



SensorWeb Hub infrastructure for open access to scientific research data

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The sharing of research data is a new challenge for the scientific community that may benefit from a large amount of information to solve environmental issues and sustainability in agriculture and urban contexts.

Prerequisites for this challenge is the development of an infrastructure that ensure access, management and preservation of data, technical support for a coordinated and harmonious management of data that, in the framework of Open Data Policies, should encourages the reuse and the collaboration.

The neogeography and the citizen as sensors approach, highlight that new data sources need a new set of tools and practices so to collect, validate, categorize, and use / access these “crowdsourced” data, that integrate the data sets produced in the scientific field, thus “feeding” the overall available data for analysis and research.

When the scientific community embraces the dimension of collaboration and sharing, access and re-use, in order to accept the open innovation approach, it should redesign and reshape the processes of data management: the challenges of technological and cultural innovation, enabled by web 2.0 technologies, bring to the scenario where the sharing of structured and interoperable data will constitute the unavoidable building block to set up a new paradigm of scientific research.

In this perspective the Institute of Biometeorology, CNR, whose aim is contributing to sharing and development of research data, has developed the “SensorWebHub” (SWH) infrastructure to support the scientific activities carried out in several research projects at national and international level.

It is designed to manage both mobile and fixed open source meteorological and environmental sensors, in order to integrate the existing agro-meteorological and urban monitoring networks. The proposed architecture uses open source tools to ensure sustainability in the development and deployment of web applications with geographic features and custom analysis, as requested by the different research projects.

The SWH components are organized in typical client-server architecture and interact from the sensing process to the representation of the results to the end-users.

The Web Application enables to view and analyse the data stored in the GeoDB. The interface is designed following Internet browsers specifications allowing the visualization of collected data in different formats (tabular, chart and geographic map). The services for the dissemination of geo-referenced information, adopt the OGC specifications.

SWH is a bottom-up collaborative initiative to share real time research data and pave the way for a open innovation approach in the scientific research.

Until now this framework has been used for several WebGIS applications and WebApp for environmental monitoring at different temporal and spatial scales.