The MED-SUV Multidisciplinary Interoperability Infrastructure

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In accordance with the international Supersite initiative concept, the MED-SUV (MEDiterranean SUpersite Volcanoes) European project (http://med-suv.eu/) aims to enable long-term monitoring experiment in two relevant geologically active regions of Europe prone to natural hazards: Mt. Vesuvio/Campi Flegrei and Mt. Etna. This objective requires the integration of existing components, such as monitoring systems and data bases and novel sensors for the measurements of volcanic parameters. Moreover, MED-SUV is also a direct contribution to the Global Earth Observation System of Systems (GEOSS) as one the volcano Supersites recognized by the Group on Earth Observation (GEO).

To achieve its goal, MED-SUV set up an advanced e-infrastructure allowing the discovery of and access to heterogeneous data for multidisciplinary applications, and the integration with external systems like GEOSS. The MED-SUV overall infrastructure is conceived as a three layer architecture with the lower layer (Data level) including the identified relevant data sources, the mid-tier (Supersite level) including components for mediation and harmonization , and the upper tier (Global level) composed of the systems that MED-SUV must serve, such as GEOSS and possibly other global/community systems.

The Data level is mostly composed of existing data sources, such as space agencies satellite data archives, the UNAVCO system, the INGV-Rome data service. They share data according to different specifications for metadata, data and service interfaces, and cannot be changed. Thus, the only relevant MED-SUV activity at this level was the creation of a MED-SUV local repository based on Web Accessible Folder (WAF) technology, deployed in the INGV site in Catania, and hosting in-situ data and products collected and generated during the project.

The Supersite level is at the core of the MED-SUV architecture, since it must mediate between the disparate data sources in the layer below, and provide a harmonized view to the layer above. In order to address data and service heteogeneity, the MED-SUV infrastructure is based on the brokered architecture approach, implemented using the GI-suite Brokering Framework for discovery and access. The GI-Suite Brokering Framework has been extended and configured to broker all the identified relevant data sources. It is also able to publish data according to several de-iure and de-facto standards including OGC CSW and OpenSearch, facilitating the interconnection with external systems.

At the Global level, MED-SUV identified the interconnection with GEOSS as the main requirement. Since MED-SUV Supersite level is implemented based on the same technology adopted in the current GEOSS Common Infrastructure (GCI) by the GEO Discovery and Access Broker (GEO DAB), no major interoperability problem is foreseen.

The MED-SUV Multidisciplinary Interoperability Infrastructure is complemented by a user portal providing human-to-machine interaction, and enabling data discovery and access. The GI-Suite Brokering Framework APIs and javascript library support machine-to-machine interaction, enabling the creation of mobile and Web applications using information available through the MED-SUV Supersite.