16th ERVO Annual Meeting
June 11-12, 2014
CSIC (UTM-CMIMA), Barcelona (Spain)

New standards for on-board software development. Eurofleets2 & SeaDataNet2

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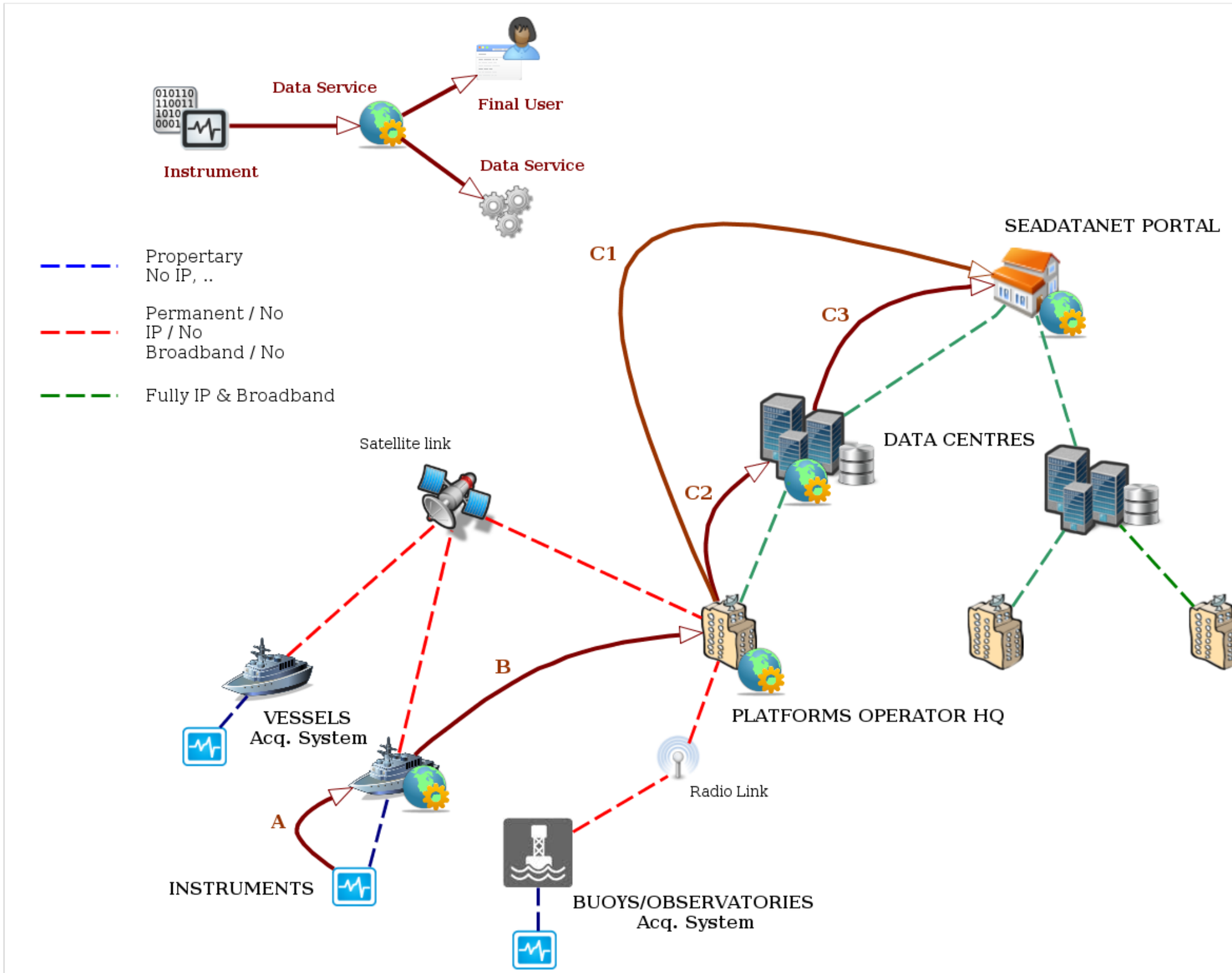
CSIC
Consejo Superior de Investigaciones Científicas

UTM
Unidad de Tecnología Marina

Data Services: General Scenario

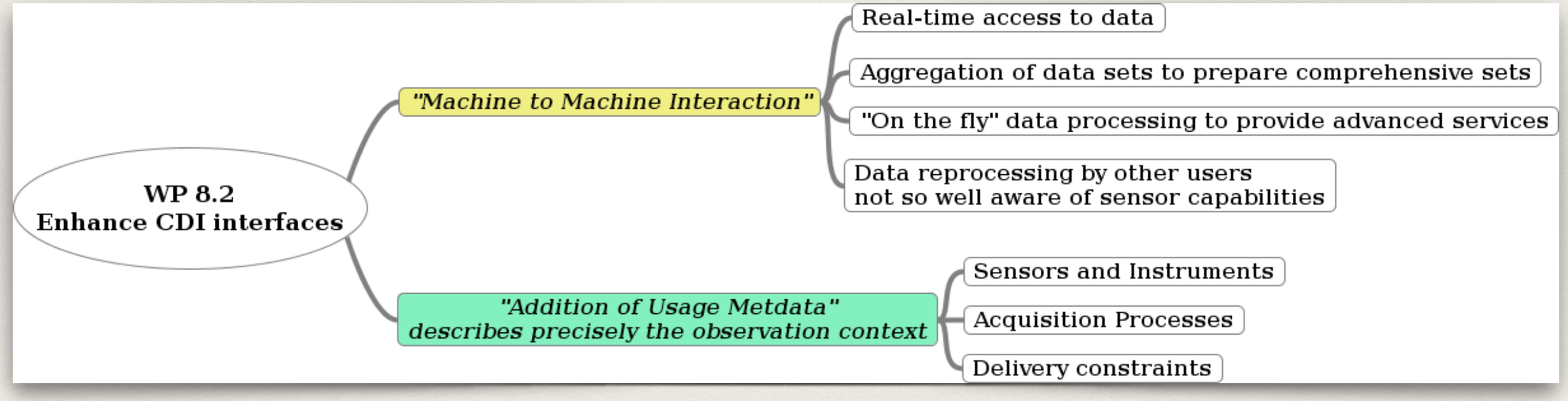


Motivation

- **Provide Common Tools, Protocols, Data and Metadata Formats for onboard users**
  - Common standards (open and well extended)
  - Same procedures (user experience)
- **Facilitate data flow from vessels to data centers**
  - Metadata at origin
  - Near Real Time

SeaDataNet2

WP 8 ("Defining an extended metadata format for the Common Data Index to support operational oceanography and other specific applications")



SeaDataNet2

- Adoption: Open Geospatial Consortium Sensor Web Enablement (SWE)
  - SensorML (Metadata)
  - O&M (Metadata & Data)
    - Sensor Observation Service - SOS (Data Service)
- How SWE standards could be integrated into SDN2
- SensorML and O&M profile for Research Vessels
- SensorML and O&M profiles for Fixed Stations
- Sensor Observation Service pilot implementations

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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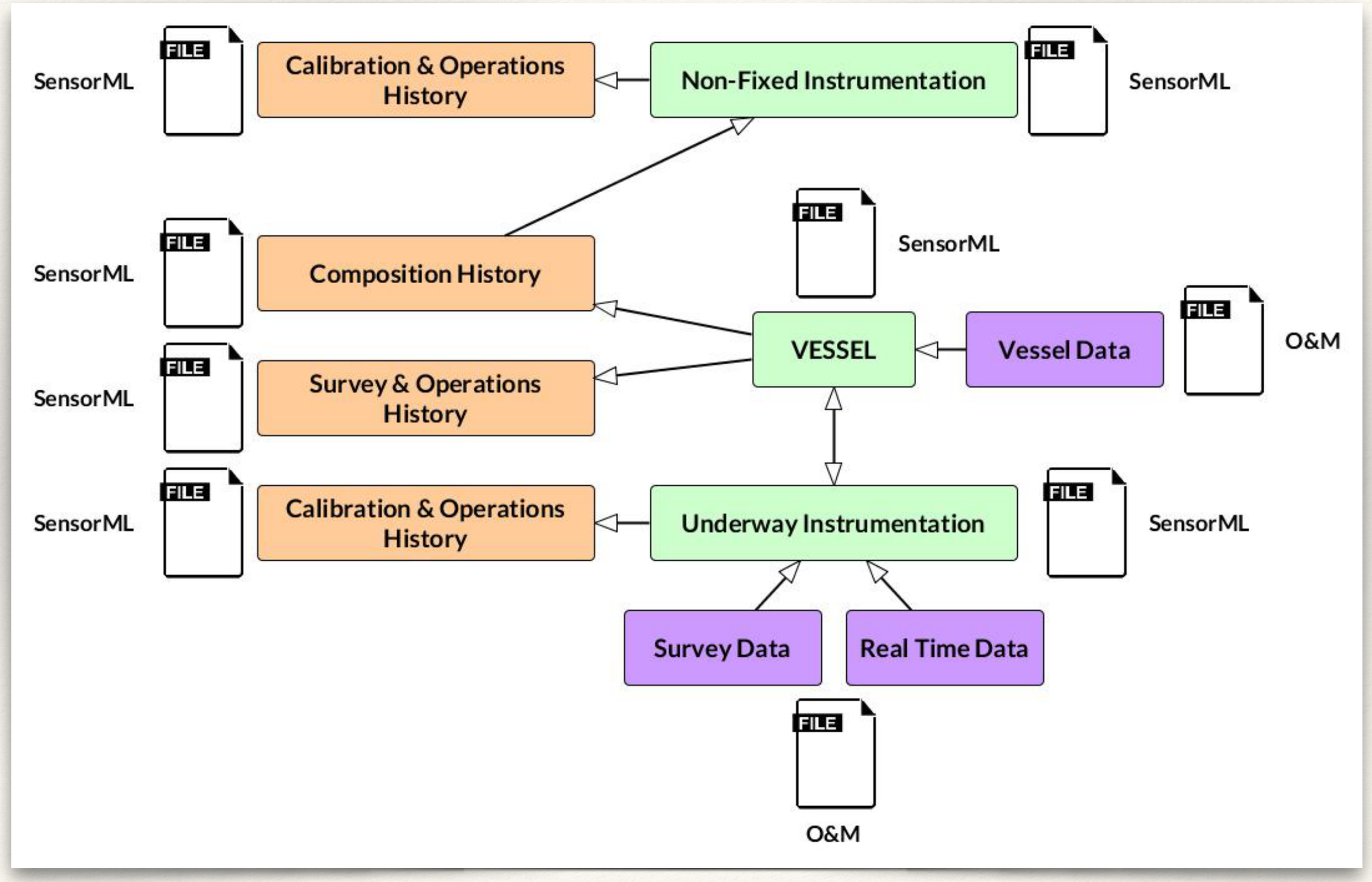
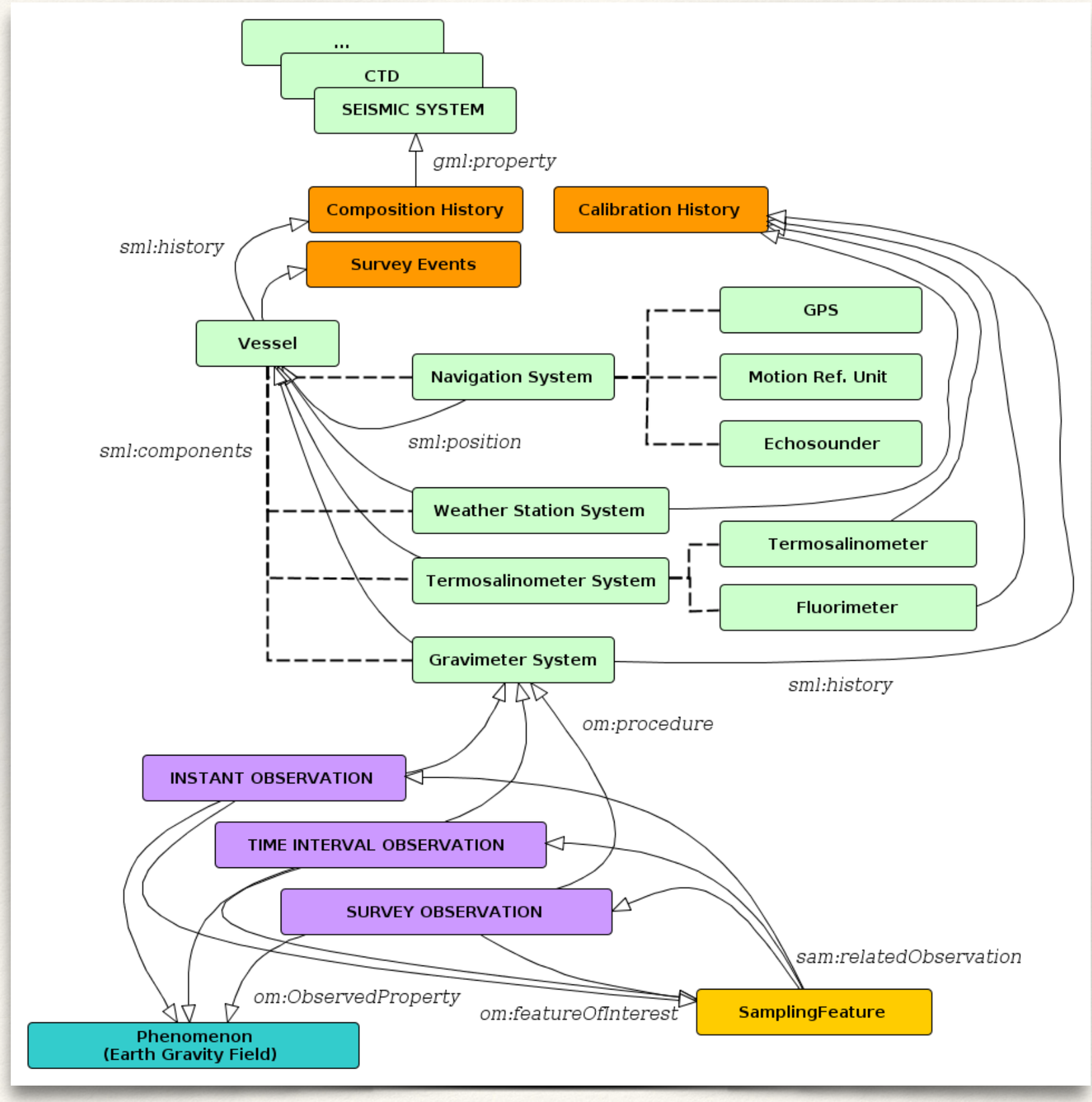
Research Vessels (OGC) Profiles



SeaDataNet



Research Vessels

Instrumentation

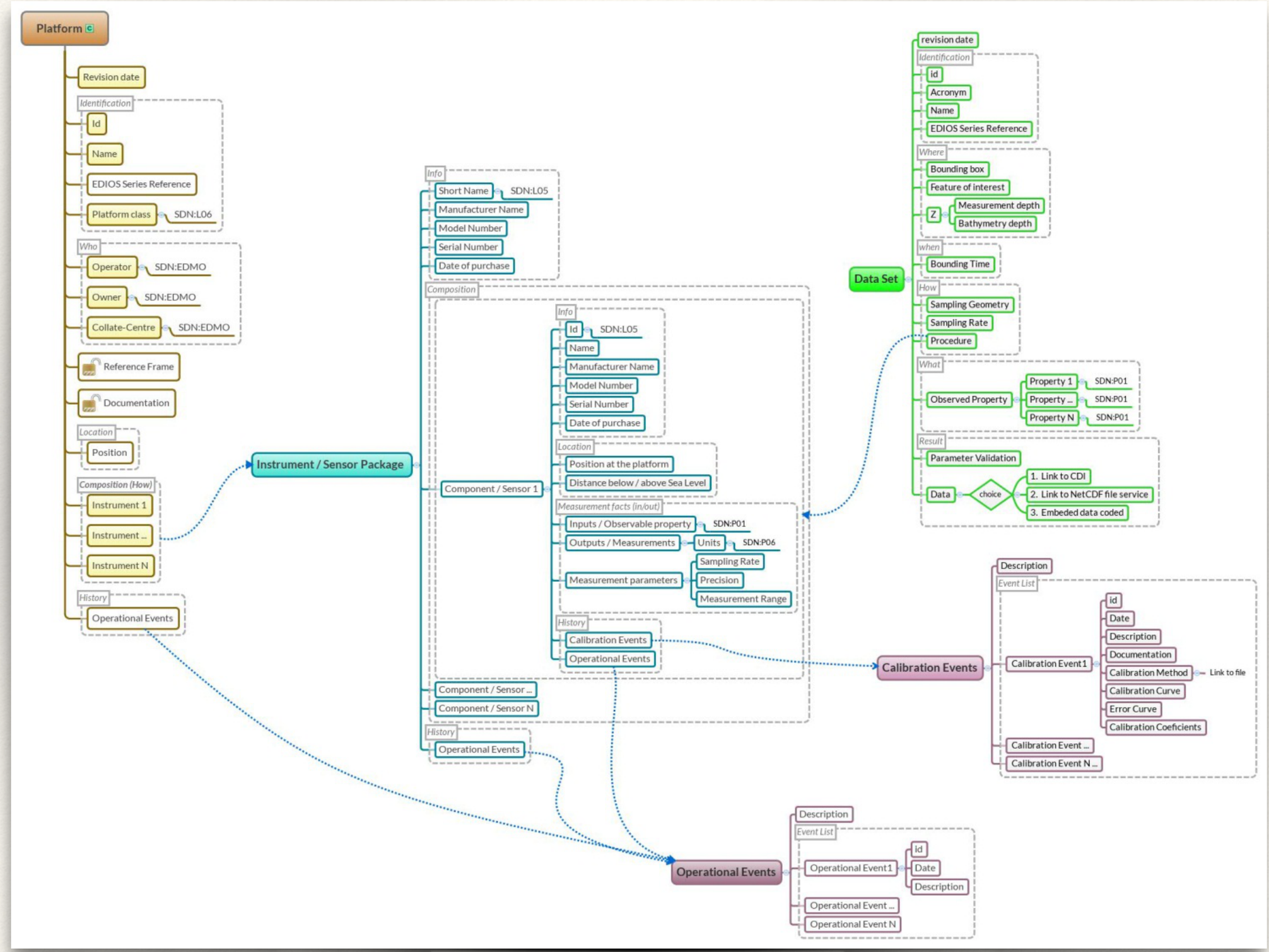
Observations

Data

Step 1

OGC Profiles

Identification of Information Blocks



Step 2

OGC Profiles

Codification XML (SensorML and O&M schemas)

29SG_Vessel_System.xml

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <sml:PhysicalSystem xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
3     xsi:schemaLocation="http://www.opengis.net/sensorml/2.0 http://www.utm.csic.es/SensorWeb/Schema
4     xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
5     xmlns:sml="http://www.opengis.net/sensorml/2.0" xmlns:xlink="http://www.w3.org/1999/xlink"
6     xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:swe="http://www.opengis.net/swe/2.0"
7     gml:id="ID_29SG_VESSEL_SYSTEM">
8
9     <!-- ============================== -->
10    <!--       SYSTEM DESCRIPTION       -->
11    <!-- ============================== -->
12    <gml:description>The RV Sarmiento de Gamboa, is a multidisciplinary ship with a diesel
13       propulsion twin engines (DC), and low vessel-noise radiated into the sea fully in
14       compliance with ICES report No 209, which could support different scenarios
15       (oceanography, fishery, seismic, geology, Rov's, etc). It has transverse
16       tunnel/azimuthally "combi" bow thruster of 590 kW and a 350 kW stern tunnel thruster for
17       Dynamic Positioning (DP) specification SP1, as well as a unique high-performance
18       Becker-type rudder, and is designed to support deep sea unmanned vehicles </gml:description>
19
20    <sml:identification>
21       <sml:IdentifierList>
22          <sml:identifier>
23             <sml:Term definition="uniqueID">
24                <sml:label>uniqueID</sml:label>
25                <sml:value>SARMIENTO</sml:value>
26             </sml:Term>
27          </sml:identifier>
28          <sml:identifier>
29             <sml:Term definition="longName">
30                <sml:label>Long Name</sml:label>
31                <sml:value>RV SARMIENTO DE GAMBOA</sml:value>
32             </sml:Term>
33          </sml:identifier>
```

Step 3

OGC Profiles

Put them to work (Sensor Observation Service)

CAPABILITIES

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

DESCRIBE SENSOR

Navigation System

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

Weather Station

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

GET OBSERVATION

Navigation System

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

Weather Station

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

JRA3 ("Software and Tools")

Enrich the information services that the vessels can offer inside the infrastructures but also to the rest of the "off-board" community allowing researches and managers to interact with the fleet activities"

- **Task 13.1 -"Developing new features in Eurofleets Automatic Reporting System (EARS)"**
- **Task 13.2 -"Standardization of the data acquisition process"**
- **Task 13.3 -"Development of direct e-access to data during survey"**

EuroFleets2

JRA3 ("Software and Tools") Innovative Aspects

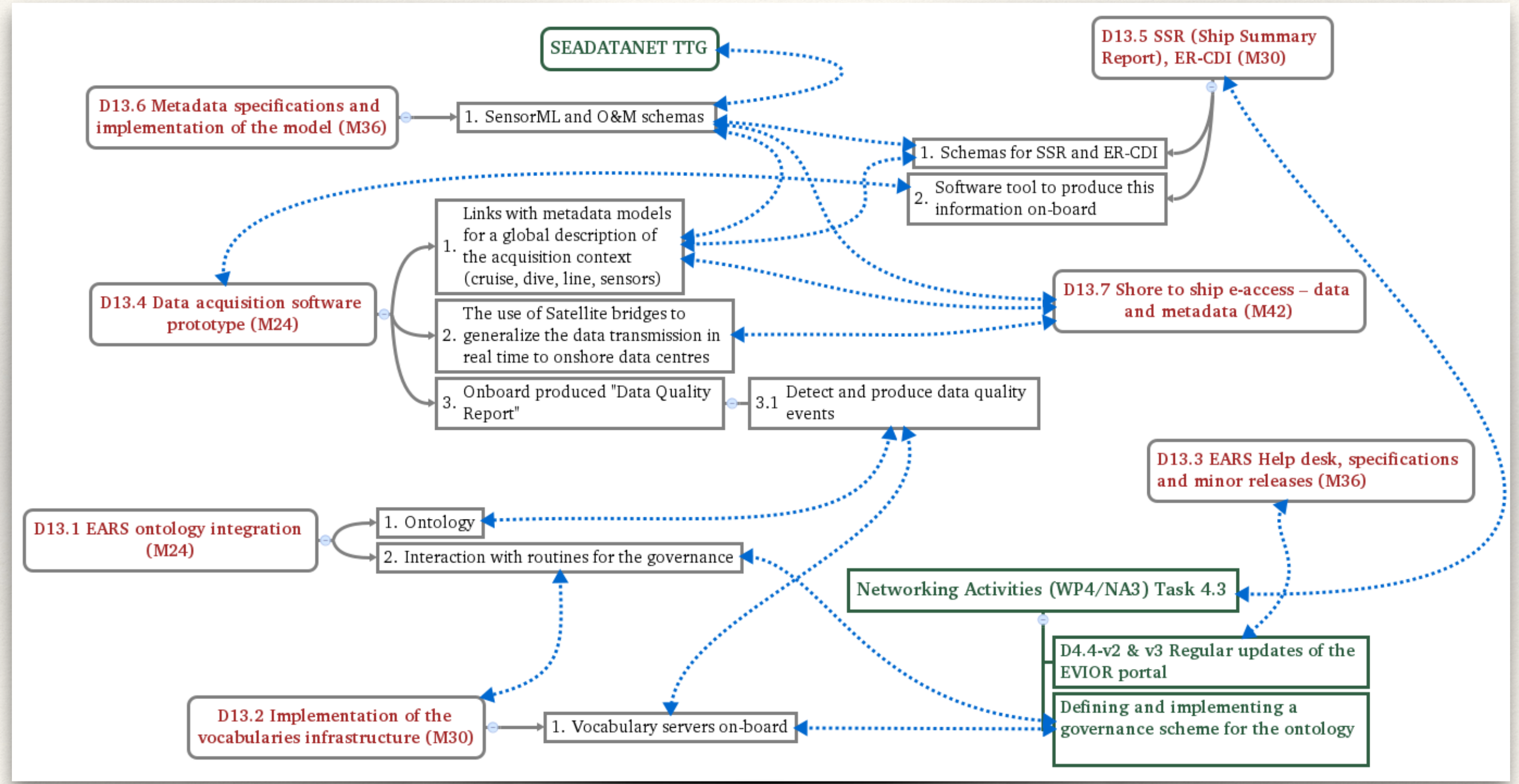
"introduction of an ontology as the basement for event coding and user interface construction. Will suppose an innovative use of the controlled vocabularies on-board research vessels, providing solutions to increase the interoperability of systems ..."

"Use of Open Geospatial Consortium Sensor Web Enablement (SWE) technologies will constitute an element of innovation ... introducing this technology in a very complex and heterogeneous system"

"Break the traditional conception of the research vessels as isolated systems, with the conception of a network of research platforms that can be accessed using Internet technologies with an e-research perspective ..."

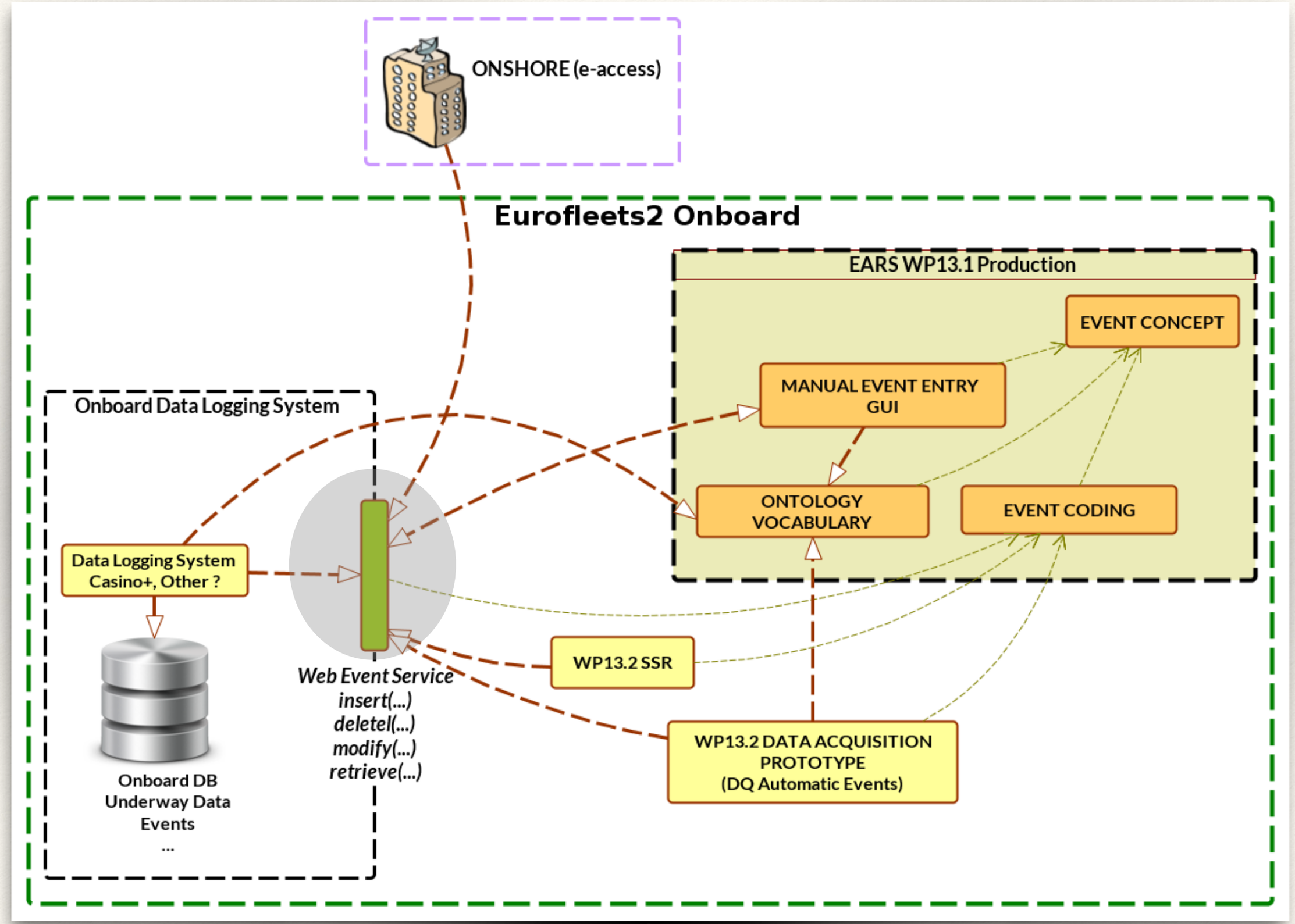
Interactions

EuroFleets2



Common Interface (Web Service)

EuroFleets2



Eurofleets

EUROFLEETS2 WP13:

Onboard Eurofleets Web Services: Formal Specification
4nd January 2014 – Revision 0.1

Grant Agreement n° 312762

Acronym : EUROFLEETS2

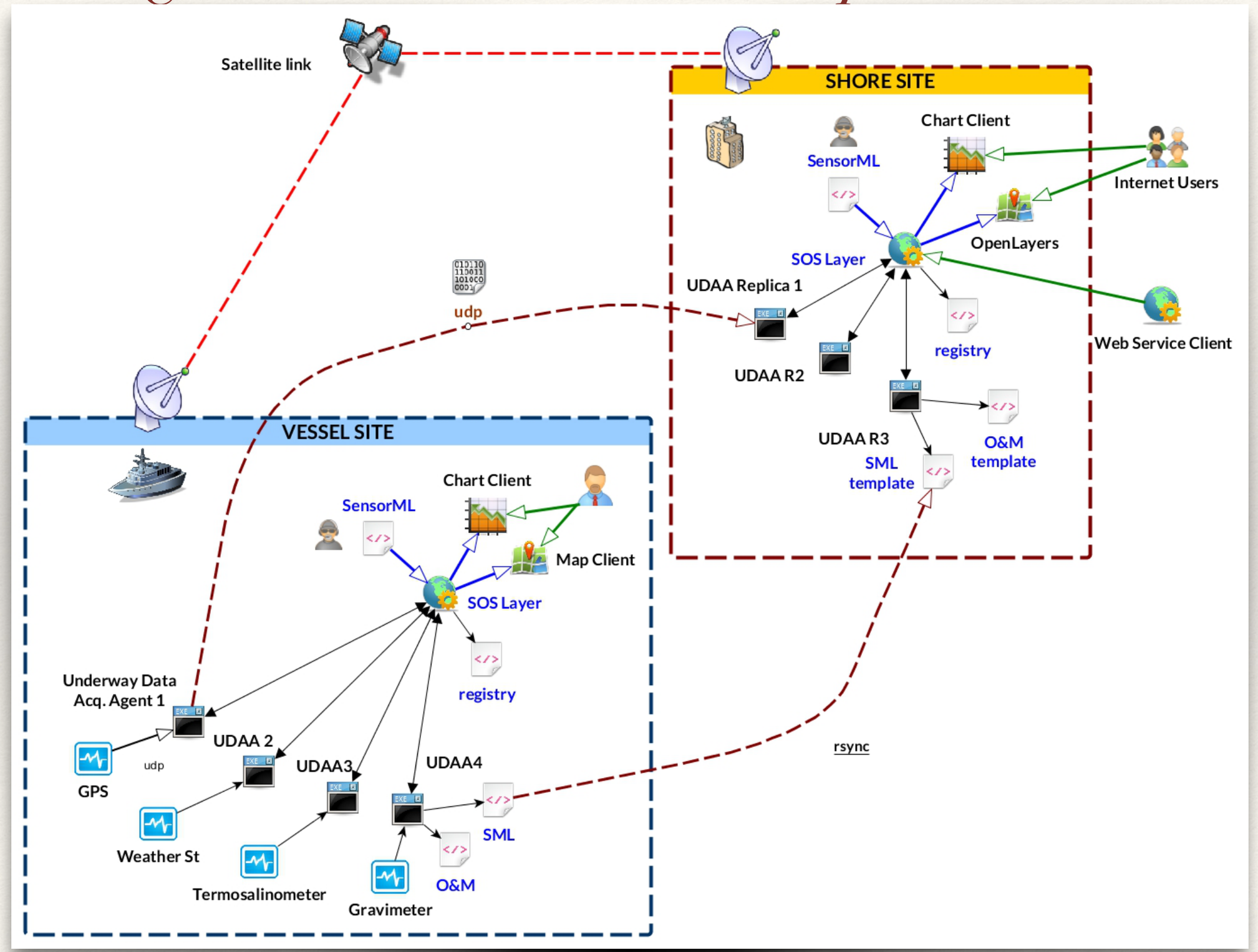
Title : New operational steps towards an alliance of European research fleets

Activity type: JRA
WP N°: 13
Task N°:
Deliverable/Milestone N°: /

Reference : Onboard Eurofleets Web Services: Formal Specification
Security : Consortium Only or Public

EuroFleets2

Introducing SWE in onboard Data Acquisition



EuroFleets2

Production of En-Route Information

Ship Summary Report

- Eurofleets1 Ship Summary Report
- SensorML expression

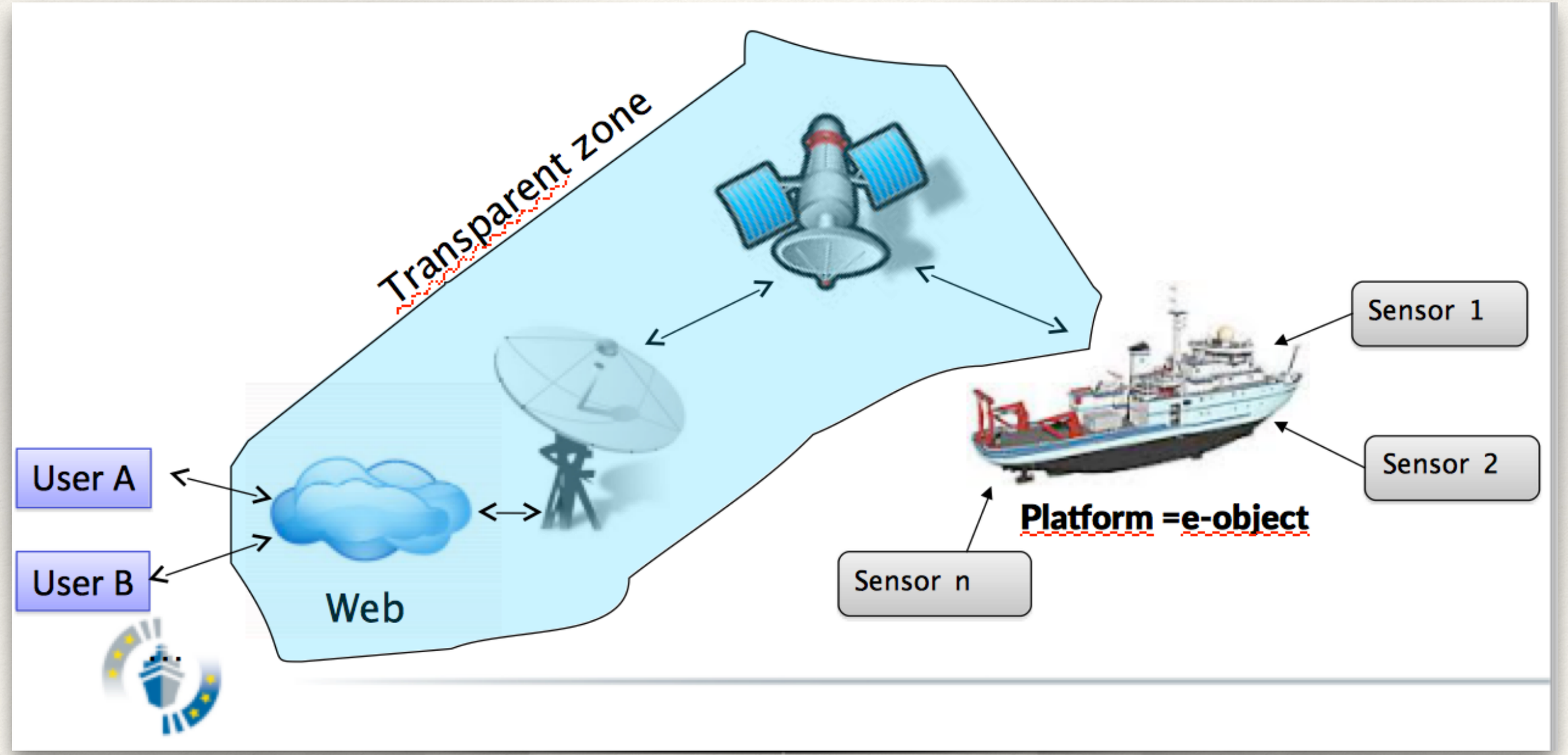
En-Route Common Data Index (ER-CDI)

- Onboard produced datasets
- Underway data
- Samples/in-situ measurements/observations
- Harvested from **Events** (EARS, EARS GUI)
- Not a final CDI as conceived in NODCs
- Reduced expression SeaDataNet CDI

e-access

EuroFleets2

- *Events History*
- *Remote Data access*
- *Team work (Collaboration)*
- *Remote Assistance and Maintennance*



"Thank you for your attention"

– SeaDataNet2 TTG and Eurofleets2 JRA3 team