

Sensor Nanny: support observation operators with equipment and data management services on the cloud

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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 expertise and thus dedicated scientific program (e.g. ARGO, EMSO, Research vessels...). However, all of them requires similar IT services to support the maintenance of their network (instrument model documentation, calibrations, deployment strategy, spare part management...) and their data management. This is actually also a concern at a trans-disciplinary level (ICOS for carbon, EPOS for solid earth or SIOS for Arctic) identified in a “sensor registry” use case in ENVRIplus project.

Upstream the current scope of the well-established European marine data management infrastructures (NODCs, ROOSs), a range of services are available or under-development to support scientific programs and observation operators in this perspective. They are integrated together by implementing the Sensor Web Enablement standards and will improve the quality, cost-effectiveness, and latency of data integration in the data management infrastructures.

The solution's corner-stone, sensor nanny, is a collaborative web environment enabling data providers to describe their observatory and drop or synchronize observation results “on the cloud”.

The application provides an on-line editor to graphically describe, literally draw, their observatory. The observatory description is composed by the user from a palette of hundreds of pre-defined sensors or hardware which descriptions is extracted in sensorML from the Fixo3-yellow pages (<http://www.esonetyellowpages.com/>).

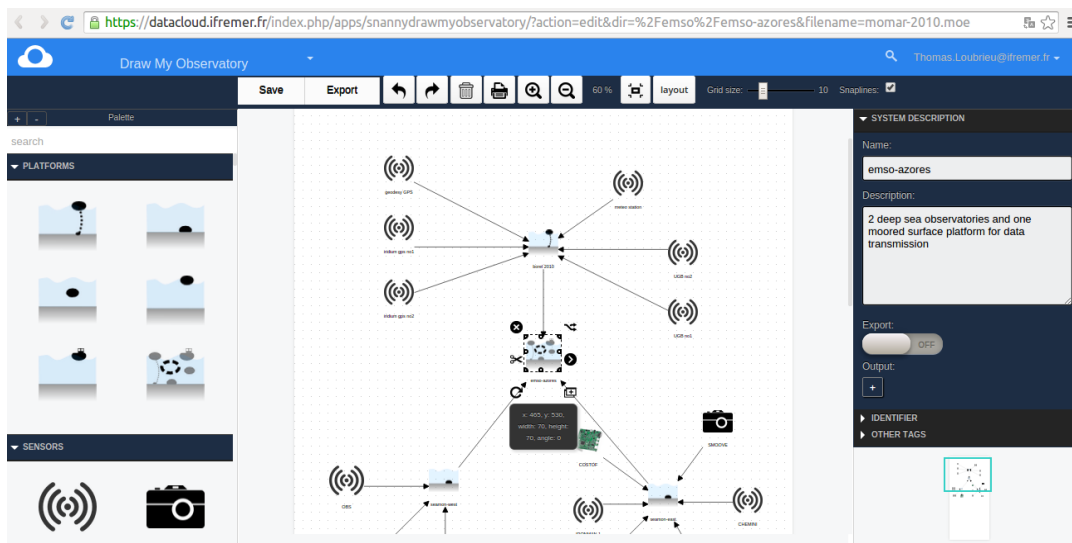


Figure 1 - Observatory online editor

In addition, the data providers can safe-guard their observation results by uploading or synchronising in real-time local data resources. The users can thus share their data on-line with their partners. The native format for the observatory and observation descriptions are sensorML and O&M from the OGC/Sensor Web Enablement suite applying profiles discussed in Ocean Of Tomorrows and ODIP projects.

The observatory descriptions and observation data are indexed so to be very fluently browsed, filtered and visualized in a portal. This has been demonstrated with up to 2.5 million observation points from French research vessels, ARGO profiling floats and EMSO-Azores deep sea observatory.

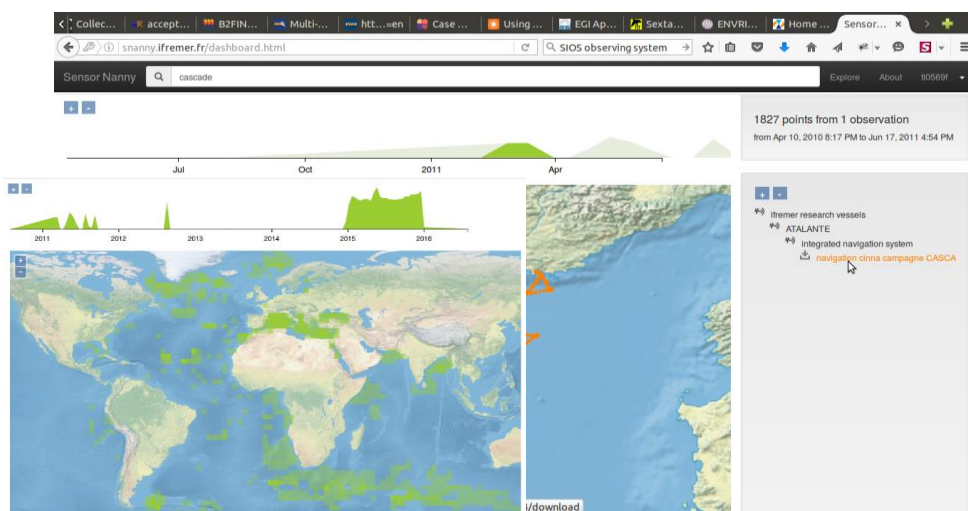


Figure 2 - Observations and system browsers

The key components used for the development are owncloud for the file synchronization and sharing and elasticSearch for the scalable indexation of the observatories and observations.

The foreseen developments aim at handling instrument maintenance support (calibration, spare parts) based on LabCollector. Within JERICO-NEXT and AtlantOS further observation networks (e.g. HF radars) will be integrated. Tools for sharing data in NODCs, ROOSes and publish datasets as DOIs are also being developed.