

## Extending the National Collaborative Ground Segment Infrastructure - ROCS

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The Copernicus programme operated by the European Space Agency constitutes one of the largest and most important Earth Observation programmes. Through the Sentinel family of satellites, contributing missions and the services provided under the programme, Copernicus generates unprecedented, massive amounts of data on a daily basis on a global scale. Due to the volume amount and variety of this data, efficient management and processing is not possible using traditional means. Initiatives such as the Copernicus Data Space Ecosystem (CDSE) or WekEO facilitate the collection, analysis and dissemination of EO data. Ongoing efforts such as EO Exploitation Platforms Common Architecture (EOEPCA+) are contributing to the development of infrastructures capable of processing large volumes of EO data by providing technological solutions, standards and best practices in order to sustain a “bring the user to the data” paradigm. These solutions are based on technologies such as the Spatio Temporal Asset Catalog (STAC) specification, Cloud Optimized GeoTIFF (COG) and Cloud Optimized Point Cloud (COPC) data formats, Xarray, Zarr, OpenEO and the latest generation of Open Geospatial Consortium (OGC) services.

The ROCS consortium is comprised of partners from both the public and private sector working together. The partners are: the West University of Timisoara, the Politechnica University of Bucharest, Meteo Romania, the Romanian Space Agency (ROSA) and Beia Consult International.

The ROCS project develops upon knowledge acquired through various research projects such as FUSE4DL, in which the West University of Timisoara and ROSA have developed the first version of a national data cube and have validated a series of relevant technologies designed to facilitate processing of big EO data provided by the Copernicus programme. The use of national platforms (PEPS, CODE-DE, EODC, etc.) enable for a more efficient management of big EO data while ensuring storage, rapid access, local processing and the integration of EO data into context-specific national solutions that require a deeper understanding of the challenges, needs and unique opportunities expressed by governmental authorities, the private sector, research communities and broader audiences.

As part of e-governing activities, ROCS contributes to personalize and adapting the services in order to align them to the specific needs of Romania, resulting in a better response to local issues, such as climate change monitoring, agriculture, education, forestry funds and many more. To achieve this objective, the ROCS consortium have consulted potential beneficiaries of the platform and have defined a series of case studies to identify direct user institutions.

This paper presents the vision of the ongoing ROCS project, from it's conceptual standpoint, outlining the technological aspects which are going to be implemented and the way this project will help institutions and end users access and process big EO data on a national level as well as it's implication as an European collaborative ground segment (CollGS).

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