The rise of istSOS3

Milan P. Antonovic, Massimiliano Cannata and Daniele Strigaro

University of Applied Sciences and Arts of Southern Switzerland – SUPSI

milan.antonovic@supsi.ch, massimiliano.cannata@supsi.ch, daniele.strigaro@supsi.ch

Abstract

istSOS is a a simple and open source implementation of the Sensor Observation Service standard from the OGC. It includes a Web based administration interface that permits access to all the service configurations and operations without need of explicitly writing XML requests, making the usage of SOS more user-friendly. Several istSOS "special features" makes it a complete sensor data management system supporting time-zones, on-the-fly data aggregation, data quality, multiple output formats, restful Web API, security & authentication and others.

Despite its proven high maturity level demonstrated in several applications and different environmental fields where it has been appreciated for its stability, robustness and features, after ten years of development for istSOS its time to move into the future.

In fact, recent researches have shown that istSOS2 (version 2) is not adequate to meet the high demanding Quality Of Service required for IoT and Big Data applications in terms of high concurrency, massive datasets and performance.For this reason, the istSOS Development Team started a complete redesign of the software, based on latest technologies and approaches like Python3, asynchronous programming, real time caching, React and ECMAScript2016. Thanks to the followed Chain of Responsibility Pattern, processes are atomized in Actions (the elaborations) that acts on Entities (the data) to produce complex operations. This introduces a great flexibility of code reuse enabling istSOS expansibility with plug-in.

Based on the requirements of supporting different databases, being INSPIRE compliant and container independent, istSOS3 (version 3) has proven its high-level Quality of Service, proved by Load testing, that makes of it the new flagship application for scientific sensor data management with Open Standard.