



## **GeoViQua: quality-aware geospatial data discovery and evaluation**

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GeoViQua (QUALity aware VISualization for the Global Earth Observation System of Systems) is a recently started FP7 project aiming at complementing the Global Earth Observation System of Systems (GEOSS) with rigorous data quality specifications and quality-aware capabilities, in order to improve reliability in scientific studies and policy decision-making.

GeoViQua main scientific and technical objective is to enhance the GEOSS Common Infrastructure (GCI) providing the user community with innovative quality-aware search and evaluation tools, which will be integrated in the GEO-Portal, as well as made available to other end-user interfaces.

To this end, GeoViQua will promote the extension of the current standard metadata for geographic information with accurate and expressive quality indicators, also contributing to the definition of a quality label (GEOLabel). GeoViQua proposed solutions will be assessed in several pilot case studies covering the whole Earth Observation chain, from remote sensing acquisition to data processing, to applications in the main GEOSS Societal Benefit Areas.

This work presents the preliminary results of GeoViQua Work Package 4 “Enhanced geo-search tools” (WP4), started in January 2012. Its major anticipated technical innovations are search and evaluation tools that communicate and exploit data quality information from the GCI. In particular, GeoViQua will investigate a graphical search interface featuring a coherent and meaningful aggregation of statistics and metadata summaries (e.g. in the form of tables, charts), thus enabling end users to leverage quality constraints for data discovery and evaluation.

Preparatory work on WP4 requirements indicated that users need the “best” data for their purpose, implying a high degree of subjectivity in judgment. This suggests that the GeoViQua system should exploit a combination of provider-generated metadata (objective indicators such as summary statistics), system-generated metadata (contextual/tracking information such as provenance of data and metadata), and user-generated metadata (informal user comments, usage information, rating, etc.). Moreover, metadata should include sufficiently complete access information, to allow rich data visualization and propagation.

The following main enabling components are currently identified within WP4:

- Quality-aware access services, e.g. a quality-aware extension of the OGC Sensor Observation Service (SOS-Q) specification, to support quality constraints for sensor data publishing and access;
- Quality-aware discovery services, namely a quality-aware extension of the OGC Catalog Service for the Web (CSW-Q), to cope with quality constrained search;
- Quality-augmentation broker (GeoViQua Broker), to support the linking and combination of the existing GCI metadata with GeoViQua- and user-generated metadata required to support the users in selecting the “best” data for their intended use.

We are currently developing prototypes of the above quality-enabled geo-search components, that will be assessed in a sensor-based pilot case study in the next months. In particular, the GeoViQua Broker will be integrated with the EuroGEOSS Broker, to implement CSW-Q and federate (either via distribution or harvesting schemes) quality-aware data sources,

GeoViQua will constitute a valuable test-bed for advancing the current best practices and standards in geospatial quality representation and exploitation.

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