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WORSICA, a Water Monitoring Cloud Platform using Sentinel Imagery.

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WORSICA (Water Monitoring Sentinel Cloud Platform) is a one-stop-shop service that integrates remote sensing (Copernicus) and in-situ data for the determination of water presence in coastal and inland areas, applicable to a range of purposes from the determination of flooded areas (from rainfall, storms, hurricanes or tsunamis) to the detection of large water leaks in major water distribution networks. It is one of the thematic services developed under the EOSC-Synergy initiative.
WORSICA provides access to customized remote sensing applications currently applied to three major water sub-services: Coastline Detection, Inland Water Bodies Detection, and Leak Detection in Irrigation networks. In the Coastline Detection application, the user will obtain the coastline determined from Sentinel-2, UAV, or Pleiades imagery, for a given Region-Of-Interest. In the future, the coastline detection will be linked to the OPENCoastS service in order to produce a Digital Elevation Model. In the Inland Water Bodies Detection, the user will obtain layers of water bodies detected in inland regions (e.g., lakes or reservoirs) to characterize their volume and occupied/inundated areas. The Leak Detection in Irrigation networks application, the main goal of this sub-service, can automatically identify and detect possible water leaks in (remote) irrigation networks, obtained systematically from satellite and UAVs images.
This service is aimed at Partners, Companies, and the Scientific Community. It can provide tools to the Partners (e.g., coastal engineers, researchers, and water supply managers) to monitor and anticipate the impacts of eventual storm surges/inundations on the coast and water leaks in irrigation networks. In addition, it can provide all Companies (e.g., coastal managers) the historical morphology of the coastline for specific periods in time, supporting multiple uses such as water monitoring harbor activities, dredging works, and building works on the coast. Finally, these detections are also helpful for the Scientific Community, supporting, for instance, fieldwork and helping to understand the evolution of the coastline and erosion patterns in the coastal areas and other water systems.
WORSICA is a remarkably complex and computationally demanding service with several technological needs, from GRID and Cloud computing, storage and GPUs. As the service will serve the entire European scientific community, it must be efficient, scalable, and resilient. Thus, new automatic integration methodologies in the marketplace catalog and federated computational infrastructures of the EOSC network were implemented in the new architecture of the WORSICA service. WORSICA will use the available HPC computation resources of the EGI infrastructure to provide speedup, scalability, portability, flexibility, redundancy, and service interoperability. In addition, WORSICA takes advantage of several essential EGI services such as EGI CheckIn for federated authentication across IT services and infrastructures, Software Quality as a Service (SQAaaS) implemented using Jenkins pipelines for CI/CD in service integration automation, and Dataverse for logging metadata of processed products for FAIRness data.
This work will present the main architecture changes implemented in the scope of the EOSC-Synergy project to the WORSICA service.

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Most suitable track

Delivering services and solutions

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