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Ellip: a collaborative workplace for EO Open Science

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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 (ICT) 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, along with Cloud Services (the new 'Ellip'solutions) for cross-domain cooperation and applied innovation, supporting users with a collaborative work environment on the Platform.

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. This is for example the case with NextGEOSS, the European Data Hub and Platform, a EC contribution in support of the Group on Earth Observations initiatives and communities, or the Geohazards Exploitation Platform, an R&D activity funded by ESA. Implementing a Hybrid Cloud model, and using Cloud APIs based on international standards, the Platform Terradue 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 guideline:

- 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, including at the level of the Platform engineering team, when it comes to deliver modular extensions.
- 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.

Moreover, Terradue has learned from past activities (2012-2017) to manage users communities in many scientific domains, and to support their collaborative work in accessing Open Data, using Open source software, and contributing research products as part of the Open Science principles. Ellip is the new Terradue Cloud Platform, a development stemmed by this learning, that incorporates open notebook science (based on the Jupyter Notebook open-source application) for the design, integration, testing, deployment and monitoring of scalable EO data processing chains.

Type of abstract

Presentation

Summary

We present our approach as an SME, based on an Open Cloud model of operations, along with Cloud Services (the new 'Ellip'solutions) for cross-domain cooperation and applied innovation, supporting users with a collaborative work environment to burst applications and process Earth Observation (EO) data on distributed Cloud infrastructures.

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