Ocean observatories – permanent presence in the deep sea and coastal waters

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ESONET/EMSO sites

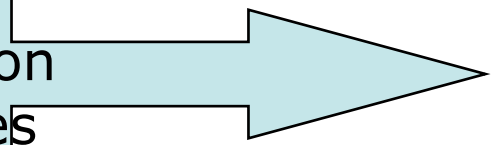
Ocean observatories – Identification of regions of interest

- Climate Change and natural eco-system habitats in a region of high biodiversity:
  The Arctic site
- Fluid flow outbursts in colds seeps and associated gas hydrate (risk of methane release related to climate change) :
  The Norwegian site
- Global change and anthropogenic impacts on very specific deep water habitats, including coral reefs :
  Porcupine / Celtic site
- Geohazards near dense human habitation areas, and testing marine sea-floor and bore-hole installations :
  Ligurian Sea Site
- Hydrothermal vents and geo-biosphere interactions :
  Mid Atlantic Ridge site (MoMAR)

ESONET - European Seas Observatory Network

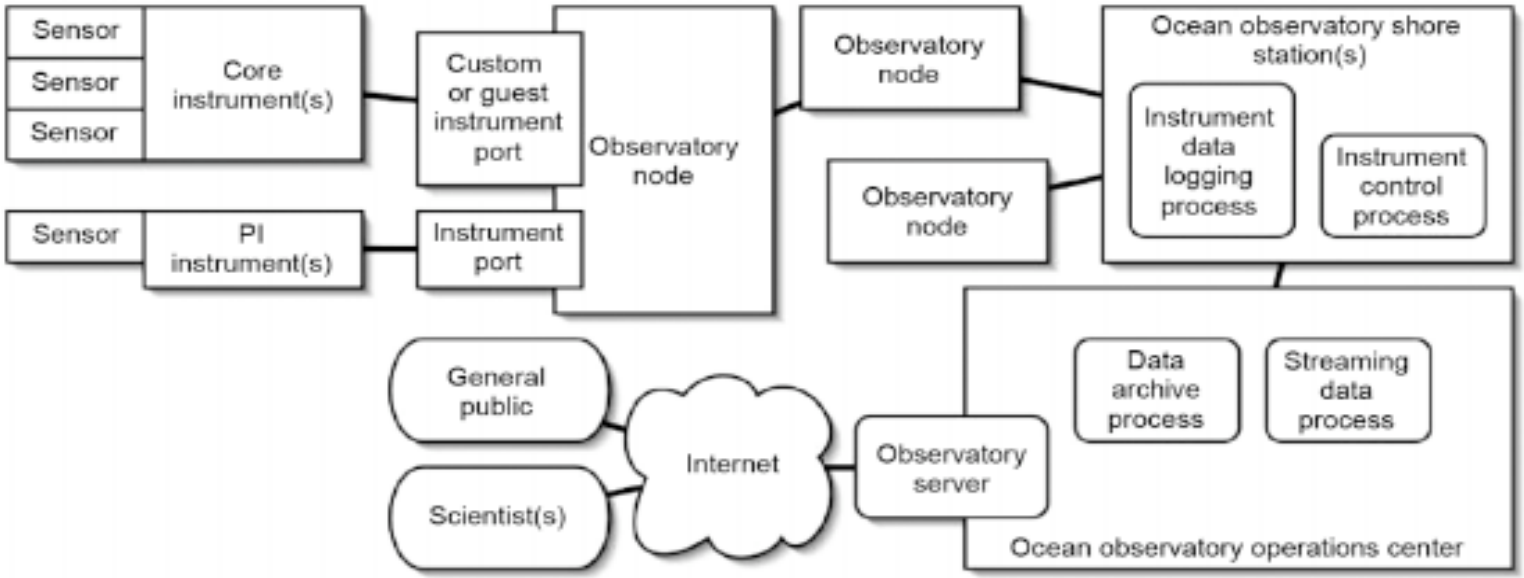
Summary of GOALS

- Establish a network of permanent observatory stations around Europe
- 12 sites of interest have been identified
- Typically 100 sensors will be deployed at an individual site
- Typical lifetime will be 25 years
- Ideally systems will have high speed data access
- Sensors
  - shall be operated interactively (task sensors)
  - will be replaced frequently
  - have to be checked during operation
  - will be recalibrated in regular cycles



QM

Major components of a cabled ocean observatory



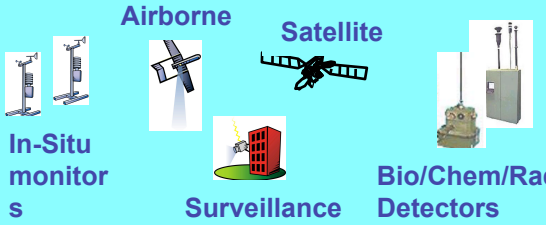
ESONET Implementation

System shall be established as a **service oriented architecture**

- Open standard hard- and software interfaces
- Discoverable and open accessibility (GEOSS compatibility)
- Dissemination of data products according agreed standards
- Data aggregation from current and archived data sources

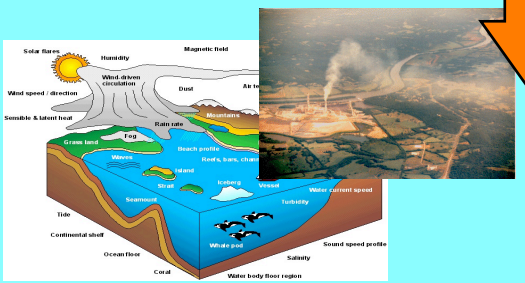
Sensor Web Enablement Framework

Heterogeneous sensor network



- sparse
- disparate
- mobile/in-situ
- extensible

Models and Simulation



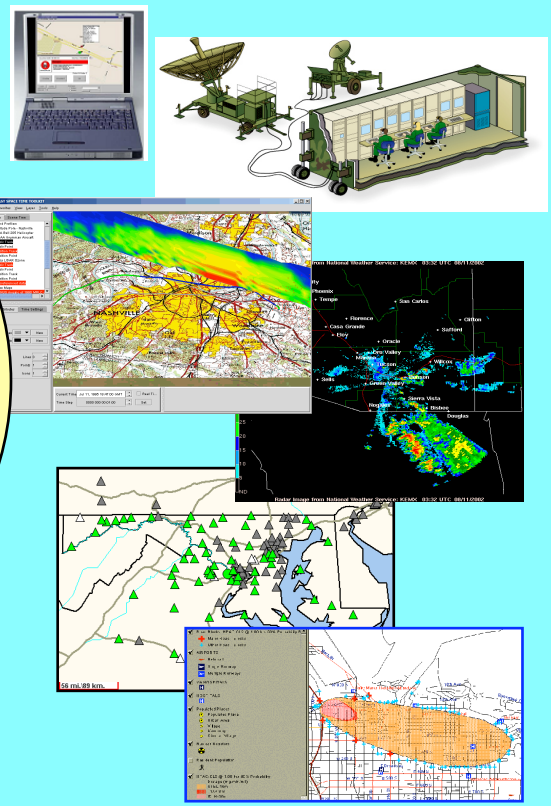
- nested
- national, regional, urban
- adaptable
- data assimilation

Sensor Web Enablement

- discovery
- access
- tasking
- alert notification

web services and encodings based on Open Standards (OGC, ISO, OASIS, IEEE)

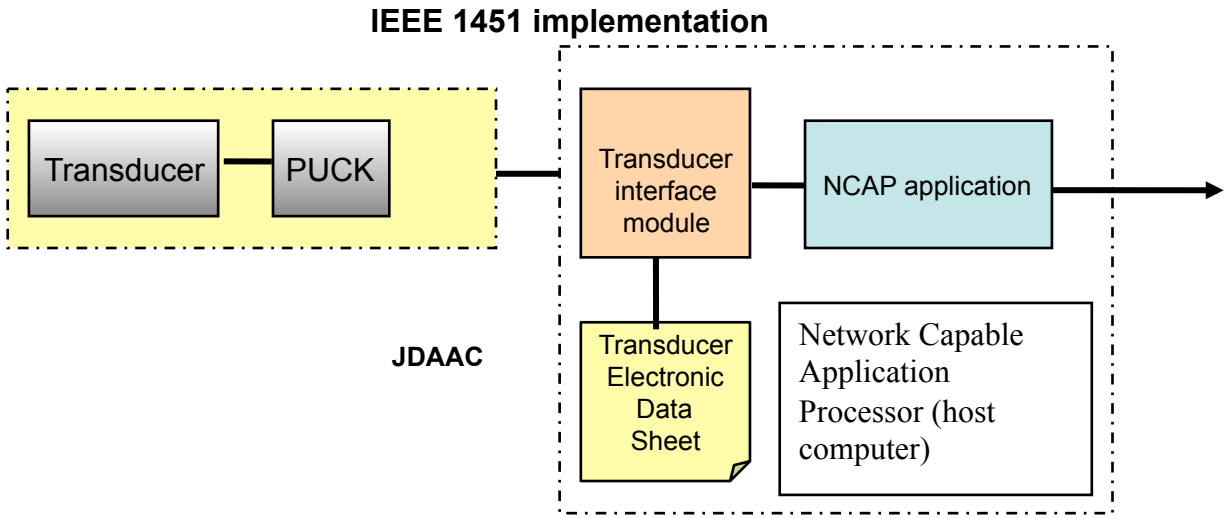
Decision Support Tools



- vendor neutral
- extensive
- flexible
- adaptable

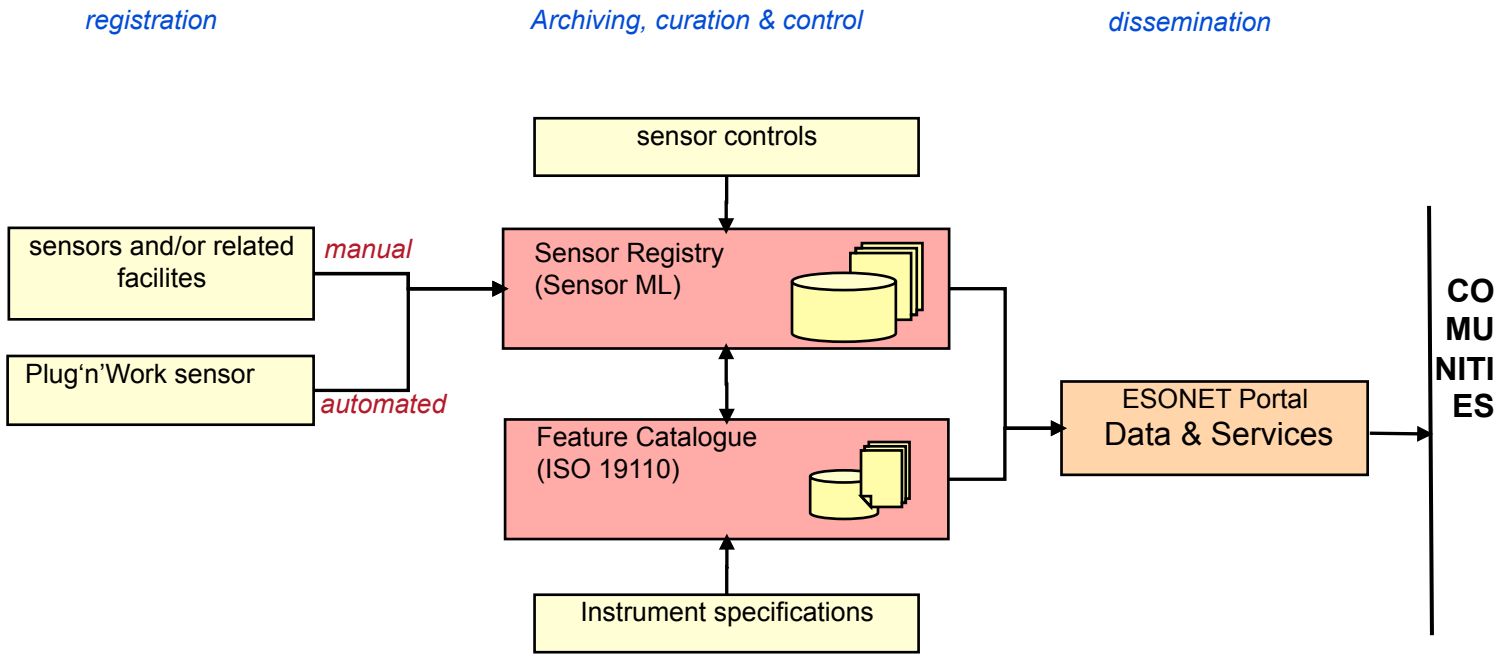
M. Botts -2004

Intelligent Sensor Concept



Generic scheme of an interoperable data acquisition system; coloured blocks are software components

Sensor registry concept



Next Steps

- Building, testing and evaluating different concepts
- Developing implementation strategies
- Developing concepts of operation