



Sensor Nanny, data management services for marine observation operators

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In marine sciences, the diversity of observed properties (from water physic to contaminants in observed in biological individuals or sediment) and observation methodologies (from manned sampling and analysis in labs to large automated networks of homogeneous platforms) requires different expertises and thus dedicated scientific program (ARGO, EMSO, GLOSS, GOSHIP, OceanSites, GOSUD, Geotraces, SOCAT, member state environment monitoring networks, experimental research...).

However, all of them requires similar IT services to support the maintenance of their network (calibrations, deployment strategy, spare part management...) and their data management.

In Europe, the National Oceanographic Data Centres coordinated by the IOC/IODE and SeaDataNet provide reliable reference services (e.g. vocabularies, contact directories), standards and long term data preservation.

Besides the regional operational oceanographic centres (ROOSes) coordinated by EuroGOOS and Copernicus In-Situ Thematic Assembly Centre provide efficient data management for near real time or delayed mode services focused on physics and bio-geo-chemistry in the water column. Other e-infrastructures, such as euroBIS for biodiversity, are focused on specific disciplines.

Beyond the current scope of these well established infrastructures, Sensor Nanny is a web application providing services for operators of observatories to manage their observations on the “cloud”. The application stands against the reference services (vocabularies, organization directory) and standard profiles (OGC/Sensor Web Enablement) provided by SeaDataNet.

The application provides an on-line editor to graphically describe, literally draw, their observatory (acquisition and processing systems). The observatory description is composed by the user from a palette of hundreds of pre-defined sensors or hardware linked together.

In addition, the data providers can upload their data in CSV and netCDF formats on a dropbox-like system. The latest enables to synchronise and safe guard in real-time local data resources on the cloud. The users can thus share their data on-line with their partners. The native format for the observatory and observation description are sensorML and O&M from the OGC/Sensor Web Enablement suite. This provides the flexibility required by the diversity and complexity of the observation programs.

The observatory descriptions and observation data are indexed so to be very fluently browsed, filtered and visualized in a portal, with spatio-temporal and keyword criteria, whatever the number of observations (currently 2.5 millions observation points from French research vessels, ARGO profiling floats and EMSO-Azores deep sea observatory).

The key component used for the development are owncloud for the file synchronization and sharing and elastic-Search for the scalable indexation of the observatories and observation.

The foreseen developments aim at interfacing the application with Information Systems used to manage instrument maintenance (calibration, spare parts), for example LabCollector. Downstream, the application could also be further integrated with marine data services (SeaDataNet, Copernicus, EMODNET, ...). This will help data providers to streamline the publication of their data in these infrastructures. As feedback, the application will provide data providers with usage statistics dashboards.

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