

The Terradue's Open Cloud Strategy: the case of leveraging the EGI Federated Cloud as a commodity for the EO communities

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Earth observations from satellites produce vast amounts of data. In particular, the new Copernicus Sentinel missions are playing an increasingly important role as a reliable, high-quality and free open data source for scientific, public sector and commercial activities. Latest developments in Information and Communication Technology facilitate the handling of such large volumes of data, and European initiatives (e.g. EOSC, DIAS) are flourishing to deliver on it. In this context, Terradue is moving forward an approach resolutely promoting an Open Cloud model of operations.

With solutions to transfer EO processing algorithms to Cloud infrastructures, Terradue Cloud Platform is optimising the connectivity of data centres with integrated discovery and processing methods. Implementing a Hybrid Cloud model, and using Cloud APIs based on international standards, the Platform fulfils its growing user needs by leveraging capabilities of several Public Cloud providers. Operated according to an "Open Cloud" strategy, it involves partnerships complying with a set of best practices and guidelines:

- Open APIs. Embrace Cloud bursting APIs that can be easily plugged into the Platform's codebase, so to expand the Platform offering with Providers offering complementary strategic advantages for different user communities.
- Developer community. Support and nurture Cloud communities that collaborate on evolving open source technologies.
- Self-service provisioning and management of resources. The Platform's end-users are able to self-provision their required ICT resources and to work autonomously.
- Users rights to move data as needed. By supporting distributed instances of its EO Data management layer, the Platform delivers the required level of data locality to ensure high performance processing with optimized costs, and guarantees that value added chains can be built on top of intermediate results.
- Federated Cloud operations. The Platform's collaborative environment and business processes support users to seamlessly deploy apps and data from a shared marketplace and across multiple cloud environments.

As a recent case, thanks to the integration within the Platform of the Open Cloud Computing Interface (OCCI), and the close partnership between EGI and Terradue, our provisioning of ICT resources supports ever more demanding exploitation scenarios.

For example, EGI compute and storage resources from ReCaS Bari (Italy) are used to support the VITO's Sentinel-2 Biopar Pilot within the NextGEOSS project, an initiative funded by the European Commission to implement a federated data hub for access and exploitation of Earth Observation data. Furthermore, EGI compute and storage resources from GOEGRID-GWGD (Germany), ReCaS Bari (Italy), BELNET-BEGRID (Belgium) are used in the context of the ESA Geohazards Exploitation Platform initiative, where several Platform services automatically produce interferograms out of Copernicus Sentinel-1 acquisitions, over a subset of the global strain rate model.

All the applications enabled by the Terradue Cloud platform will be integrated in the EOSC service catalogue during the EOSC-hub project to promote them and enlarge the user base. It is also planned to exploit more e-infrastructure services during the project, integrating selected services (from EGI, EUDAT and INDIGO-DataCloud) from the EOSC-hub catalogue in the cloud platform.

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