Maritime Spatial Data Service

Why standards help to increase the quality of the operational services

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Introduction to European Maritime Safety Agency (EMSA)

CleanSeaNet (CSN) - > Maritime Earth Observation System

What are the challenges to create a near real time operational Maritime Spatial Data Service? How to address the challenges

Q&A
Background:


Legal basis:

- Regulation 1406/2002/EC
- Regulatory Agency of the European Community
- Own legal identity
- Technical and operational support to EC and MS
- Approximate 200 staff
- Annual budget about 60 MEURO
Legal framework is provided by Directive 2005/35/EC on ship sourced pollution
- European system for detecting oil slicks
- System that interoperate with national/regional response chain (aerial/naval surveillance)
- Identification of potential polluters and provide analysis capabilities

-CleanSeaNet (CSN) versions
- CSN v1.0 operational Apr. 2007
- CSN v2.0 operational Feb. 2011

-Users
- 28 EU + EFTA Coastal States
- Approximately 500 users
Enterprise viewpoint – use case

Ordering, Acquisition and Processing

Oil Spill Analysis

Alert & Product Delivery (Web Browser, EMSA)

Phone and email alert

Oil Service Report

Image (LR, HR)

Ancillary data

Planning

T0 = End of scene acquisition

Feedback

T = T0 + 30 min
Oil Spill polluter

possible spill reported by CSN and confirmed by aircraft as being mineral oil - 42 km long

polluter identified using AIS information

ENVISAT image acquired over the Canary Islands on 15 September 2009 by the Azores ground station
Oil Spill detection

7 satellite images per day
5 oil spills per day
A SERVICE is a mean of delivering value to customers by facilitating outcomes customers without the ownership of specific costs and risks (ITIL)
Interoperability for CSN

For CSN, as many operational emergency services, **taking the right decision at the right time**, means to analyse all the relevant information when some predefined event is detected (e.g. an Oil Spill) and trigger a set of actions.

1. CSN acquires and process huge *variety* of data sources
2. CSN is a *near real time* service with demanding performance
3. CSN process a quite huge *volume* of data every day
4. CSN involves *many users* form different countries and organizations
5. CSN enables the exchange of information among its users (*technical and semantic interoperability*)
6. CSN is a Maritime Service which belongs to *different themes*: safety, environment, security
INTEROPERABILITY based on standards as key driver for:

- Fit the EU policies requirements;
- Increase the RE-USABILITY of the EMSA maritime services avoiding to tailor the services or clients for each use case;
- Exchange CROSS-SECTOR information among EU Institutions and MS;
- Seamlessly acquire NEW DATASET;
- Streamline the continuous IMPROVEMENT of the standard services without having to bear the ownership of the costs;
- Increase the efficiency to MAINTAN the standard services due to the fact that they are deployed in many environments less prone to fail than ad-hoc implementations;
- Avoid CONTRACTOR’S DEPENDENCY and promote competitiveness.
Maritime Earth Observation Service

IMDatE platform

Enterprise Bus

Maritime Observation System (MOS)

Data Source
- Airborne sensors
- In situ sensor
- Satellite Images
- Oil drift modeling
- Met. and sea state information

Suppliers
- Service Providers
- Data Modeler

CSN client
- Portal
- Alerting
- Platform Monitoring

System 2 System
- MS
- EU institution
- Citizen
- Business

VD & Oil Spill notification
AIS & LRIT
Others services

Maritime Observation Archive
(Pollution Repository)

Data Acquisition
Geo Processing
Product Ordering
Feasibility Analysis
OnLine Data Access and Presentation
Discovery
Computational viewpoints

- **Identity Management**: Authentication and Authorization
- **Discovery**: OGC CSW ebRIM profile
- **Data Acquisition Request and Feasability**: CSN adaptors to acquire desired datasets
- **Product Ordering**: CSN financial component
- **Invoke**: Oil Spill Modeling (forecast hindcast) OGC-WPS; Alerting
- **View & Download**: OGC-WMS, OGC-WFS, OGC-WCS, sFTP

Standard

Ad-hoc
CSN implements syntactic interoperability: The CSNDC information exchange mechanism is based on Geographic Markup Language (GML - ISO 19136)

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Standard Ad-hoc
Interoperability challenges

- Very slow legal and standardization process “we cannot wait”
- Technological providers protect the business with proprietary solution
- Interdependencies among organizations for release management
- Heterogeneity LESS issues data format MORE issues with data quality (scale, accuracy, timing)
- New devices with specific requirements increase the complexity of the eco systems (mobile/tablet)
- Access and Right management
- Error Management always lower estimated
- Standard vs Performance