



ISTIMES Integrated System for Transport Infrastructures Surveillance and Monitoring by Electromagnetic Sensing

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The EC FP7 ISTIMES project has the goal of realizing an ICT-based system exploiting distributed and local sensors for non destructive electromagnetic monitoring in order to make critical transport infrastructures more reliable and safe. Higher situation awareness thanks to real time and detailed information and images of the controlled infrastructure status allows improving decision capabilities for emergency management stakeholders.

Web-enabled sensors and a service-oriented approach are used as core of the architecture providing a system that adopts open standards (e.g. OGC SWE, OGC CSW etc.) and makes efforts to achieve full interoperability with other GMES and European Spatial Data Infrastructure initiatives as well as compliance with INSPIRE.

The system exploits an open easily scalable network architecture to accommodate a wide range of sensors integrated with a set of tools for handling, analyzing and processing large data volumes from different organizations with different data models. Situation Awareness tools are also integrated in the system. Definition of sensor observations and services follows a metadata model based on the ISO 19115 Core set of metadata elements and the O&M model of OGC SWE.

The ISTIMES infrastructure is based on an e-Infrastructure for geospatial data sharing, with a Data Catalog that implements the discovery services for sensor data retrieval, acting as a broker through static connections based on standard SOS and WNS interfaces; a Decision Support component which helps decision makers providing support for data fusion and inference and generation of situation indexes; a Presentation component which implements system-users interaction services for information publication and rendering, by means of a WEB Portal using SOA design principles; A security framework using Shibboleth open source middleware based on the Security Assertion Markup Language supporting Single Sign On (SSO).

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