# SENSOR INTEROPERABILITY IN THE FRAMEWORK OF OCEAN OBSERVATORIES

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**1. Introduction**

The establishment of permanent ocean observatories is a promising approach for monitoring the ocean interior in particular in regard to detecting the advent and consequences of sudden changes on the environment. From a technical perspective it is important to assure a seamless integration of all the needed subcomponents into the system. This is in particular of importance for the front end of the system, the sensors and instruments to be integrated.

Enabling sensor interoperability by introducing standards is a completely new concept in ocean sciences as there has been no real need for it in the past. Just to be able to deal with the anticipated complexity of the observatory structure standardisation has been recognized as indispensable.
Currently a number of technical groups have been established as part of the ongoing ocean observatory initiatives where according projects are running in Europe (ESONET), North America (NEPTUNE, MARS) and Japan (DONET,ARENA).

On top of the technical issues it will be of utmost importance to come up with a coherent standardisation and interoperability concept that can only be achieved by a close cooperation between all ongoing initiatives.

**2. Results and Discussion**

The aim of the interoperability activity is to come up with a general process model of the measuring process. This has already been started as part of the development of the SensorML content standard. In its simplest implementation SensorML is used to define standard digital methods of providing specification sheets for sensor components and systems.

In a next step it is necessary to judge about the quality of the data where a clear definition of the factors that influence the measurement process should exist (see fig 1).

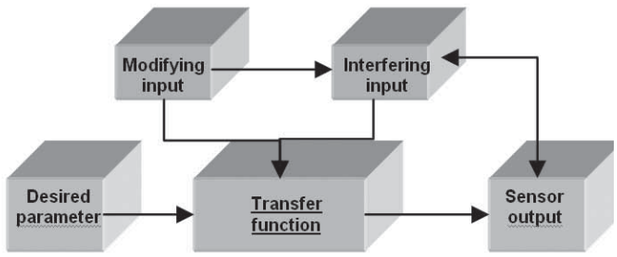


***Figure 1: Generalised sensor scheme***

All the information that describes the measuring process has to be made available in a standard format to make it possible to further process the data with different, user specific evaluation schemes. This also implies that the measured data that ocean observatories make available are interoperable which in this case means that at a certain stage of the data processing chain web services are forming the interface between the user and the individual sensor system.
This paper will give an overview about the current status in this field.

**3. Acknowlegdment**

This work is supported by the European Commission as part of the NoE ESONET, Contract no.: 036851

**4. References**

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# DEVELOPMENT AND TEXT OF THE DELFIMX CATAMARAN

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This talk will present the DELFIMx catamaran that is an autonomous surface craft developed at ISR/IST for automatic marine data acquisition and to serve as an acoustic relay between submerged craft and a support vessel. The talk will describe the navigation, guidance, and control systems of the vehicle, together with the mission control system that allows end-users to seamlessly program and run scientific missions at sea. Practical results obtained during sea tests in the Sines, Portugal will be briefly summarized and discussed.

Marine biologists and researchers depend on technology to conduct their studies on time and space scales that suit the phenomena under study. Several oceanography missions can be performed automatically by Autonomous Surface Craft (ASC), like bathymetric operations and sea floor characterization. ASC vehicles not only serve research purposes but can also be used for performing automatic inspection of rubblemound breakwaters, as required by the MEDIRES project. In the scope of this project, the autonomous catamaran DELFIMx, built