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Copernicus Data and Exploitation Infrastructure – a German national collaborative ground segment

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ABSTRACT:

Copernicus establishes an operational European Earth Observation capacity. Copernicus collects data from multiple sources, processes them and provides users with reliable and up-to-date information regarding environmental and security issues. ESA implements the Sentinel data access infrastructure and has invited Participating States to establish national collaborative ground segments, aiming at the additional use of the Copernicus datasets.
The goal of the German Copernicus Data and Exploitation Infrastructure is to set up an infrastructure for data access and value-added product generation. The functional design is based on user requirements and different application scenarios. It is conceptually structured into one interface layer, two service groups and governance. The Search & Portrayal interface will feature a Portal Website, a Marketplace and the Service Provisioning enabling the user to access all infrastructure elements, to publish user datasets/products and to deploy/launch own applications. The archive component will contain a mirror providing fast access to the mission data, a local storage for value-added products and a catalogue service with an external interface. As one of the requirements is to archive all Sentinel data - all time steps world-wide – additionally an intermediate archive with a bulk data access functionality is foreseen. Key challenges for the interface-design are the high data rates (560Mbit rate/8PSK/290MHz) and the massive data volume accumulating over the years (2018: ~ 12.5PB). It is difficult to predict the actual use in detail. Therefore, functionalities (ingestion service, subscription service, subsetting and distribution service, download service) and the processing facilities (applications, service hosting, hosted processing) have to be designed in a scalable manner.

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