

Defensa de tesis: 'Acquisition and Declarative Analytical Processing of Spatio-Temporal Observation Data'

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A myriad of data acquisition devices are observing every day more variables and generating a vast amount of data in almost every application domain. Environmental observation data is an essential portion of such generated data, whose spatio-temporal nature has posed interesting challenges in the area of Environmental Observation Data Management Systems.

Two features are common to all these systems: spatio-temporal observations and heterogeneity. In the context of this thesis, the Observations and Measurements (O&M) conceptual schema was adopted as the theoretical framework for the definition of the concept of observation. Heterogeneity specifically concerns the data acquisition part of the aforementioned systems, which need to access data produced by heterogeneous sensing following different software/hardware specifications that are accessed through several communication protocols. A major challenge is to provide the required flexibility to enable data acquisition from heterogeneous sensing devices and data dissemination through heterogeneous end-user applications.

Moreover, the INSPIRE Directive of the European Union encourages the creation of a Spatial Data Infrastructure (SDI) to ensure the interoperability of spatial information systems in Europe. The application of INSPIRE in the Spanish legislative system forces public administrations to make their geographic data available through SDI services. Therefore, the new enriched geographical knowledge allows for the appearance of many applications in different areas of knowledge that require spatial analysis capabilities.

Therefore, the main objective of this thesis is the design and implementation of a generic framework for spatio-temporal observation data acquisition and declarative analytical processing.