



A Reference Implementation of the OGC CSW EO Standard for the ESA HMA-T project

Lorenzo Bigagli (1,2), Enrico Boldrini (1), Fabrizio Papeschi (1), and Fabrizio Vitale (1)

(1) IMAA-CNR, ESSI-Lab, Tito Scalo (PZ), Italy (bigagli@imaa.cnr.it), (2) University of Florence, Italy

This work was developed in the context of the ESA Heterogeneous Missions Accessibility (HMA) project, whose main objective is to involve the stakeholders, namely National space agencies, satellite or mission owners and operators, in an harmonization and standardization process of their ground segment services and related interfaces.

Among HMA objectives was the specification, conformance testing, and experimentation of two Extension Packages (EPs) of the ebRIM Application Profile (AP) of the OGC Catalog Service for the Web (CSW) specification: the Earth Observation Products (EO) EP (OGC 06-131) and the Cataloguing of ISO Metadata (CIM) EP (OGC 07-038).

Our contributions have included the development and deployment of Reference Implementations (RIs) for both the above specifications, and their integration with the ESA Service Support Environment (SSE).

The RIs are based on the GI-cat framework, an implementation of a distributed catalog service, able to query disparate Earth and Space Science data sources (e.g. OGC Web Services, Unidata THREDDS) and to expose several standard interfaces for data discovery (e.g. OGC CSW ISO AP).

Following our initial planning, the GI-cat framework has been extended in order to expose the CSW.ebRIM-CIM and CSW.ebRIM-EO interfaces, and to distribute queries to CSW.ebRIM-CIM and CSW.ebRIM-EO data sources.

We expected that a mapping strategy would suffice for accommodating CIM, but this proved to be unpractical during implementation. Hence, a model extension strategy was eventually implemented for both the CIM and EO EPs, and the GI-cat federal model was enhanced in order to support the underlying ebRIM AP. This work has provided us with new insights into the different data models for geospatial data, and the technologies for their implementation.

The extension is used by suitable CIM and EO profilers (front-end mediator components) and accessors (back-end mediator components), that relate ISO 19115 concepts to EO and CIM ones. Moreover, a mapping to GI-cat federal model was developed for each EP (quite limited for EO; complete for CIM), in order to enable the discovery of resources through any of GI-cat profilers. The query manager was also improved.

GI-cat-EO and -CIM installation packages were made available for distribution, and two RI instances were deployed on the Amazon EC2 facility (plus an ad-hoc instance returning incorrect control data). Integration activities of the EO RI with the ESA SSE Portal for Earth Observation Products were also successfully carried on.

During our work, we have contributed feedback and comments to the CIM and EO EP specification working groups. Our contributions resulted in version 0.2.5 of the EO EP, recently approved as an OGC standard, and were useful to consolidate version 0.1.11 of the CIM EP (still being developed).