Sensor Web Enablement integration, demo

IFREMER, CSIC, OGS and MARIS
Objective reminder

• Edit/Create SensorML and O&M standard records
• Implement SOS services to access the standard records
• Integrate the services in the SDN infrastructure to bridge with near real time observation networks
Edit/Create the records

• **Difficulties**: no on-the-shelf software available for version 2.0 of sensorML, O&M
• **Opportunity**: move edition from desktop function for data manager (as in mikado) to online functions for data providers
• **Result**: development of a marine observation system graphical editor: drawMySensor
Draw My Sensor

http://snanny.ifremer.fr//webgraphiceditorDemo/
Draw My Sensor: preloaded sensor models

http://snanny.ifremer.fr//webgraphiceditorDemo/

- Sensor models descriptions are extracted (sensorML format) from EMSO sensor model directory (aka fixo3 yellow pages): http://www.esonetyellowpages.com/
- List of preloaded models is extensible (configuration).
- Description of the sensor model are provided as “sml:typeOf” information on the sensor instance description.
**Draw My Sensor**: draw and links components of your system

http://snanny.ifremer.fr//webgraphiceditorDemo/

- Drag and drop icons of sensor or platform model to create instances
- Link them together to describe complex systems.
- Links are oriented and mean input/output relationship, type of connexion may be wired or not (e.g. acoustic).
Draw My Sensor: describe properties of the components

http://snanny.ifremer.fr//webgraphiceditorDemo/

- Name, description, identifiers and properties, outputs parameters, location, contact, events
- Free Text information
- Vocabularies references from URI (linked data)
- Autocompletion provided
**Draw My Sensor**: save and export

http://snanny.ifremer.fr//webgraphiceditorDemo/

- Save on disk or on ifremer cloud (test)
- Export in report (pdf, doc)
- Export in SensorML
## SOS services deployed

<table>
<thead>
<tr>
<th>protocol</th>
<th>operation</th>
<th>Format of answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOS</td>
<td>describeSensor</td>
<td>sensorML</td>
</tr>
<tr>
<td></td>
<td>getObservation</td>
<td>O&amp;M</td>
</tr>
</tbody>
</table>

- **52°North SOS services**: Deployed at OGS and IFREMER with E2M3A mooring and EMSO-Azores deep sea observatory: manages properly O&M and time series results
- Temporarily unsuccessful attempt to use [52°N Sensor Registry](#) to manage sensorML in SOS services
- **Alternate SOS services** also implemented in CSIC and IFREMER
Integration with SDN, namely CDI portal

• Difficulty:
  – Diversity of available implementation available for SOS services (IFREMER, CSIC, OGS).
  – Diversity of observation types (time series, profiles, trajectories)

• Opportunity:
  – Good looking 52°North client for time series only
  – Interesting restful API provided by 52°N SOS server (promoted in ODIP)
  – 100% on-the-shelf solution (good for sustainability).

• Results: 2 partners integration (OGS, IFREMER)
Underlying architecture
NODC point of view

• Deploy 52°N SOS server

• Upload time series description and datasets in the server

• Update CDI records with time series URI in 52°N SOS Server through mikado
Underlying architecture

Web services stuff
User point of view

Data Distributor
Access/ordering of data
Internet access/ordering
Access restriction
Additional services

OGS (Istituto Nazionale di Oceanografia e di Geosfera Sperimentale), Division of Oceanography
web data access with registration
by negotiation

<table>
<thead>
<tr>
<th>Website</th>
<th>Reference</th>
<th>Distribution method</th>
<th>Data size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Time series visualisation of parameter</td>
<td>Electrical conductivity of the water body</td>
<td>52n-sos-restful-ts-api</td>
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</tbody>
</table>

Diagram

Legend

Data without warranty!

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Underlying architecture

Real life web experience
Perspectives

• Improve user friendly experience (logos, less click, browser compliance).
• Extend the demo:
  – Vertical profiles and trajectories
  – Sensor and system descriptions
  – Re-merge with core SWE standards
• Work goes on in:
  – Eurofleet2, ODIP2, JERICO-NEXT, NEXOS, Fixo3
    ATLANTOS, EMSO-DEV…
  – Ingestion system, SDN3, ifremer/csic/ogs internal business…
  – And on the clouds!