

Sensor Web Enablement Implementations in Marine Observation Platforms



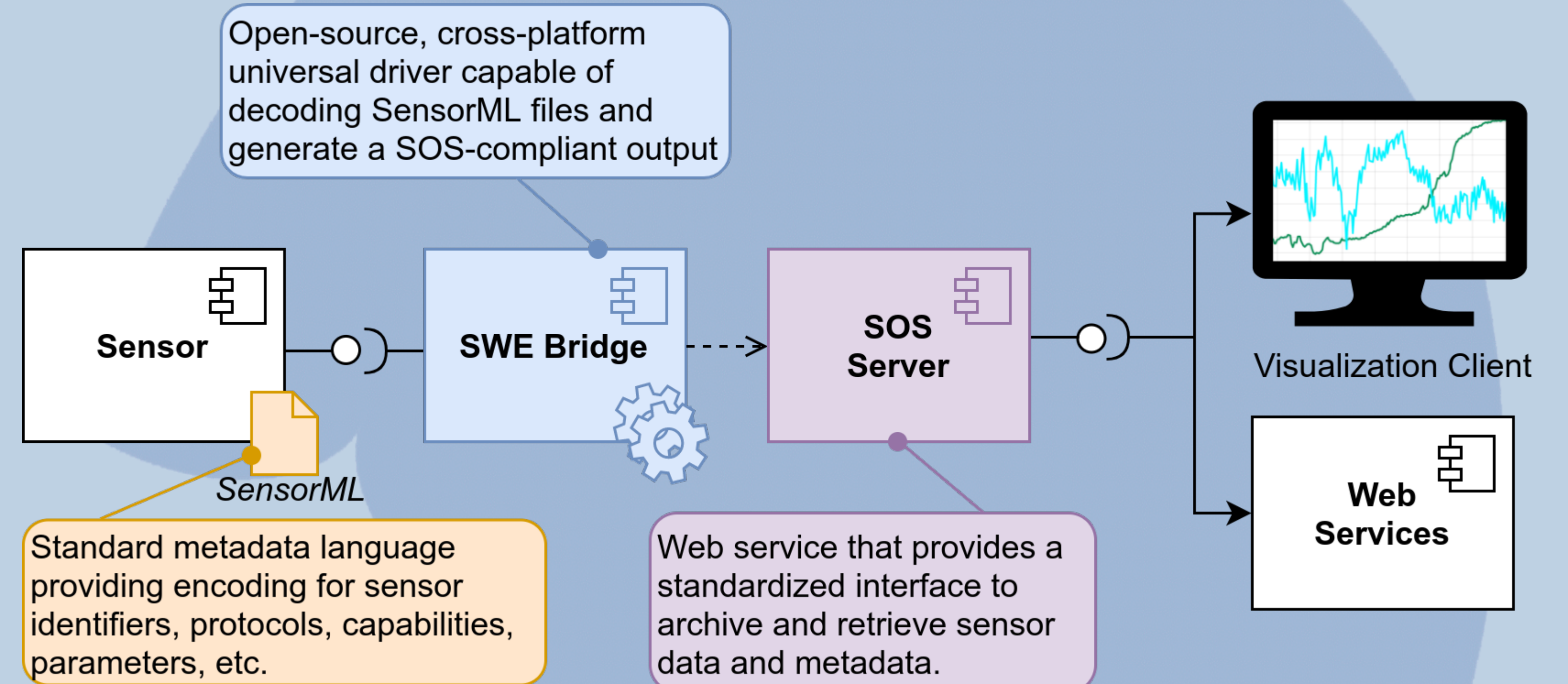
Enoc Martínez¹, Daniel M. Toma¹, Joaquín del Río¹
(1) Universitat Politècnica de Catalunya (UPC)

Introduction

The study of global phenomena requires the analysis of data coming from multiple sources. However interoperability and data harmonization still remains an issue. The Sensor Web Enablement framework aims to address these interoperability challenges. It provides a set of protocols and standards to achieve an end-to-end integration of sensor data into data infrastructures.

Due to the wide variety of marine observation platforms, a flexible, generic standards-based architecture is proposed in order to integrate sensor data into existing SWE data infrastructures in different scenarios.

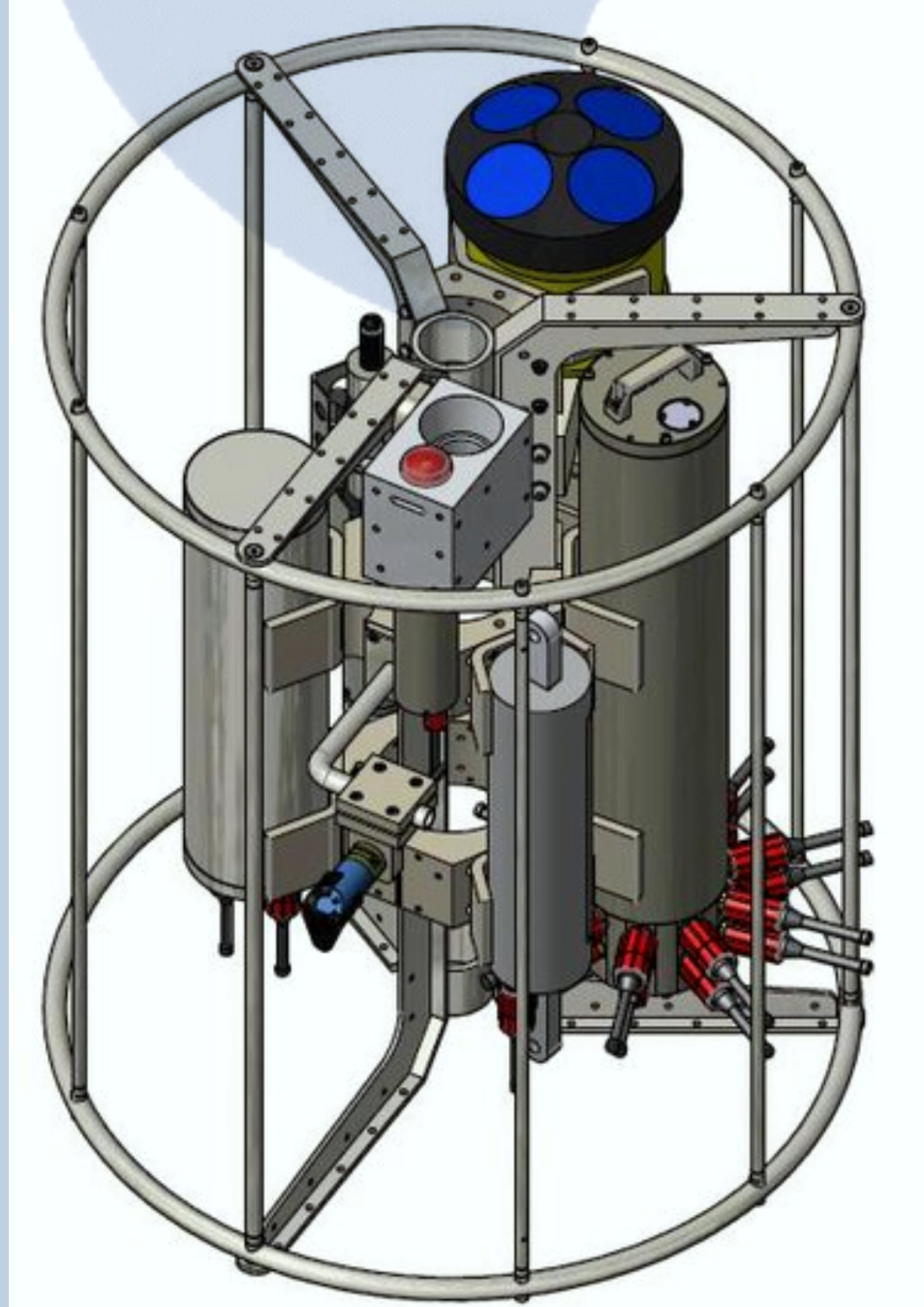
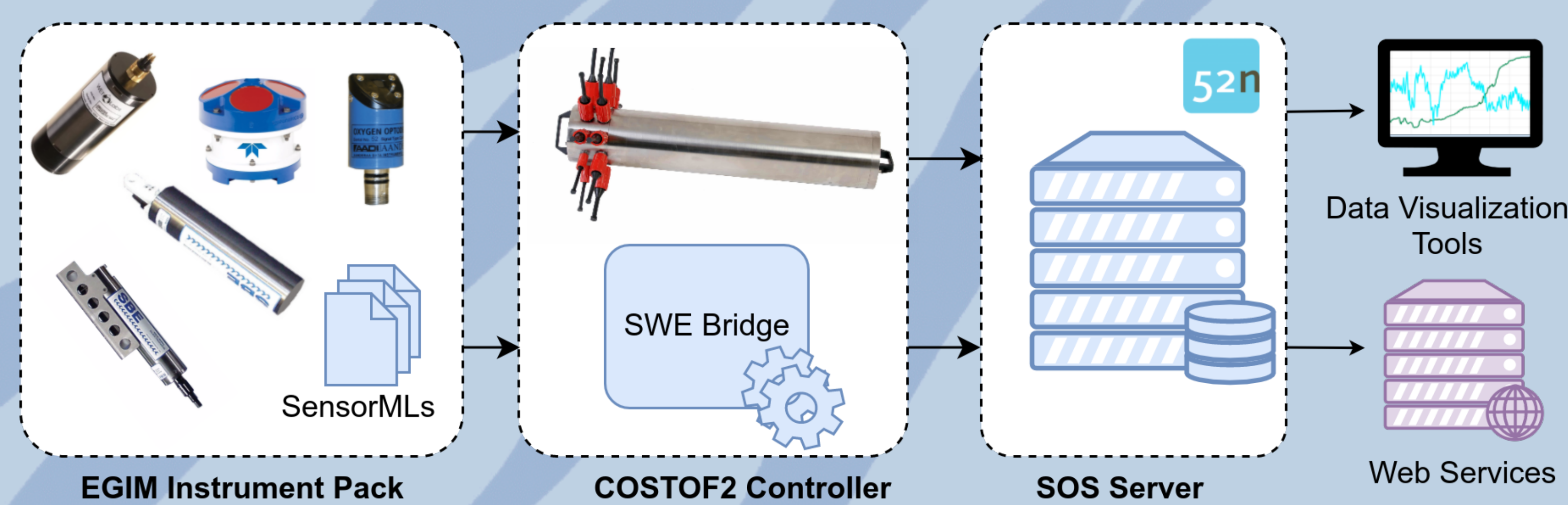
Generic Sensor Web Enablement Architecture



EMSO Generic Instrument Module (EGIM)

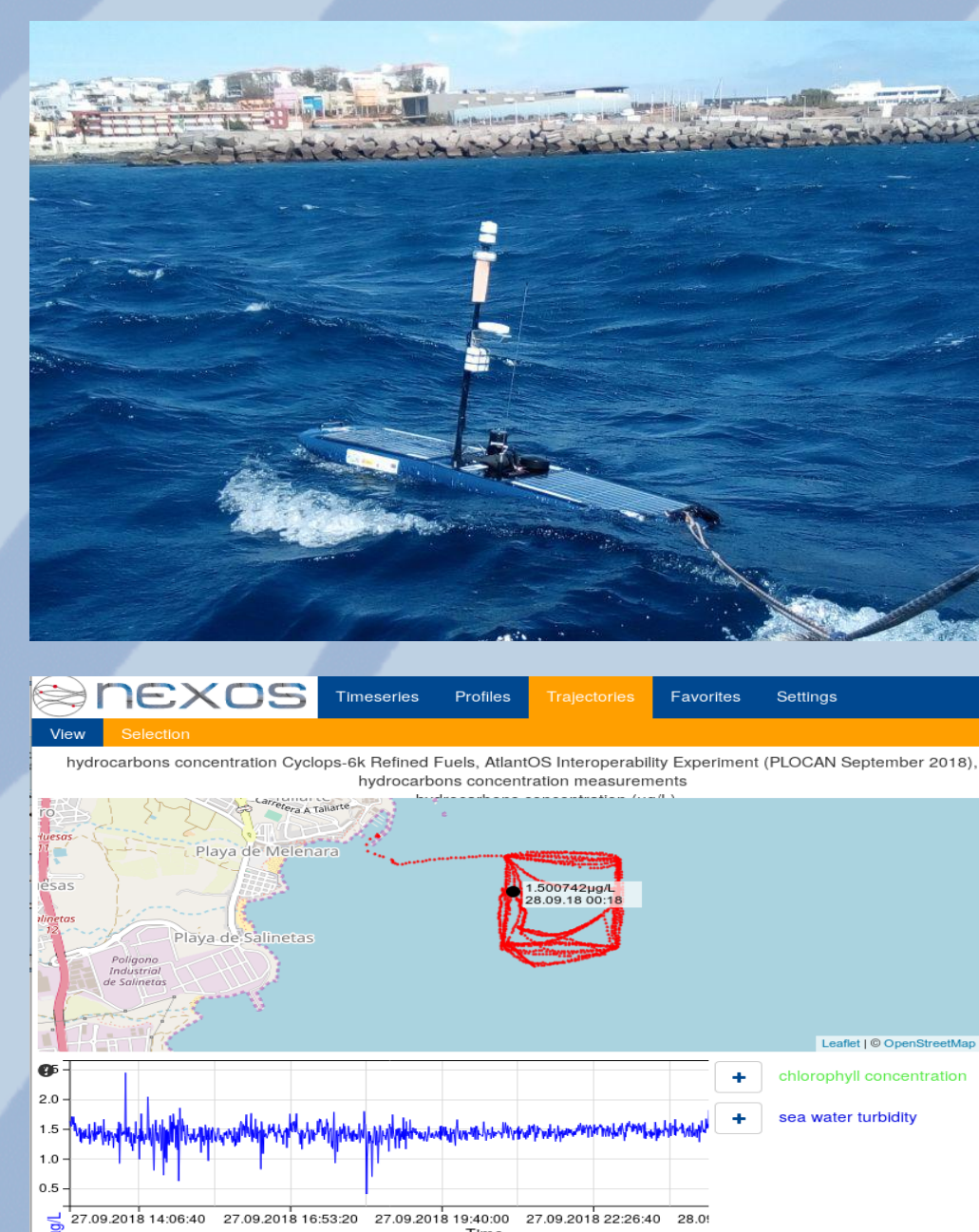
The EGIM is a modular observation platform capable of being deployed in a wide variety of scenarios. It contains several sensors from different manufacturers, each one with its own non-standardized interface.

Deploying the SWE Bridge software in the Costof2 (EGIM controller) facilitates the sensor integration. Furthermore, it also provides a standardized output, compatible with an SOS servers.



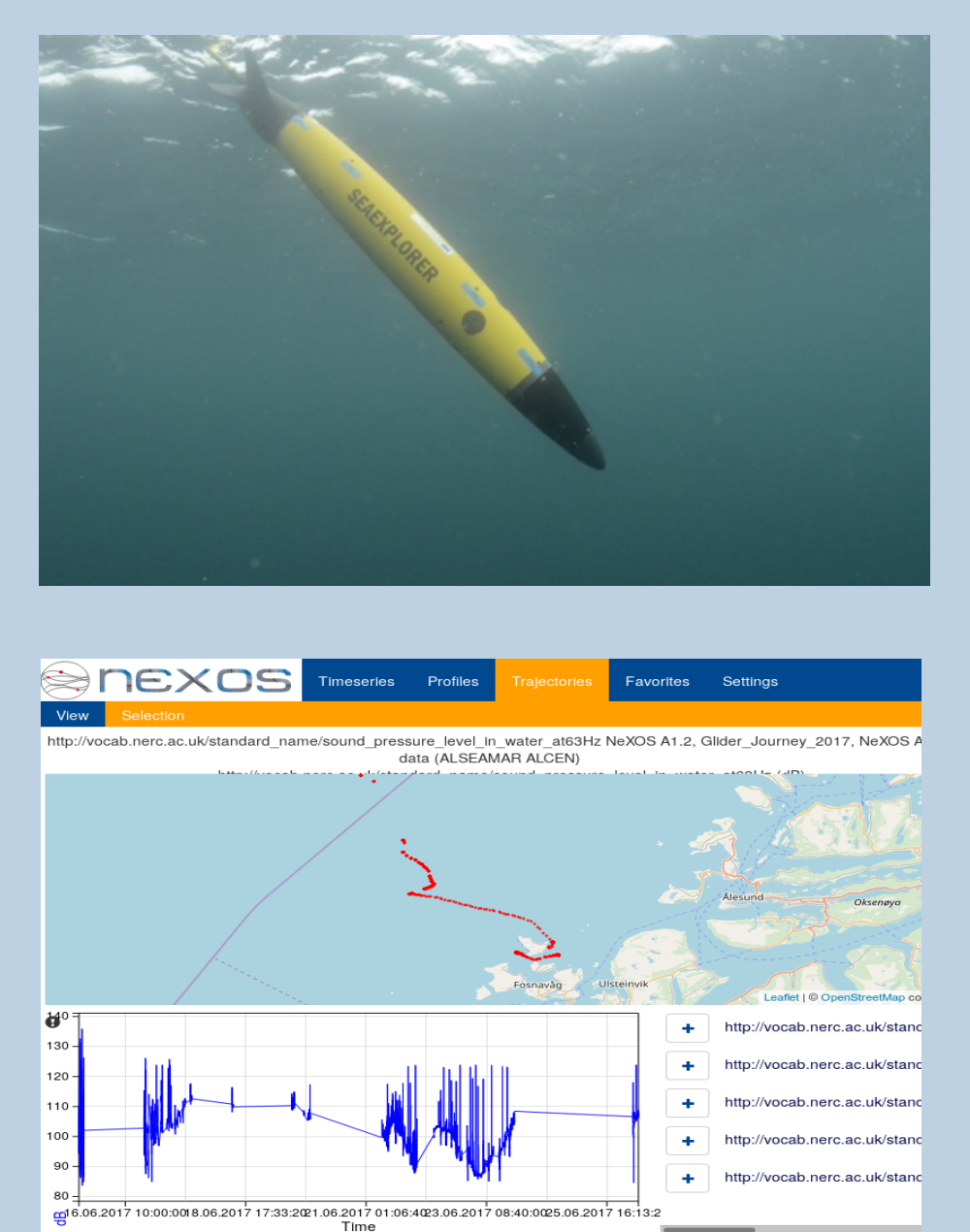
AtlantOS Interoperability Experiment

The AtlantOS Interoperability Experiment (September 2018) demonstrated the usage of SWE standards even in analog sensors. Three Cyclops-6k analog sensors were deployed in a Waveglider at Plocan (Canary Islands) using a Smart Cable. This cable, developed by Cyprus Subsea provides ADC conversion and implements the OGC PUCK protocol, enhancing the sensor's interoperability.



NeXOS Project

Within the NeXOS project two PUCK-enabled sensors (Mini.1 Hydrocarbons detector and Smart Hydrophone A1) were deployed in a SeaExplorer glider at Runde Island, Norway (September 2017). The SWE Bridge was integrated within the glider controller. The acquired data was transmitted in near real-time using an Iridium link to a SOS server.



OBSEA Underwater Noise

Since September 2017 the OBSEA Underwater Observatory is publishing real-time Sound Pressure Level (SPL) data to EMODNet Physics using SWE-based architecture. The processed underwater noise data is shared using a SOS server as gateway.

