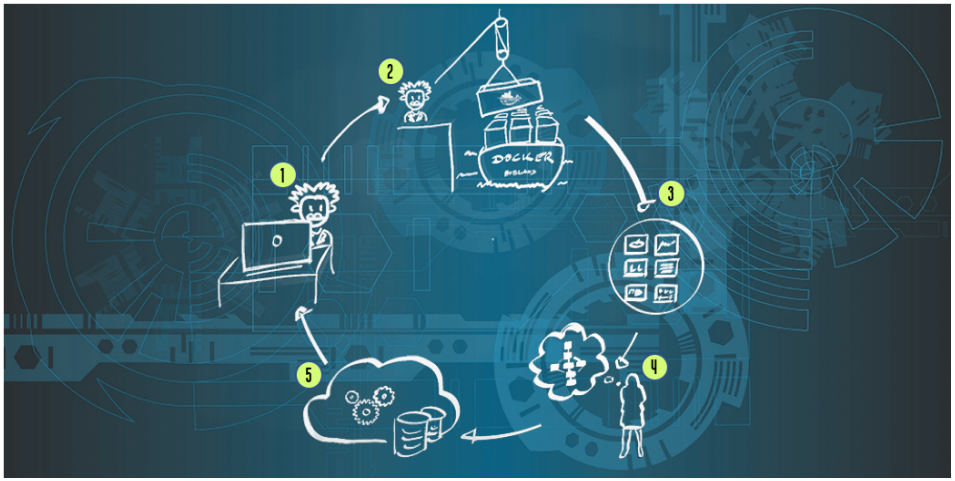
12 Apr

# Request for Information: Earth Observation Big Data Architecture




Full Earth Observation Big Data Analytics Life Cycle: The architecture features a set of emerging specifications that will standardize the full data analysis life cycle. The cycle includes application development and description (1), containerization (2), registration at app stores (3), discovery and on-request deployment in cloud environments (4), parameterized execution and final result access (5), together with business functions such as quoting and billing.

The OGC, in collaboration with ESA, is seeking industry feedback on its current Earth Observation Big Data Architecture and its planned Earth Observation Big Data Analytics Market Enablement Initiative coming up later this year. Over the last two years, the Open Geospatial Consortium, supported by ESA, has developed a software architecture that allows deploying and executing arbitrary applications close to the physical location of Earth Observation data. This data includes satellite images, model output such as climate forecasts, or in-situ data.

The architecture shall now be tested in real world scenarios. Thus, this RFI serves dual purpose: First, it invites organizations to comment on the current architecture, second, it invites organizations to indicate interest in joining the OGC/ESA Cloud Architecture Maturity Pilot. The pilot is planned for the second half of 2019.

Conference publications and Engineering Reports describe the details of this architecture:

- BIDS'19 conference paper Quoting and Billing Commercialization of Big Data Analytics puts the Big Data architecture into commercial contexts. It summarizes the overall architecture with its essential components and demonstrates how new markets can emerge.
- The OGC Testbed-14: Application Package Engineering Report provides the latest specification for application metadata that is required to discover, deploy and execute applications automatically.
- The OGC Testbed-14: ADES & EMS Results and Best Practices Engineering Report specifies service interfaces that allow deployment and execution of arbitrary applications in cloud environments, support application chaining, and can be complemented with billing and quoting as documented in the OGC Testbed-14: Authorisation, Authentication, & Billing Engineering Report.
- Previous material includes the OGC Earth Observation Exploitation Platform Hackathon 2018 Engineering Report that summarizes the results of a hackathon organized by OGC and ESA in May 2018 with the goal to evaluate the Testbed-13 work with interested organizations. Testbed-13 results have been used as a starting point in Testbed-14 and are documented in the OGC Testbed-13: EP Application Package Engineering Report and the OGC Testbed-13: Application Deployment and Execution Service Engineering Report.

Developed in a rapid prototyping research environment, the software architecture is now ready for real world testing and exploitation. The OGC, together with its sponsoring organizations ESA and Telespazio Vega UK Ltd., is therefore organizing a major **maturity evaluation pilot** that is open to the whole geospatial community. For that purpose, organizations are invited to provide feedback on the current architecture, and express their interest in joining the new pilot scheduled tentatively for second half of 2019. Organizations are invited to describe their possible contributions, data sets, service offerings, and platforms to allow the pilot organizers to include all aspects early in the planning phase. The pilot will provide cost-share opportunities to participants. Sponsoring opportunities exist as well. Responses to the RFI are requested by May 5, 2019 by email to isimonis@opengeospatial.org.

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