

Status of Sensor Web Enablement (SWE) and SOS prototypes in connection with CDI service

(updated Deliverables 8.2 - 8.3)

(UTM-CSIC)IEO subcontractor Raquel Casas *SeaDataNet II – Final Plenary Meeting 16-17 September 2015, Brest*



SWE & SDN2 Planned Roadmap







- SensorML and O&M Profiling
- SOS prototypes in connection with CDI service
- SOS client service (demo)



SensorML and O&M Profiling



SensorML profiles and O&M data models adapted to specific marine observation data.

SensorML and O&M expressions for Research Vessels and Fixed Stations.

Deliverables 8.2 and 8.3 combined

Project Acronym : SeaDataNet II Project Full Title : SeaDataNet II: Pan-European infrastructure for ocean and marine data management Grant Agreement Number : 283607

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SensorML profiles and O&M data models adapted to specific marine observations data.

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SensorML and O&M Profiling

SensorML and O&M Profiles

Why?

- Together SensorML and O&M profiles will constitute the base of the technology that will complement the already existing SeaDataNet2 infrastructure.
- SensorML and O&M are both very extensible and flexible languages.
- It's necessary to fix some rules to follow with the aim of standardize files.

How?

Relax NG



SensorML and O&M Profiling

Why RELAX NG?

- RELAX NG language is very simple, the syntax is intuitive.
- Using RelaxNG + Schematron we will apply ISO/IEC 19757.
- RELAX NG schema makes sure that all the required elements and attributes are present, and that some of these have the correct datatype.
- Embedding Schematron rules in RELAX NG is very simple because a RELAX NG validator ignores all elements not in RELAX NG namespace. This means that Schematron rules can be embedded in any element and on any level in RELAX NG Schema.
- Schematron embedded in RELAX NG can easily check all of totalAmount, payments, groups... constraints. And the context definition in the language provides a logical grouping of the constraints.



SensorML and O&M Profiling

RelaxNG Profile

- One RelaxNG Profile for SensorML files (all instruments and vessels)
 - http://www.utm.csic.es/SensorWeb/Descriptions/2.0/Profiles/SensorML_RelaxNG.rng
- One RelaxNG for all O&M files
 - http://www.utm.csic.es/SensorWeb/Descriptions/2.0/Profiles/O&M_RelaxNG.rng

* Both profiles are tested and running in a real server.



SensorML and O&M Profiling





SensorML and O&M Profiling

Research Vessels





SensorML and O&M Profiling





SensorML and O&M Profiling

Composition History





SensorML and O&M Profiling

Survey Events





SensorML and O&M Profiling

Survey O&M





gml:id=ID_29SG_INSTANT_TERMOSALINOMETERFLUOROMETER

SensorML and O&M Profiling

Instant O&M





SensorML and O&M Profiling

Fixed Stations (Based on EDIOS)





SensorML and O&M Profiling





SensorML and O&M Profiling



Fixed Station SensorML



SensorML and O&M Examples

 2.0
 -fixedStations

- 1406 RONIMAR PLATFORM CADIZ Observation.xml
- 1406 RONIMAR PLATFORM CADIZ.xml
- ------ Features
- SamplingFeature_Instant_1406_RONIMAR_PLATFORM_CADIZ.xml
- SEBAPULS_20.xml
- L_____VEGAPULS_WL_61.xml

-----vessels

- ------ GRAVIMETER
- 29SG_GRAVIMETER.xml
- ------ 29SG_Instant_Gravity.xml
- 29SG_Survey_Gravity_Observation.xml
- 29SG_Instant_Navigation.xml
- 29SG_NAVIGATION_SYSTEM.xml
- 29SG_Survey_Navigation.xml
- 29SG_Composition_History.xml
- 29SG_Instant_Vessel_System.xml
- 29SG_Survey_Vessel_System.xml
- 29SG_Vessel_System.xml
- ------ 29SG_Instant_Termosalinometer.xml
- 29SG_Survey_Termosalinometer.xml
- 29SG_Termosalinometer_Calibration_History.xml
- 29SG_TermosalinometerFluorometer_System.xml
- 29SG_Instant_Weather.xml
- 29SG_Survey_Weather.xml
- 29SG_WEATHER_STATION.xml

http://www.utm.csic.es/SensorWeb/Descriptions/



SOS prototypes in connection with CDI service

Data and Metadata from Vessels to Data Centres:





SOS prototypes in connection with CDI service





CDI Detail

 	CDI is connected with SOS	
<qmd:transferoptions></qmd:transferoptions>		
<pre><qmd:md_digitaltransferoptions></qmd:md_digitaltransferoptions></pre>		
<pre><qmd:online></qmd:online></pre>		
<pre><gmd:ci_onlineresource></gmd:ci_onlineresource></pre>		
<pre><qmd:linkage></qmd:linkage></pre>		
<pre><qmd:url>http://www.utm.csic.es/sos/kvp?s</qmd:url></pre>	service=SOS&request=GetObservationById&observedProperty=29SG20120927_29SG_NAVIGATION_SY	STEM
		3
<qmd:protocol></qmd:protocol>		
<pre><gco:characterstring>HTTP-SOS</gco:characterstring></pre>	cterString>	
	5	
<qmd:description></qmd:description>		
<pre><gco:characterstring>http://vocab.nerc.ac</gco:characterstring></pre>	c.uk/collection/P01/current/PTCHGP01	
<gmd:function></gmd:function>		
<pre><gmd:ci_onlinefunctioncode codelis<="" codelist="http</pre></td><td><pre>>://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/gmxCodeLists.xml#CI_OnLineFunctionCode" pre=""></gmd:ci_onlinefunctioncode></pre>	tValue="downlo	



SOS prototypes in connection with CDI service

Three types of O&M:

- Time interval O&M
- Specific instant O&M
- Specific cruise or survey O&M

SeaDataNet

PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT

SOS prototypes in connection with CDI service





</om:OM Observation>

PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT

Survey O&M

r<om:OM_Observation xmlns:om="http://www.opengis.net/om/2.0" xmlns:swe="http://www.opengis.net/swe/2.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instau xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:md="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco" gml:id="ID_29SG_SURVI http://schemas.opengis.net/om/2.0/observation.xsd http://www.opengis.net/swe/2.0 http://schemas.opengis.net/sweCommon/2.0/swe.xsd"> <!-- Description -->

```
v<qml:description>
  Weather Observations made onboard Sarmiento de Gamboa vessel during a Survey (Cruisse)
 </gml:description>
 <!-- Name -->
 <gml:name>Sarmiento Survey Navigation Data</gml:name>
 <!-- Type -->
 <om:type xlink:href="http://www.opengis.net/def/observationType/OGC-OM/2.0/OM ComplexObservation"/>
 <!-- Phenomenon Time -->
 <!-- This is the time interval of the survey -->
v<om:phenomenonTime>
 v<gml:TimePeriod gml:id="SamplingTime">
    <gml:beginPosition>2012-04-02</gml:beginPosition>
    <gml:endPosition>2012-04-21</gml:endPosition>
  </gml:TimePeriod>
 </om:phenomenonTime>
 <!-- Result Time -->
 <om:resultTime xlink:href="#SamplingTime"/>
w<!--
   link to the procedure. In this case to the Weather Station Definition
 -->
 <om:procedure xlink:href="http://www.utm.csic.es/sos/kvp?request=DescribeSensor&procedure=ID 29SG WEATHER STATION"/>
 <!-- Definition of the Observed Property -->
 <om:observedProperty xlink:href="http://www.utm.csic.es/SensorWeb/Descriptions/1.0.1/Phenomenons/WeatherConditions Phenomenon.xml"/>
 <!-- Foi -->
 <!-- This is the nav track of the survey in GML -->
v<om:featureOfInterest>
 v<gml:DynamicFeature gml:id="survey">
    <gml:descriptionReference xlink:href="http://www.utm.csic.es/metadata/Sarmiento/generated/29SG20130424/csr/29SG20130424 csr.xml"/>
   v<!--
       The data source should be expressed as a <gml:history> element
    -->
    <gml:dataSourceReference xlink:href="http://www.utm.csic.es/metadata/Sarmiento/generated/29SG20130424/csr/29SG20130424 nav.gml"/>
  </gml:DynamicFeature>
 </om:featureOfInterest>
 <!-- Result netCDF of 29SG20120402 -->
w<om:result xlink:href="http://www.utm.csic.es/metadata/Sarmiento/generated/29SG20130424/data/29SG20130424_meteo.csv">
  <gml:descriptionReference xlink:href="http://www.utm.csic.es/metadata/Sarmiento/generated/29SG20130424/cdi/underway/29SG20130424 meteo.xml"/>
 </om:result>
```



Survey O&M Detail



</om:OM Observation>



DescribeSensor

http://www.utm.csic.es/sos/kvp?service=SOS&request=DescribeSensor&procedure=ID_29SG_WEATHER_STATION

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Instant R.T O&M GetObservation

SeaDataNet

http://www.utm.csic.es/sos/kvp?service=SOS&request=GetObservation&procedure=ID_29SG__NAVIGATION_SYSTEM

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SensorML Client (demo)

http://ortelius.cmima.csic.es:9090/ParserSOS/

- -> C i ortelius.cmima.csic.es:9090/ParserSOS/30062015_termosal.jsp

Navigation Data of Sarmiento de Gamboa vessel during a Survey (Cruisse)

Name

Sarmiento Survey Navigation Data

Position - From

2012-04-02

to

2012-04-21

Procedure

http://www.utm.csic.es/sos/kvp?request=DescribeSensor&procedure=ID_29SG_NAVIGATION_SYSTEM

Observed Property

http://www.utm.csic.es/SensorWeb/Descriptions/1.0.1/Phenomenons/Vessel_Navigation_Phenomenon.xml

Dynamic Feature

survey

Description Reference

http://www.utm.csic.es/metadata/Sarmiento/generated/29SG20120927/csr/29SG20120927_csr.xml

Data Source Reference

http://www.utm.csic.es/metadata/Sarmiento/generated/29SG20120927/csr/29SG20120927_nav.gml

Result

http://www.utm.csic.es/metadata/Sarmiento/generated/29SG20120927/data/29SG20120927_posicion.csv

Access to a graphical description





Next steps:

- Register CDI with SOS links in SeaDataNet Infrastructure station for Fixed Stations and Research Vessel
- Final tests with more datasets and instruments