available out-of-box in the latest releases of DSpace, in collaboration with the OpenAIRE team.

RESULTS

The PR to merge these new features, developed during the pilot, in DSpace has been set by the DSpace working group in the scope of the version 8 release.

The two target services, Data Correction and the Publication Claim were updated to a a new version that is more integrated with the services provided by OpenAIRE. The Data Correction service was also improved to allow for other data providers in the future.

IMPACT

The pilot achieved refinement and improvement of the results of the previous OpenAIRE ELD project, targeting a deeper integration between OpenAIRE services and DSpace. This integration allows researcher to automatically discover new content produced by the institution's researchers in the OpenAIRE Graph, thus reducing the manual input from researchers.

The pilot used DSpace REST API as integration layer for all the components which is repository "agnostic" and could be applied to other different repositories technologies.

TRL increased from TRL5 to TRL6.

BUSINESS PARTNER

4SCIENCE

EOSC SERVICE PROVIDER

OpenAIRE NEXUS

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

OPEN SCIENCE LENS

OFFERING ACCESS TO MILLIONS OF OPEN SCIENCE RESEARCH PRODUCTS, AT A GLIMPSE

ABOUT

Open Science Lens (OSL) delivers an innovative technological approach to empower Open Science (OS) and bring the scholarly works available on OpenAIRE e-infrastructure, at the reach of research stakeholders, citizens.

To deliver its objectives, OSL builds on the OpenAIRE Research Graph a set of services, offering a tool-suite that can be integrated into a browser or directly into a science-oriented web page enhancing the user experience with regards to OS exploration.

CHALLENGE

The objectives of the pilot were threefold. First was to empower Open Science Lens with resources to support increased traffic of users. Next was to improve the integration with OpenAIRE research graph API and data model. Finally, to pilot and validate the performance profile achieved for OSL services through the underlying infrastructure scaling capabilities.

HOW THEY USED EOSC SERVICES

Open Science Lens integrated with a variety of OpenAire services like OpenAIRE Graph, OpenAIRE Login and OpenAIRE Explore. It also leveraged the EGI Cloud Compute and EGI Cloud Container Compute to scale availability of its services to users.

RESULTS

Through the usage of the EGI-ACE services of EGI Cloud Compute and EGI Cloud Container Compute, OSL was able to setup, configure and utilise the platform to run, test, and evaluate the service. OSL was also able to utilise know-how and technical consultancy from EOSC DIH to integrate successfully with OpenAIRE and EOSC services.

OSL was able to measure and validate required throughput for supporting large scale usage both directly through the browser extension as well as indirectly through high traffic sites.

IMPACT

The OSL extended the readiness level of its technology marking the system as complete and qualified. TRL increased from TRL7 to TRL8. Through the pilot, OSL has gained additional insights and also explored the possible options to further sustain the OSL.

COUNTRY: GREECE

SECTOR: OPEN SCIENCE

TRL 8

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

CITE

EOSC SERVICE PROVIDER

OpenAIRE NEXUS

EGI-ACE

EOSC DIH DIGITAL INNOVATION HUB

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AGRIFOOTPRINT

CARBON FOOTPRINT ASSESSMENT IN CROP GROWING AND AGRI FOOD VALUE CHAINS

COUNTRY: UKRAINE

SECTOR: AGRITECH

TRL 6

1 2 3 4 5 6 7 8 9

ABOUT

The INNOVATION COMPANY BIOINVEST-AGRO LLC. (Ukraine) has been on the market since 2004. The company focuses on the development of innovative adaptive technologies for plant growing that enhance productivity and quality of crop production. The company's solutions allow to reduce operating costs and risks, optimise the use of nutrients and plant protection products, and reduce the losses of the transitional period during the introduction of energy saving technologies in the soil cultivation practices (No-till, Mini, Strip-Till).

CHALLENGE

The aim of the AgriFootprint pilot is to create a service for the assessment of carbon footprint of agricultural products in the process of growing. Also, it is the tool for sound adjustment of agrotechnological, organisational and management decisions by food producers of plant origin. The service meets demand among crop producers and will create a new niche of eco-economic services.

HOW THEY USED EOSC SERVICES

The AgriFootprint pilot implementation divided into few MVPs that includes building comprehensive infrastructure encompassing Kubernetes cluster for services, code repository with delivery process and metadata datasets storage for carbon footprint modeling.

Each of MVPs of the pilot uses different sets of EOSC services, namely: EGI Cloud Compute, EGI Cloud Container Compute, EGI Online Storage, Elastic Cloud Compute Cluster (EC3) for Kubernetes or PaaS/Saas, Zenodo, Amnesia, OpenAIR Research Graph and OpenAIR Broker.

RESULTS

Despite a 6-month pause due to the Ukrainian war, the collaboration was successful in developing a cloud-based model for carbon footprint estimation in agriculture, and creating a prototype cloud service.

The NOSC-UA DIH, acting as an i4trust ambassador, prepared and executed an experiment for agricultural data exchange among SMEs from multiple countries, resulting in the realisation of the i4Trust Data Spaces Experiment "Carbon Agri Data Space (CADS)". With the support of EOSC DIH, the cloud model developed in AgriFootPrint was adapted to meet i4Trust Dataspaces requirements.

IMPACT

The service was successfully prototyped and tested with 3 farmers (from Spain and Ukraine) and 3 Farm Management Information Systems (FMIS) (Greece, France and Italy). The solution allows Farmers and FMIS to estimate and trace carbon footprints during food production, providing a ready-to-use service for diverse stakeholders based on standard mechanisms for data interoperability, value creation, and data sovereignty. TRL notably increased from TRL2 to TRL6.

BUSINESS PARTNER

BIOINVEST-AGRO INNOVATION COMPANY

EOSC SERVICE PROVIDER

OpenAIRE NEXUS

EGI-ACE

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

OIPUB

A DIGITAL PLATFORM FOR ENHANCED DISCOVERY AND DISCUSSION OF RESEARCH

ABOUT

OiPub is a platform to discover and discuss research. Among other features, OiPub allows you to create tailored online research communities which are automatically populated with all relevant research papers and discussion. Our system is built around our tagging, broadcasting and privileges system which makes it easier and better than ever to discover the right information and share ideas with experts and peers in every niche.

CHALLENGE

The aim of the pilot was to build OiPub's Minimum Viable Product (MVP) design, focusing on the core aspects that bring the most value to its users.

HOW THEY USED EOSC SERVICES

OiPub used EOSC DIH's computational support through EGI, service expert consulting and support through OpenAIRE. OiPub investigated various services, APIs & data dumps as part of their pilot. These include CrossRef, ORCID, OpenAlex, as well as EOSC / OpenAIRE services such as ScholExplorer, OpenCitations & most importantly OpenAIRE Research Graph for paper metadata and metrics. OiPub received business strategy consulting, product design review and user testing support through the EGI DIH team. OiPub also learned of many funding opportunities and successfully received support through some of these with the help of EOSC DIH.

RESULTS

The pilot led to co-design and validation of the MVP with direct input from potential end-users. Comprehensive investigation and evaluation of relevant EOSC services were conducted to enhance the product. Additionally, the business and growth strategy underwent thorough review and refinement through strategic consulting. The project further garnered valuable insights through user testing and feedback from the EOSC DIH team as well as prospective end-users. Through this work and with the support of EGI-ACE, OiPub was able to adapt the massive OpenAIRE Research Graph to its topics-based broadcasting system. The computations and Natural Language Processing work involved resulted in 3.4 billion publication-keyword links that would form the foundations of OiPub's topic broadcasting system, along with other data intensive outputs.

IMPACT

The project achieved a notable increase in TRL from TRL3 to TRL6, supported by crucial assistance in co-designing the product during the early design phase. Alignment of OpenAire Graph data dump with internal broadcasting systems paved the way for refining broadcasting, ranking, and sorting tools. Valuable user feedback informed design tweaks for the upcoming open beta release. Additionally, the project secured a significant funding grant with crucial support from EOSC DIH, enabling accelerated business growth. The participation in EOSC-related events and conferences facilitated the demonstration of the system to early audiences, providing essential awareness, recognition, and support for OiPub's growth and networking opportunities.

COUNTRY: MALTA

SECTOR: OPEN SCIENCE

TRL 6

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

OiPub

EOSC SERVICE PROVIDER

OpenAIRE NEXUS

EGI-ACE

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

IRAZ

INTEGRATION OF RSPACE ELN WITH ARGOS AND ZENODO

COUNTRY: SCOTLAND

SECTOR: OPEN SCIENCE

TRL 6

1 2 3 4 5 6 7 8 9

ABOUT

Research Space provides RSpace, a digital research platform that includes a fully featured electronic lab notebook integrated with a sample management system. Through integrations between RSpace and other research tools including file storage/sharing apps like Owncloud, NextCloud, Dropbox, Google Drive, and One Drive, specialised tools like the PyRat animal colony management system and the Clustermarket equipment scheduling system, protocols.io, and others, it is also possible to create links in RSpace to data related to the experiment/project being documented in RSpace that resides in these external tools. This results in a rich and more comprehensive presentation of the experimental record, which through additional integrations can be deposited in data repositories including Dataverse, Dryad and Figshare, facilitating FAIR principles and workflows.

CHALLENGE

The pilot involved the design and development of two integrations, one between the RSpace ELN and Zenodo, and the other between the RSpace ELN and Argos. The aim of both integrations is to further promote and adopt the FAIR principles.

HOW THEY USE EOSC SERVICES

The pilot used the Zenodo API to implement the integration with Zenodo and the RSpace API to implement the Argos integration.

RESULTS

Two essential integrations have been achieved, marking significant advancements in research data management. The first, a groundbreaking RSpace – Argos Integration, facilitates the seamless transfer of data generated in RSpace during a research project into Argos. This integration includes data from other tools, enhancing the overall information associated with the project's data management plan in Argos. Upon export to Zenodo, the comprehensive dataset provides users with a more detailed and complete understanding of the project, significantly improving its discoverability and reproducibility.

Notably, this integration represents the first-ever connection between Argos and an electronic lab notebook. The second integration, RSpace – Zenodo, enables the direct deposition of project data from RSpace into Zenodo, ensuring a more comprehensive and accurate representation of the project in Zenodo. This integration also stands as a pioneering effort, marking the first-ever integration of Zenodo with an electronic lab notebook. Together, these integrations enhance the accessibility, completeness, and reproducibility of research projects, marking a significant milestone in research data interoperability.

IMPACT

The pilot started with mature commercial components but with speculative workflow and integrations amongst themselves. Upon completion of the pilot, a working prototype was produced, and integration and technology issues were resolved.

BUSINESS PARTNER

RSpace

EOSC SERVICE PROVIDER

OpenAIRE NEXUS

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

PREMACOOL

AI FOR PREDICTIVE MAINTENANCE IN COMMERCIAL REFRIGERATION UNIT SYSTEMS

ABOUT

Klimamichaniki was founded in Thessaloniki, Greece in 1984. It is an engineering consultancy and construction company with expertise on all HVAC systems. The company recently pivoted towards research and development via incorporating and applying AI methods within its modus operandi, to develop innovative solutions.

CHALLENGE

The PreMaCOOL pilot focused on leveraging sensor data from a commercial refrigeration system to pioneer AI-based services in a domain lacking such tools. Notably, the development of AI models for energy forecasting and predictive maintenance addressed a gap in the market where monitoring tools exist but lack forecasting or fault prognosis solutions.

HOW THEY USE EOSC SERVICES

The project extensively utilised EOSC services, including OpenAIRE EXPLORE as a starting point, EGI Notebook for code development and visualisation, and the ARGOS was instrumental in crafting a comprehensive Data Management Plan (DMP), which will be a living document guiding data-related aspects throughout the pilot. Additionally, B2SHARE served as a hub for researching relevant datasets, similar applications, and cutting-edge technologies crucial for addressing the project's challenges.

RESULTS

During PreMaCOOL, Klimamichaniki achieved several milestones including the development of accurate anomaly detection models using point-wise and pattern-wise mechanisms. The energy forecasting models with hourly granularity and a 24-hour forecasting depth successfully predicted consumption patterns.

Engagement with the pilot and EOSC DIH led to the conceptualization of two innovative solutions, with one already submitted for funding through EOSC DIH's proposed funding calls. Importantly, HVAC engineers' competence in identifying data-driven solutions for market problems significantly increased, fostering continuous engagement and discussions on the potential implementation of AI solutions to address specific challenges in the domain.

IMPACT

The core idea behind the pilot progressed from conceptualisation and proof of concept to the development of production-ready trained models. The effectiveness of the AI models in addressing the specific problem was successfully validated, and this process solidified Klimamichaniki's vision towards establishing a software service. As a result, TRL increased from TRL3 to TRL5.

COUNTRY: GREECE

SECTOR: ENERGY

TRL 5

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

ΚΛΙΜΑΜΗΧΑΝΙΚΗ 1984 ΟΛΙΣΤΙΚΗ ΕΝΕΡΓΕΙΑΚΗ ΔΙΑΧΕΙΡΙΣΗ

EOSC SERVICE PROVIDER

OpenAIRE NEXUS AI4 eosc

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SOFIA

AUTOMATING THE INNOVATION SCORING PROCESS IN FINANCE

COUNTRY: GREECE

SECTOR: FINANCE

ABOUT

SOFIA Innovation Scoring is a Decision Support System (DSS), created by RENVIS, for measuring business Innovation Scoring, that integrates data from various sources and offers a unified, friendly UI for creating Innovation Scorecards and customising Innovation Scoring Models.

SOFIA also guarantees data integrity and secure user access, so that it can be immediately part of an alternative evaluation process (Credit & Investment Scoring) beyond traditional banking criteria.

CHALLENGE

The implementation of the pilot will introduce to market the new version of SOFIA (SOFIA 4.0), that adds the ability to provide suggestions based on existing, external and newly created datasets. This will create unique added value to data entered by the users and to the everyday usage of the software.

SOFIA 4.0 will introduce the following innovations: an Innovation Scoring tool, ML models stemming from financial banking transactions, consumer behaviours, and macro-economic company datasets, and an alternative Scoring process for companies, irrespective of their size and stage.

HOW THEY USED EOSC SERVICES

The pilot made use of the EGI DataHub, OpenAIRE's Zenodo, ARGOS and Enrichment API, and Reliance for implementing new features of SOFIA. EOSC DIH assisted in communicating the pilot through newsletters campaigns, participation in events/webinars/seminars related to Innovation Scoring and the use of ML/AI into SaaS DSS.

RESULTS

Used the EGI DataHub for making available SOFIA Innovation Scoring final datasets, disseminated the use case to EOSC partners and general audience, and delivered a webinar and used it for marketing and dissemination purposes.

IMPACT

Increased TRL from TRL7 to TRL8. Through the regular meetings and assistance of the EOSC partners, RENVIS has been keeping up with the updates, informed about funding and event participation opportunities, and increased their reach. EOSC DIH added more value to SOFIA, by reaching a larger audience and receiving feedback on the efforts.

TRL 8

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

RENVIS
RESEARCHING VISIONS

EOSC SERVICE PROVIDER

EGI-ACE
Reliance
EOSC DIH DIGITAL INNOVATION HUB
OpenAIRE NEXUS

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YDMS

DATA MANAGEMENT SYSTEM FOR SMART BUILDING ANALYSIS

COUNTRY: ITALY

SECTOR: ENERGY

ABOUT

YDMS, by Yuppies Services, focuses on the creation of the Yuppies Data Management System (YDMS), a data lake-based infrastructure containing building's technical registry records in order to allow free research and a flexible data organisation to perform smart data analytics. The pilot stems from both the request to innovate the survey services and the need to manage the large amount of data required to set-up a building's technical registry record. A technical registry record consists in a dataset collection that stores all the components of the facility-building system, through survey information maps and graphic restitutions in CAD, BIM or RCP files.

By generating the software (YoDS) to import the heterogeneous types of facility-building system datasets in a structured scheme, it is possible to provide interested end-users with all available information collected with the purpose of improving the facility management, the energy management and, in general, the restoration of the Italian public heritage.

CHALLENGE

The aim of YDMS is to combine data collected in the past on different public buildings and make them searchable according to different criteria: for instance, by ownership, use, location and other peculiarities. Furthermore, the availability of time-series data on the same assets permits to analyse potential changes in terms of investments, technologies adopted and developments in the different sites.

HOW THEY USED EOSC SERVICES

The pilot used B2Safe by DICE for implementing the YDMS, and it used the EOSC DIH consultancy, training, and proof of concept services.

RESULTS

The technological requirements of the Data Lake based platform have been identified. YDMS Data Management System has been implemented, as well as the Import Data Software YoDS. The system was tested and validated, with the aim to benchmark datasets of buildings to use it in the (Building) health system in their software YODS.

IMPACT

The TRL was increased from TRL3 to TRL5. To achieve this, the techniques to manage this amount of data, YDMS was benchmark-verified and disseminated.

TRL 5

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

YUPPIES SERVICES

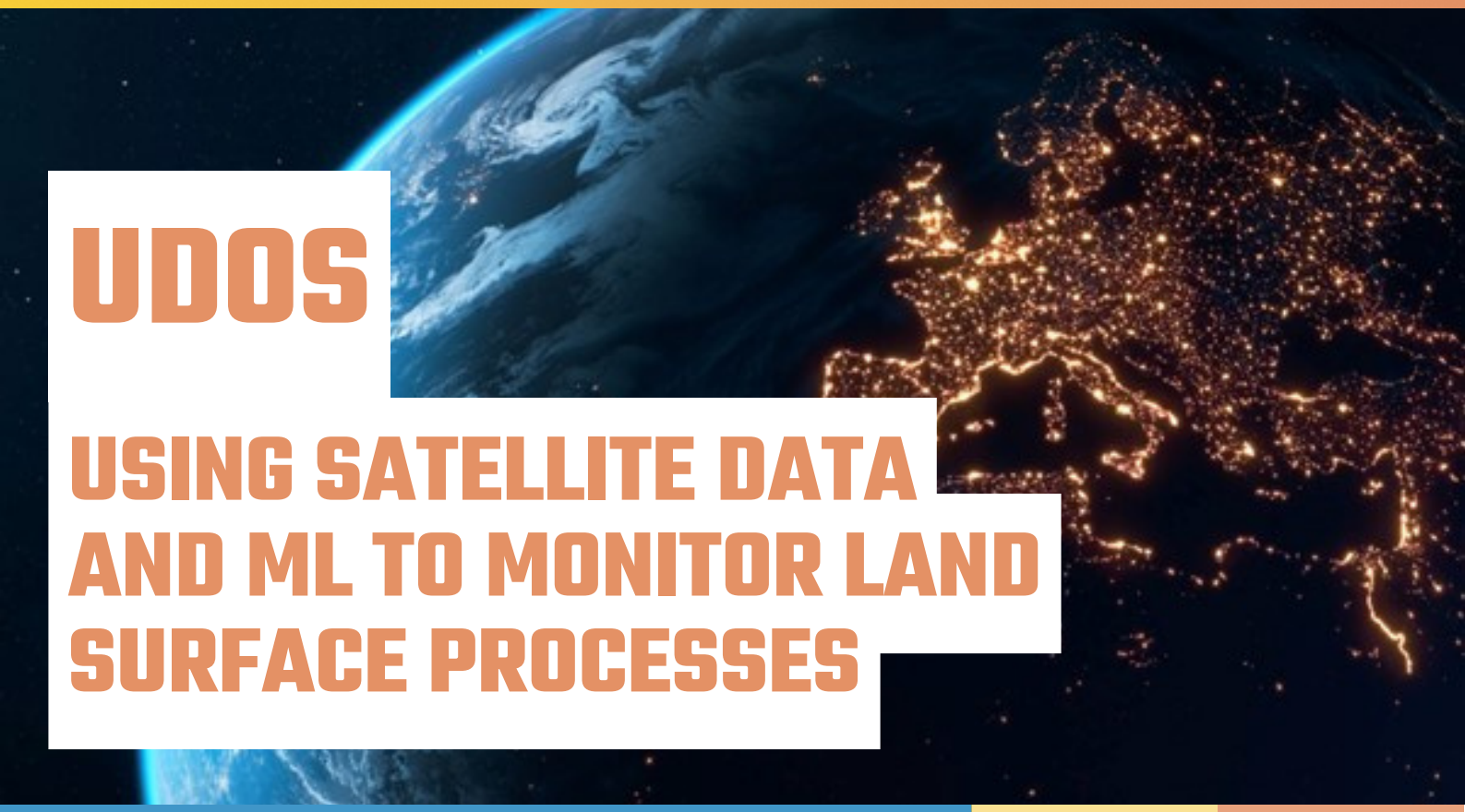
EOSC SERVICE PROVIDER

DICE Data Infrastructure Capacity for EOSC

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future



UDOS

USING SATELLITE DATA AND ML TO MONITOR LAND SURFACE PROCESSES

COUNTRY: AUSTRIA

SECTOR: REAL ESTATE

ABOUT

Scientific studies have proven the feasibility of monitoring urban structures by satellite data from various sensors. This can help to satisfy their customers' need to get ready-to-use information about urban dynamics down to the individual property-level, without the hassle of having the experience and the knowledge in processing satellite images.

Accurate information about the current extent of built-up areas and their change over time is not only crucial for sustainable urban development but also relevant for commercial applications in different industries (e.g., real estate). In that context, the start-up ubicube GmbH developed a promising pilot base service: the high-resolution built-up detection with continuous/regular monitoring.

With UDOS, ubicube tends to develop this system further and certify its transferability and its extensibility to larger geographic areas.

CHALLENGE

The overall aim is to produce an urban extent monitoring system with unprecedented temporal and spatial resolutions that can be used for various use cases from the national to the local scale, enabling insights down to the individual property level.

HOW THEY USED EOSC SERVICES

In the pilot the C-SCALE Compute and Data Federation services were used to improve, scale, and validate ubicubes' satellite data enabled urban dynamics monitoring service.

RESULTS

After a mapping exercise, revised service prototypes were created and presented to a set of potential clients to gather their initial feedback. Implementation sprints through C-SCALE services improved and optimised the application, including design revisions. The full scale development cycle has been completed, with a final round of feedback ensuring the processing pipeline for the full-scale service is optimised, and the service has been launched. A SAR Coherence processing pipeline is implemented. The overall processing time has been significantly reduced.

IMPACT

The pilot resulted in an upgrade of TRL4 to TRL6. A system prototype demonstration in an operational environment was executed.

The urban monitoring system was improved, and finally, using C-SCALE services helped ubicube reinforce the strategic decision that they need to outsource all processing to the cloud.

TRL 6

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

ubicube

EOSC SERVICE PROVIDER

C-SCALE

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

TWC-SCUP

INTEGRATED MANAGEMENT TOOLS FOR FORESTRY OPERATIONS

COUNTRY: GERMANY

SECTOR: FORESTRY

ABOUT

The Tama WaldCursor provides integrated management tools for forestry operations and forestry owners. The cloud and app based WaldCursor is designed on a remote sensing backbone, sponsored by ESA (TSMF 10CM DP). Today's target users of the cloud product are medium to small scale forestry companies and private forestry owners. The WaldCursor was commercially launched in April 2022.

The pilot TWC-SCUP intends to investigate and test the capabilities of the currently available algorithms, data handling structures and system performance to achieve a system scale up of the current average of 5km² per user -as normal in private forestry operations- to an average of 50km² per account -as expected with environmental use cases for local eco-systems.

CHALLENGE

The scale up factor of 10 per login requires intensive testing on a larger machine as currently available.

HOW THEY USED EOSC SERVICES

Tama used the C-SCALE's service FedEarthData (Federated Earth System Simulation and Data Processing Platform) for satellite image analysis, and C-SCALE resources for scaling-up.

In addition, Tama used the expertise of the EOSC DIH experts for the exploratory and scale up phases. The project has been divided into several scale-up phases, increasing the amount of the resources and complexity.

RESULTS

WaldCursor conducted a Satellite image (ESA Sentinel-2) based analysis of a customer defined area in the Dominican Republic, stretching by a bounding box over an area of 1.6mio ha (16,000km²); net investigation area: 1,180ha. The addition of resources, protocols and processing modules to the commercially available Tama WaldCursor using the available resources from C-SCALE and EOSC-DIH helped to achieve this scale-up.

IMPACT

The project allowed Tama Group to accelerate the development for this new feature, reaching TRL 6 for this new feature within the project period (having started at TRL 2). This acceleration saved about 1 year time to market for this feature.

TRL 6

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

TAMA GROUP

EOSC SERVICE PROVIDER

C-SCALE

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

MRADSIMIDE

IMPROVING DATA ANALYSIS AND RECONSTRUCTION CAPABILITIES

COUNTRY: ITALY

SECTOR: IT

ABOUT

BEAMIDE is an innovative spin-off of INFN (Italian National Institute for Nuclear Physics) with core business of radiation hardness assurance services tests and software & innovative radiation detectors.

The MRADSIMIDE pilot is about the development of a software set to simulate the radiation effects on electronic and electro-mechanical systems/subsystems (DUT).

MRADSIM is a cross-platform system using OpenCascade, Qt5, CMake etc. and it provides a user-friendly interface to the users which are not experts in computing to do their simulations in autonomy.

CHALLENGE

MRADSIM needs CPU, GPU, and disk space, but most of all training on how to implement algorithms for combined CPU and GPU usage and optimisation, to be able to simulate very large number of radiation events (e.g. 10^16 particles through a big GEO satellite over 20 years of activity) and to use AI and ML techniques to run lesser number of events while approaching to the same result accuracy as in full run case.

HOW THEY USED EOSC SERVICES

The Pilot used EGI Cloud Compute services through EGI-ACE, ROHub and API from RELIANCE and the expertise on AI and ML from AI4EOSC.

RESULTS

The programmes were uploaded to test the first approaches focused to implement the superresolution issue, namely, to improve the 3D dose distribution obtained with a limited number of simulated events. The algorithms have been tested on EGI infrastructures, allowing to select the correct algorithm among many available.

Multithread, multi-CPU computing in MRADSIM and in radiation detector's data acquisition, reconstruction and display codes have been implemented.

Algorithms with AI/ML resulted in better images in MRADSIM 3D reconstructions for Dose-Depth Studies, and in GamCam (a crystal scintillator coupled to a Hamamatsu SIOPM array).

IMPACT

TRL for the space module improved from TRL6 to TRL7.

TRL 7

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

BEAMIDE

EOSC SERVICE PROVIDER

EOSC DIH DIGITAL INNOVATION HUB

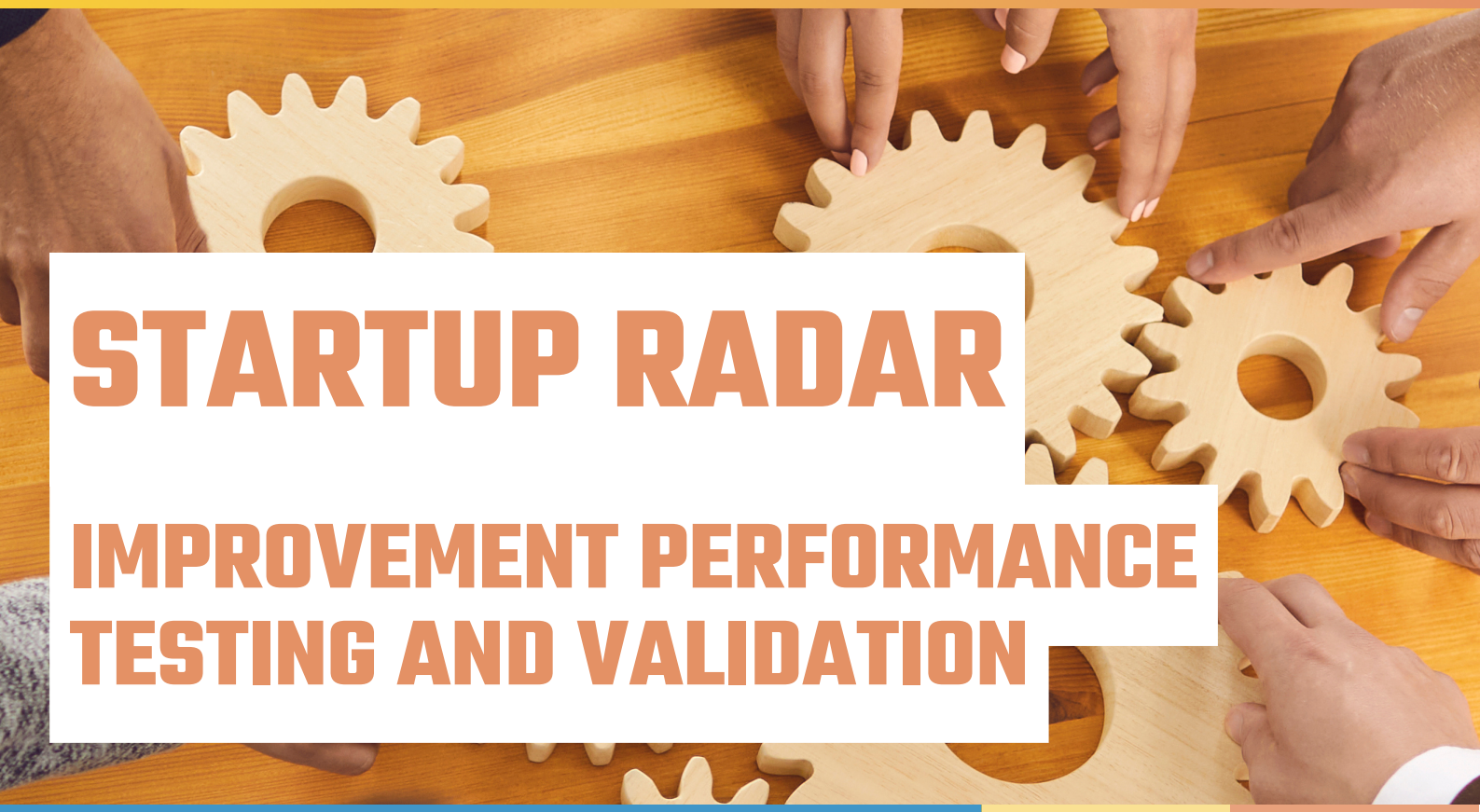
AI4 | eosc

Reliance

EGI-ACE

SUPPORTING PROJECT

EOSC Future



STARTUP RADAR

IMPROVEMENT PERFORMANCE TESTING AND VALIDATION

ABOUT

STARTUP RADAR (SR) is Linknovate's latest R&D venture.
Linknovate provides an "innovation search engine" to R&D and strategic divisions of different king of organisations. They have incorporated and structured more heterogeneous data sources than any other solution (publications, patents, funding data, specialised news, web monitoring…), allowing clients to collectively monitor these "innovation signals." This translates into time savings and improved internal communication.

In this regard, the enrichment of their datasets with thousands (or millions) of additional scientific publications should boost the scouting capabilities of users cross-industry.

CHALLENGE

STARTUP RADAR datasets need to be enhanced, the data and platform should be improved through the curation of private organisation's data.

HOW THEY USED EOSC SERVICES

The pilot made use of the OpenAIRE Graph to enrich the existing data through deduplication, profile enrichement, location information, organisation IDs, and scientific publications. OpenAIRE Monitor, built on the Graph, was used for advanced data analytics and the OpenAIRE team provided technical feedback.

RESULTS

Almost 90K profiles in the Linknovate database were improved.

IMPACT

While not all the goals were achieved, the pilot managed to fix one of their core platform issues: the curation of organisational profiles. As a result, TRL increased from TRL4 to TRL7.

Additionally, Linknovate gained understanding of how to improve their data and platform and to curate private organisation's data. Moreover, there is more clarity about potential future collaborations with OpenAIRE. In fact, this opens the possibility for Linkovate of becoming a data provider themselves, either as a service provider for OpenAIRE or for third parties, using OpenAIRE as an intermediary.

COUNTRY: SPAIN

SECTOR: IT

BUSINESS PARTNER

LINKNOVATE

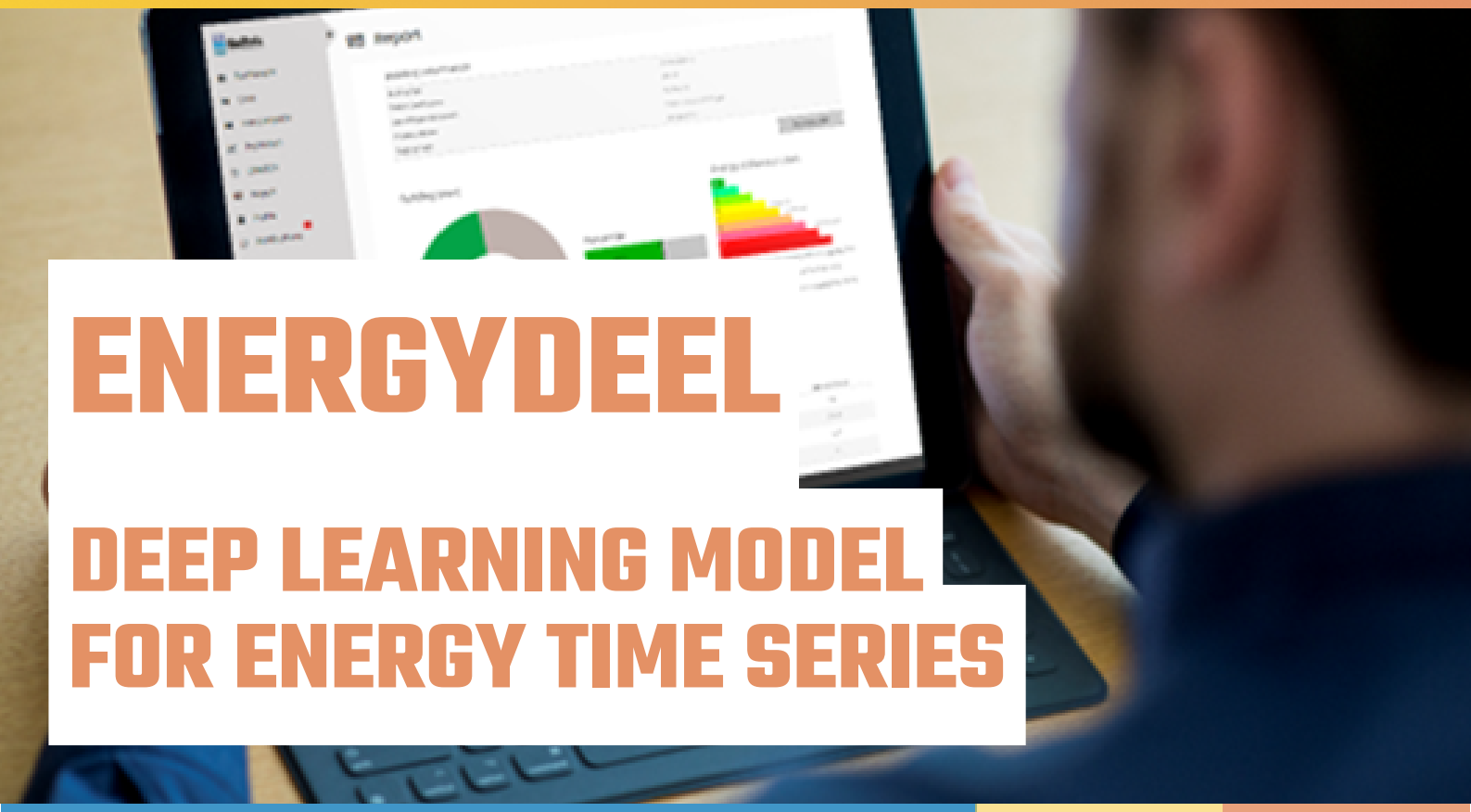
EOSC SERVICE PROVIDER

OpenAIRE NEXUS

EOSC DIH
DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future



ENERGYDEEL

DEEP LEARNING MODEL FOR ENERGY TIME SERIES

ABOUT

EnergyDeeL is a data-driven software technology built by open-source big data tools and Artificial Intelligence (AI). EnergyDeeL is a Virtual Disaggregation technology, also known as Non-intrusive Load Monitoring (NILM). It intends to identify the operational state (on/off) and the precise power consumption of individual electrical loads, considering as input only the aggregated consumption from the central smart meter.

EnergyDeeL was run as part of Builtrix energy analytics platform interoperating with the rooftop photovoltaic (PV) plants, distribution system operator (DSO) smart meters, Energy and Building management systems, Electric Vehicle (EV) chargers and other stakeholders.

CHALLENGE

The major drawback of smart buildings is the purchase, installation, and maintenance of many IoT devices and sensors.

The pilot needed to leverage appliance-level consumption data and short-term (hourly/daily) PV production forecasts.

HOW THEY USED EOSC SERVICES

EnergyDeel used used the OpenAIRE Nexus services Amnesia (for data anonymisation) and ARGOS for a workshop on data management. Additionally, EGI Cloud Container Compute was used, as well as the Elastic Cloud Compute Cluster (EC3).

RESULTS

The pilot project unfolded in a pilot community of energy consumers located in Cascais, Portugal, and played a pivotal role in empowering service buildings to make informed, data-driven decisions regarding the deployment and utilisation of renewable resources, as well as the efficient management of energy-consuming devices within their structures.

IMPACT

Thanks to the pilot, the TRL level was upgraded from TRL6 to TRL8.

The number of pilot buildings was increased and the software was offered as a service based on annual or monthly subscription. The pilot ran in phase with a larger-scale pilot with a potential customer, and this helped Builtrix to amplify learnings and speed up developments - resulting an a success case that can be scaled up for other, similar customers.

Finally, EOSC DIH proved instrumental to find partners for EU and Horizon Europe open calls.

COUNTRY: PORTUGAL

SECTOR: ENERGY

TRL 8

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

Builtrix
Connected-Building Solution

EOSC SERVICE PROVIDER

EGI-ACE

EOSC DIH
DIGITAL INNOVATION HUB

OpenAIRE NEXUS

SUPPORTING PROJECT

EOSC Future

B2PREDICT

SMARTBIKES PREDICTIVE MAINTENANCE

ABOUT

BikeSquare is an innovative startup with a social vocation that has developed high expertise in the cycling sector and has defined a model of cycle tourism circuit that contemplates the networking of public and private entities. Predictive maintenance is a novel research topic that not only allows e-bike users to ride bicycles safely but also helps e-bike renters to save money and time. For this pilot, BikeSquare would like to implement a predictive maintenance system for the e-bikes and an alert system that provides the status of the bicycles and IoT devices.

CHALLENGE

The pilot needed to assess the correct algorithm to perform the prediction of damages and failures and the detection of abnormal behaviour in the bikes. It needed to verify if the technical infrastructure was able to execute the the selected algorithms and find the optimal evaluation methods.

HOW THEY USED EOSC SERVICES

The pilot used and tested the EGI-ACE cloud computing and online storage services to develop and test services for: developing a pipeline that collects, processes, and predicts possible damages or failures in the electric bikes, and collecting the information produced by the platform. A system was developed to detect abnormal behaviour in the rented bicycles, and to evaluate the performance of the algorithms.

RESULTS

Most of the targets were reached.
The pilot managed to organise and collect GPS data, and created a way to collect maintenance data correctly.
A dashboard page was developed where users can visualise maintenace reports and cost summaries.

IMPACT

In terms of impact, the pilot has reached TRL6. This means that the company has developed a working prototype that users can interact with. This prototype is a minimum viable product (MVP) with the core features needed to validate the business concept.

COUNTRY: ITALY

SECTOR: MOBILITY

BUSINESS PARTNER

BikeSquare SmartBikes Predictive Maintenance

EOSC SERVICE PROVIDER

EGI-ACE

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

SNOWPOWER

CLIMATE FORECAST FOR HYDROPOWER GENERATION

ABOUT

SnowPower is a SaaS solution, developed by Amigo. It is the first commercial climate service of its kind, combining a satellite-based snow water equivalent with climate data to estimate and predict the energy generated by hydropower plants up to six months in advance.

SnowPower consists of three components (snow, melt and hydropower generation) that work in sequence, combining the use of data and AI/ML algorithms with the aim of providing a reliable and accurate forecast of hydropower generation in the short (7 days) and medium term (1 to 6 months).

CHALLENGE

Accurate estimation of snow water content could allow energy producers to better manage natural resources and make renewable energy production more efficient.

HOW THEY USED EOSC SERVICES

Snowpower used C-SCALE's FedEarthData service: Federated Earth System Simulation and Data Processing Platform, as well as a Workflow Solution for on-demand seasonal river discharge forecasting.

RESULTS

A methodological improvement inlcuded a revision of the criteria to determine catchment areas. New variables related to the energy market were identified. A detailed business plan to guide future operations was developed.

IMPACT

The TRL was upgraded from TRL7 to TRL9. The Business Strategy and Operational Processes were advanced, and the market expansion and competitiveness testing can help Amigo to be more competitive in existing and potential markets.

During the pilot, the project developed several user-friendly solutions that take into account the different characteristics of hydropower plants.

COUNTRY: ITALY

SECTOR: ENERGY

TRL 9

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

Amigo

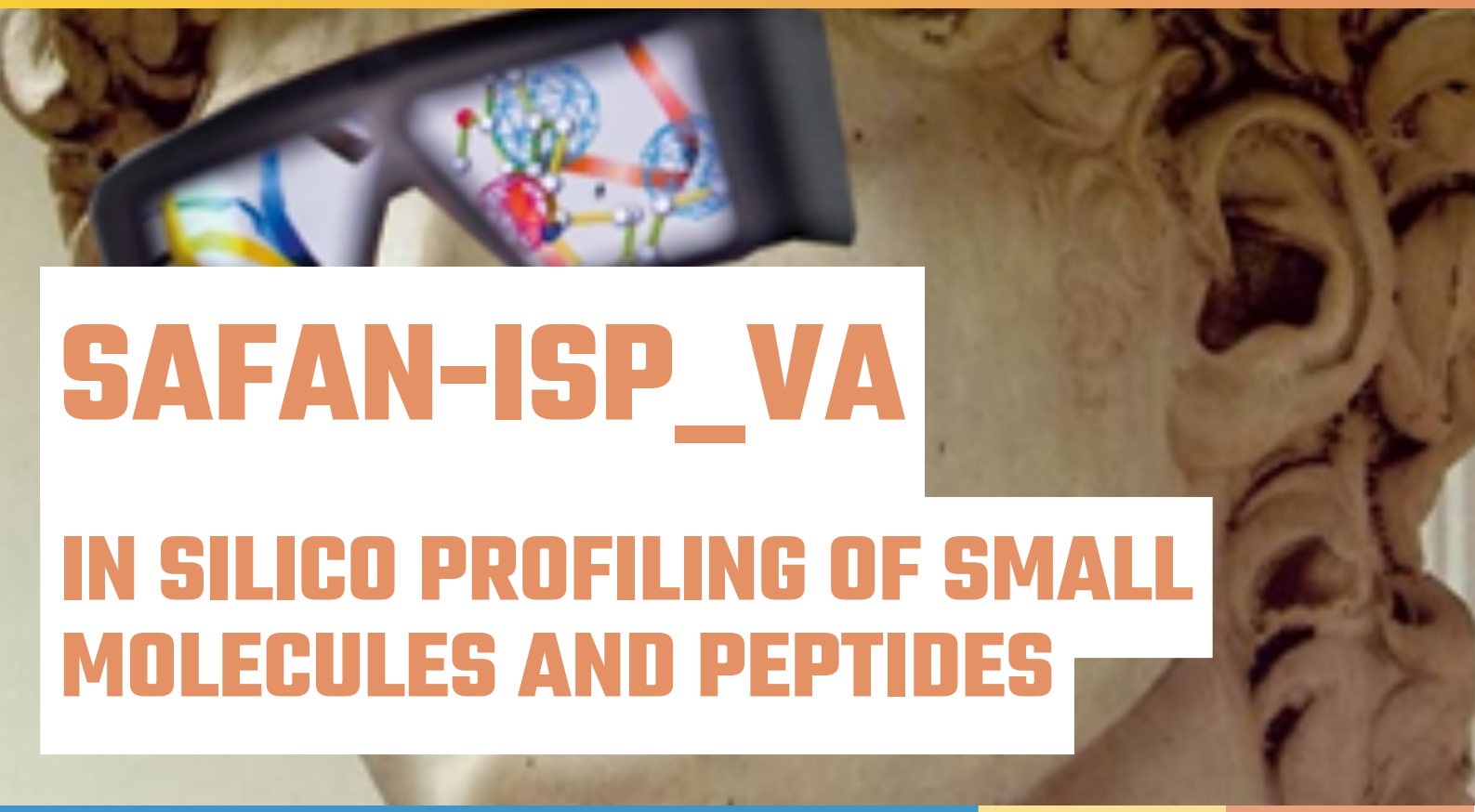
EOSC SERVICE PROVIDER

EOSC DIH DIGITAL INNOVATION HUB

C-SCALE

SUPPORTING PROJECT

EOSC Future



SAFAN-ISP_VA

IN SILICO PROFILING OF SMALL MOLECULES AND PEPTIDES

COUNTRY: ITALY

SECTOR: PHARMA

TRL 5

1 2 3 4 5 6 7 8 9

ABOUT

S.A.F.AN. BIOINFORMATICS is a small bioinformatic company based in Turin (Italy) with the mission of reducing costs and increasing efficiency of bringing new drugs to market.

Due to the high costs of the drug development process, within the pharmaceutical industry there is a general interest in applications that can be used for target deconvolution and off-target prediction such as the tool SAFAN-ISP, a new fragment based in-silico screening profiling technology.

CHALLENGE

New computational methods need a very accurate validation process in order to be accepted by the pharmaceutical companies.

Validation has been done on a limited number of cases in vitro or on a much larger amount of data in silico. The resulting statistical analysis was extremely important for SAFAN-ISP validation to promote its diffusion within the pharmaceutical industry.

HOW THEY USED EOSC SERVICES

SAFAN-ISP implemented a workflow running with a docker container performing a complete calculation within 15' for each drug compound on one core.

With the support from EOSC DIH experts, the workflow was adapted to a cloud HPC environment to increase performance and make it able to analyse a dataset large enough for commercial purpose. Consequently, for pilot testing a subset of 10000 compounds were generated by analysing and comparing BindingDB data with ChEMBL.

Simulation runs were done in waves alternating between results analysis and refinement. Computational resources were used at CINECA. DICE provided support for porting of the code on the selected machine (Galileo100).

RESULTS

After executing SAFAN-ISP on the chosen compunds, an analysis of the affinities obtained was conducted.

IMPACT

The pilot resulted in an ppdate of the TRL 4 to TRL 5, where SAFRAN technology is validated with an industrially-relevant dataset.

BUSINESS PARTNER

S.A.F.AN. bioinformatics

EOSC SERVICE PROVIDER

DICE Data Infrastructure Capacity for EOSC

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

AWARE

AERO WASTE ASSESSMENT WITH THE USE OF ROBOTICS EQUIPMENT

ABOUT

VERTLINER is a pioneering field robotics company specializing in the development of autonomous robotic aerial platforms for indoor assessments. Our newest pilot, AWARE, leverages a semi-autonomous UAV equipped with advanced sensor modalities. The software's purpose is to detect materials frequently met on construction sites. By identifying and quantifying these materials, we aim to significantly improve waste management processes.

CHALLENGE

Effective waste management in construction sites necessitates precise identification and location of various materials. Traditional methods can be time-consuming and often inaccurate. Through the use of High-Performance Computing (HPC) services, the AWARE pilot seeks to harness the power of AI by training a Neural Network based on the DIH cloud resources such as GPUs, CPUs, RAM, and disk space. This enabled us to develop an efficient AI model for accurate material detection, ultimately enhancing VERTLINER's information-gathering capabilities regarding objects in areas of interest

HOW THEY ARE USING EOSC SERVICES

AWARE made use of the AI4EOSC platform for training of the models and of the computing resources. It also received Training and Support and Visibility opportunities, and information on funding opportunities.

RESULTS

The main achievement of the AWARE pilot under the EOSC DIH initiative has been the successful establishment of a foundational neural network for material detection in construction sites. Utilizing the advanced resources available at the DEEP training facility, we have effectively developed a proof of concept for our initial hypothesis. This accomplishment has been pivotal in transitioning from theoretical design to practical application, offering us a robust testbed to evaluate both the potential and limitations of our AI model. Through this pilot, we have gained invaluable insights into the complexities of material identification in dynamic construction environments, enabling us to refine our approach towards developing a more accurate and efficient system.

IMPACT

Achieving a TRL 5 at the completion, the AWARE pilot has positively impacted VERTILINER's business by adding a practical and marketable feature to VERTLINER's UAV technology. This development, focusing on material detection in construction sites, offers a new dimension to VERTLINER's product line, potentially increasing its appeal to clients looking for practical solutions in construction management.

COUNTRY: GREECE

SECTOR: WASTE MANAGEMENT

TRL 5

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

VERTLINER™

EOSC SERVICE PROVIDER

AI4 | eosc

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

MIFOOD

ROBOT FOR AGRICULTURE HARVESTING

ABOUT

Farmers are unable to find workers to perform tasks in farms; there is a serious labor shortage of more than 5 million people required, and labour cost is also very high. Another problem in farms is food waste and crop losses, representing 30% of losses for the farmers. Harvesting food in a farm currently involves damaged produce, low hygiene, higher and significant risk of accidents in the farms. To solve all these problems, MiFood has developed a solution based in Artificial Intelligence and Robotics.

The MiFood Robot automates harvesting and collecting food in farms. The robot collects and stores food items including fruit and vegetables in farms faster, maximises crops produced and enhances sustainability increasing efficiency and reducing co2 emission on harvesting. The result is quicker harvesting time, food waste reduction, labour shortage reduction, more efficient collecting, lower labour costs, and reduced risk of accidents.

CHALLENGE

MiFood is analysing different solutions for improvement and further development of robotic solutions. With the new possible appliances, new AI models are required, as well as integration with the Cloud services compared to the current solution.

HOW THEY ARE USING EOSC SERVICES

Integration of the MiFood Robot with EOSC Services: compute services, AI platform. EOSC DIH consultancy on the technical solutions

OUTCOMES

The implementation of the robotic service pilot in agriculture using cloud technology achieved significant milestones in enhancing precision agriculture, data-driven decision-making, remote monitoring, and autonomous operations. Cloud computing facilitated the collection and analysis of extensive data for informed decisions in crop management and resource allocation.

Real-time monitoring through cloud-connected robotic systems allowed farmers to observe and respond promptly to changes in crops, irrigation, and equipment. Moreover, the autonomous capabilities of cloud-connected robots, equipped with sensors and cameras, enabled tasks such as planting, harvesting, and weeding, contributing to increased efficiency, productivity, and sustainability in farming practices.

IMPACT

The pilot and the developed solution will support agriculture sector by enhancing operational efficiency through automation and data-driven decision-making, which will lead to substantial cost savings. Additionally, the cloud-connected robotic agriculture systems are expected to contribute to environmental sustainability by precisely managing resources, minimizing the overall environmental impact of farming practices. Moreover, the planned continuous monitoring and data analysis facilitated by the solution are expected to optimize crop management, resulting in improved yields and higher-quality produce. TRL increased from TRL6 to TRL7.

COUNTRY: POLAND

SECTOR: AGRITECH

TRL 7

1 2 3 4 5 6 7 8 9

BUSINESS PARTNER

MiFood

EOSC SERVICE PROVIDER

PSNC

EOSC DIH DIGITAL INNOVATION HUB

SUPPORTING PROJECT

EOSC Future

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