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A Replicable Multi-Cloud Automation Architecture for Earth Observation

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The EO4EU project aims at making the access and use of Earth Observation (EO) data easier for environmental, government and business forecasts and operations.

To reach this goal, the EO4EU Platform will soon be made officially available, leveraging existing EO data sources such as DestinE, GEOSS, INSPIRE, Copernicus and Galileo, and offering advanced tools and services, based also on machine learning techniques, to help users find, access and handle the data they are interested in. The EO4EU Platform relies on a combination of a multi-cloud computing infrastructure coupled with pre-exascale high-performance computing facilities to manage demanding processing workloads.

The EO4EU multi-cloud infrastructure is composed by IaaS resources hosted on the WEkEO and CINECA Ada clouds, leveraged by a set of Kubernetes clusters dedicated to different workloads (e.g. cluster management tools, observability, or specific applications such as an inference server). To automate the deployment and management of these clusters, with advantages in terms of minimisation of dedicated effort and human errors, we have devised an Infrastructure-as-Code (IaC) architecture based on the Terraform, Rancher and Ansible technologies.

We believe that the proposed IaC architecture, based on open-source components and extensively documented and tested on the field, can be successfully replicated by other EO initiatives leveraging cloud infrastructures.