

# From sensors to semantic web: *the SemsorGrid4env project*

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# The Team



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of Manchester

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1824



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University of Athens

UNIVERSITY OF  
Southampton

deimos  
SPACE



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# Overall aim

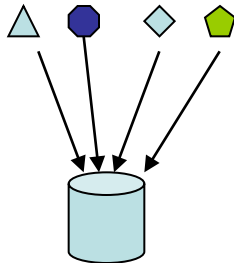
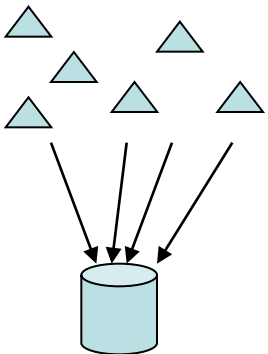
- Development of an integrated information space where new sensor networks can be easily discovered and integrated with existing ones

# Aims

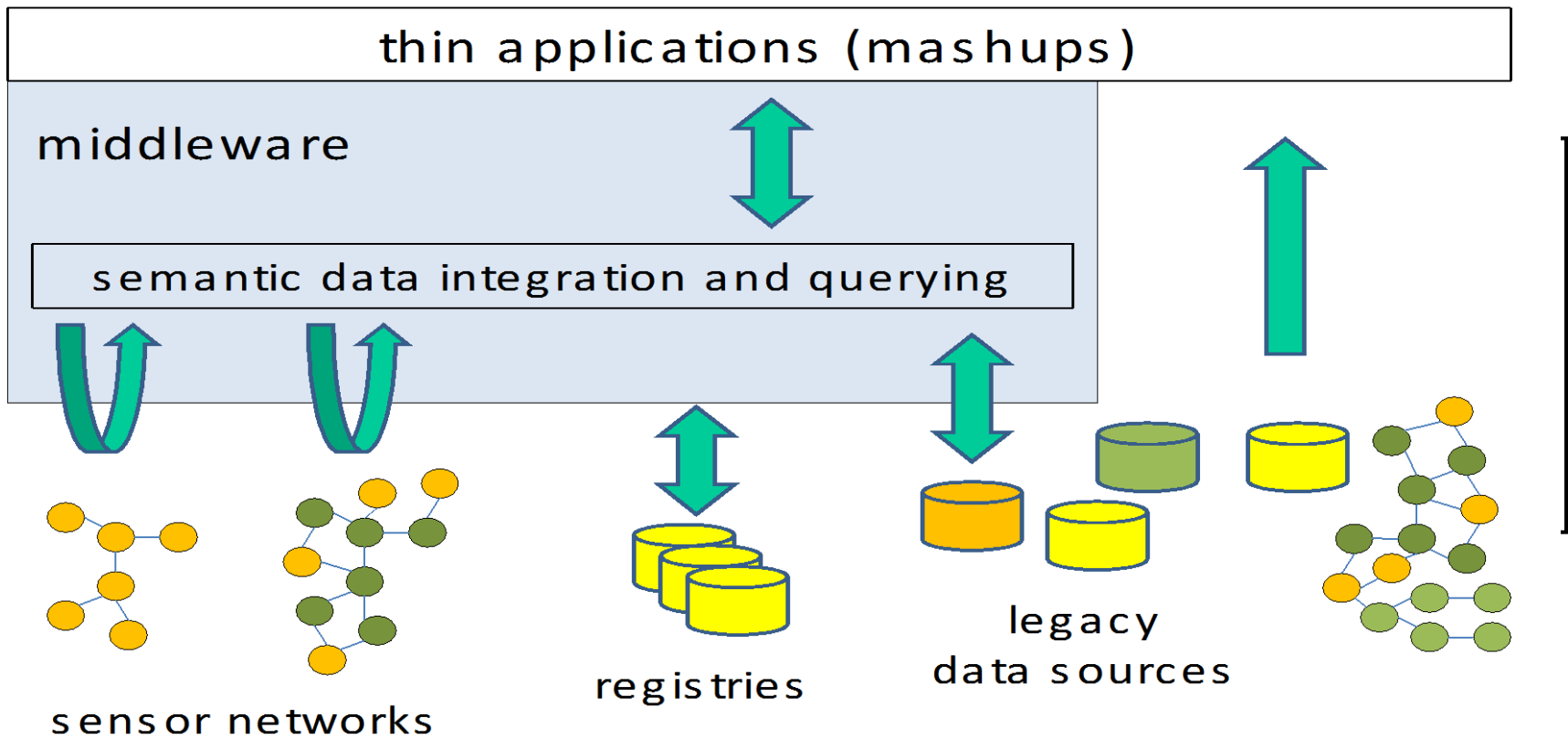
- Rapid development of applications
  - Compatibility with existing tools and expectations
  - Interoperability with deployed standards, (e.g OGC)
  - Mashups!
- Publishing sensor data
  - Semantic web techniques
  - Scenarios that combine diverse sources
  - **Linked Data**

# Data integration now

- Using tight integration of known sources
  - needs more adoption of standards
  - not as scalable
- Exporting into one large database
- *Linked data is emerging*



# Overview



# What is linked data?

- URIs name *things, concepts etc*
- They can link information which is not currently linked!

eg:

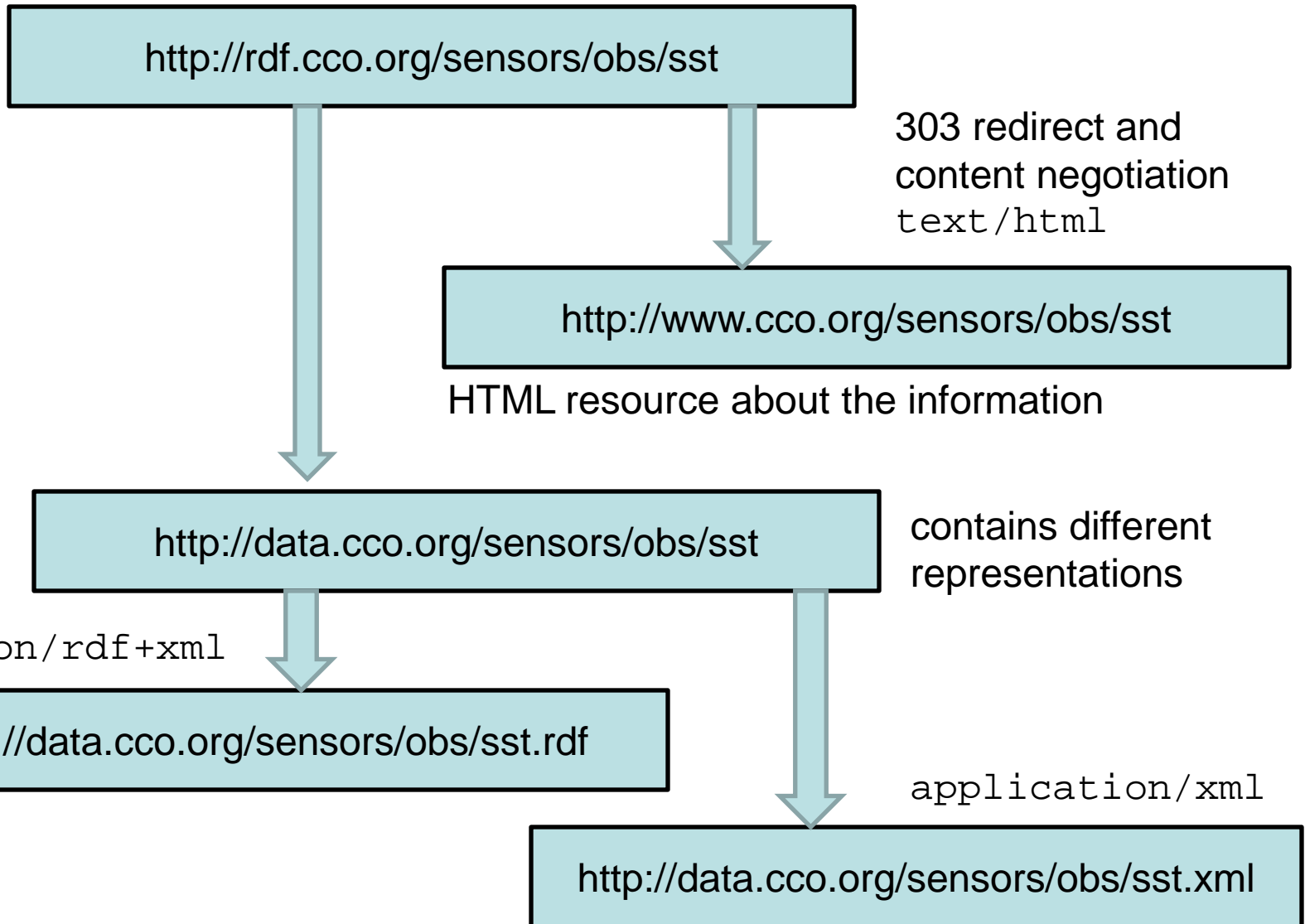
<http://id.ecs.soton.ac.uk/person/1193>

Represents Kirk Martinez

<http://rdf.ecs.soton.ac.uk/person/1193>

provides a “full” representation

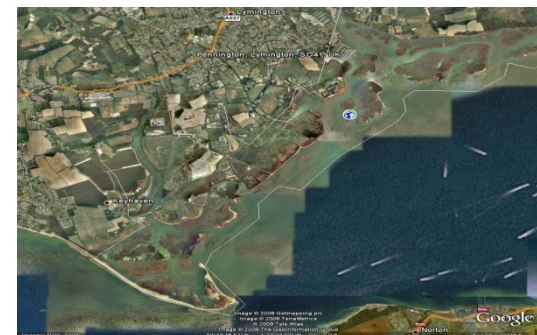
# Content negotiation





# Data Set

- Channel Coast Observatory (CCO)
  - the data management centre for the Regional Coastal Monitoring Programmes of England
  - software to manage and transmit real-time data from the largest network of coastal sensors in the UK
  - infrastructure to collect data and publish on website





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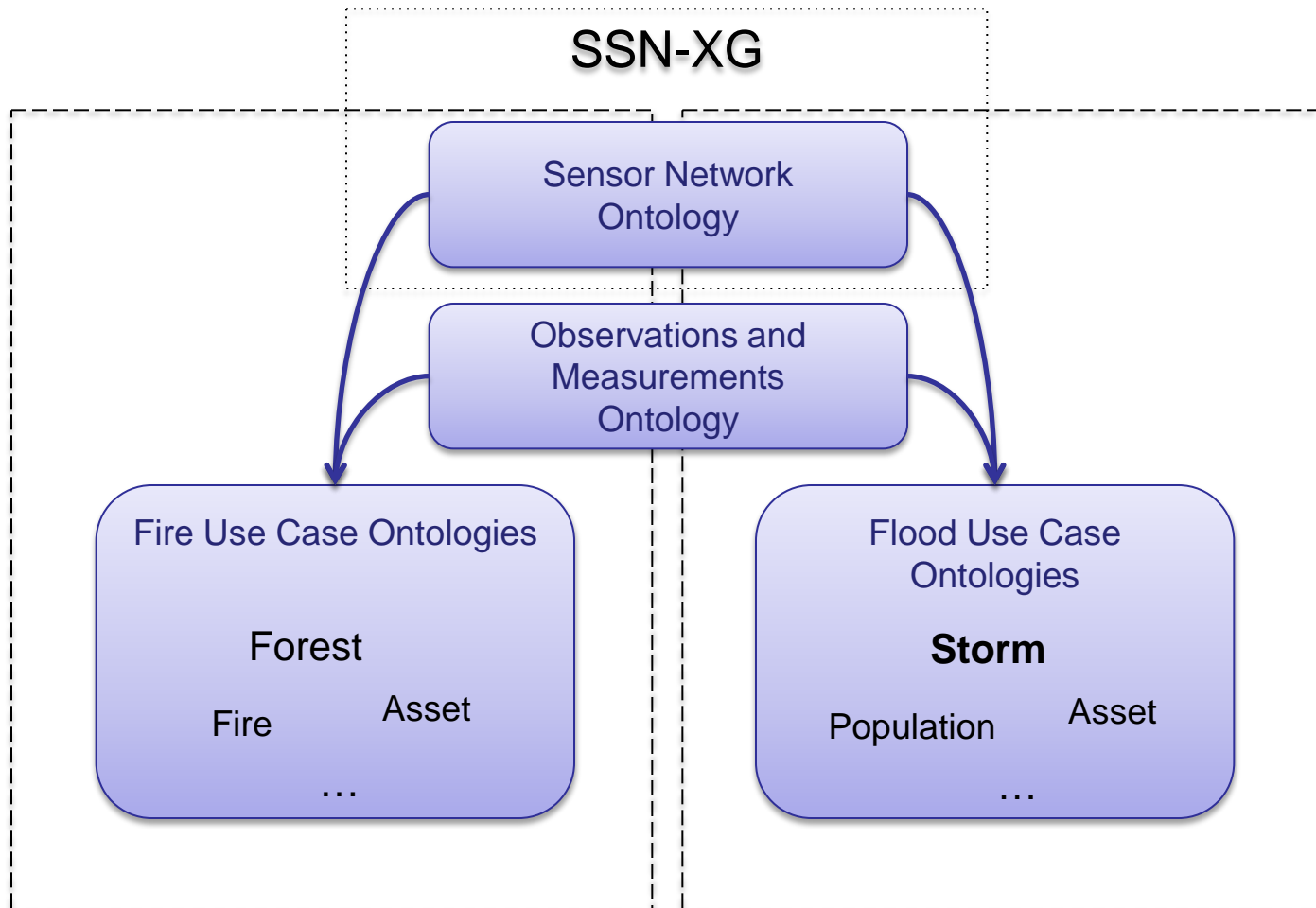
[links](#)

[abbreviations](#)

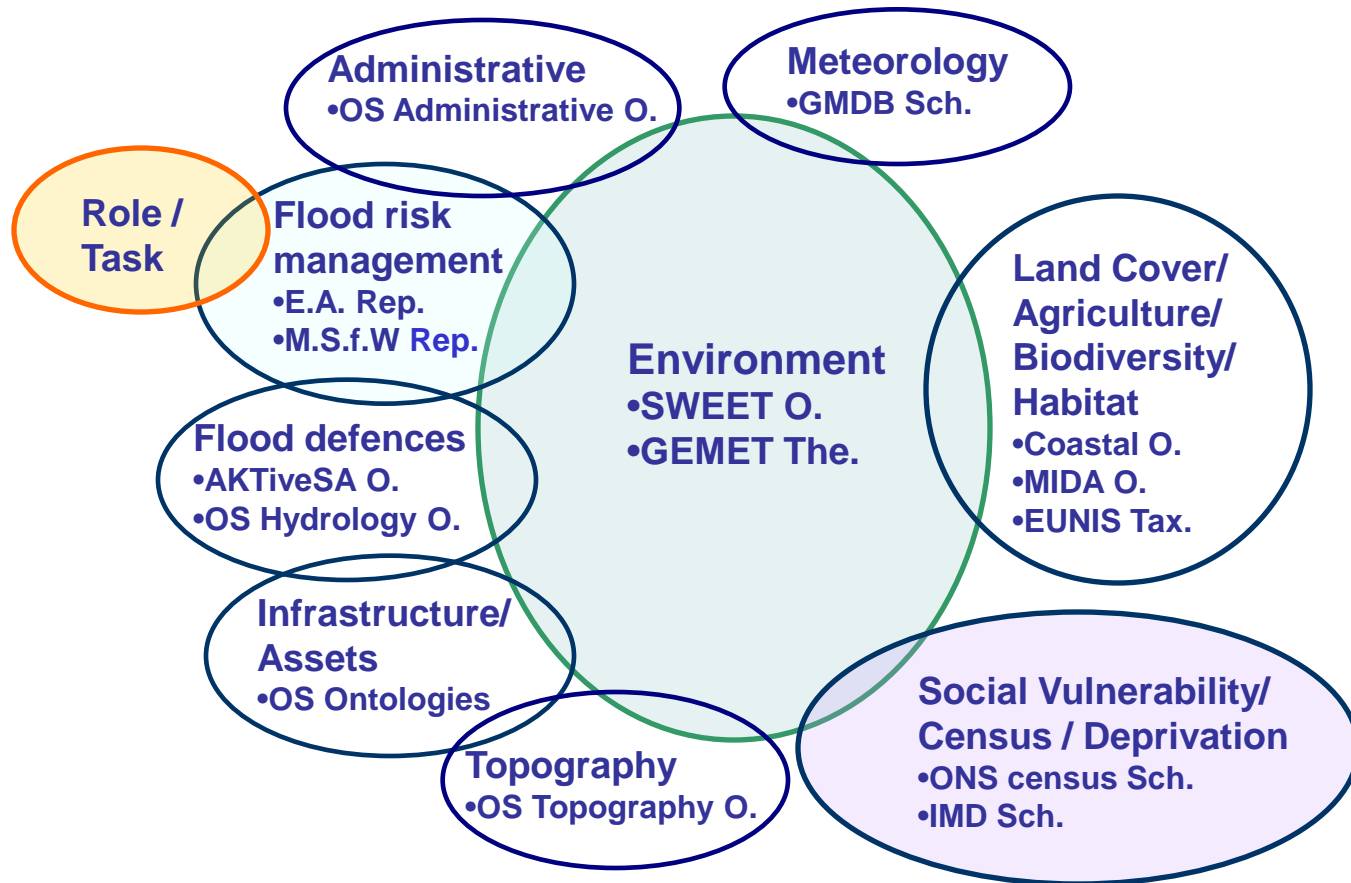
## STRATEGIC REGIONAL COASTAL MONITORING PROGRAMMES



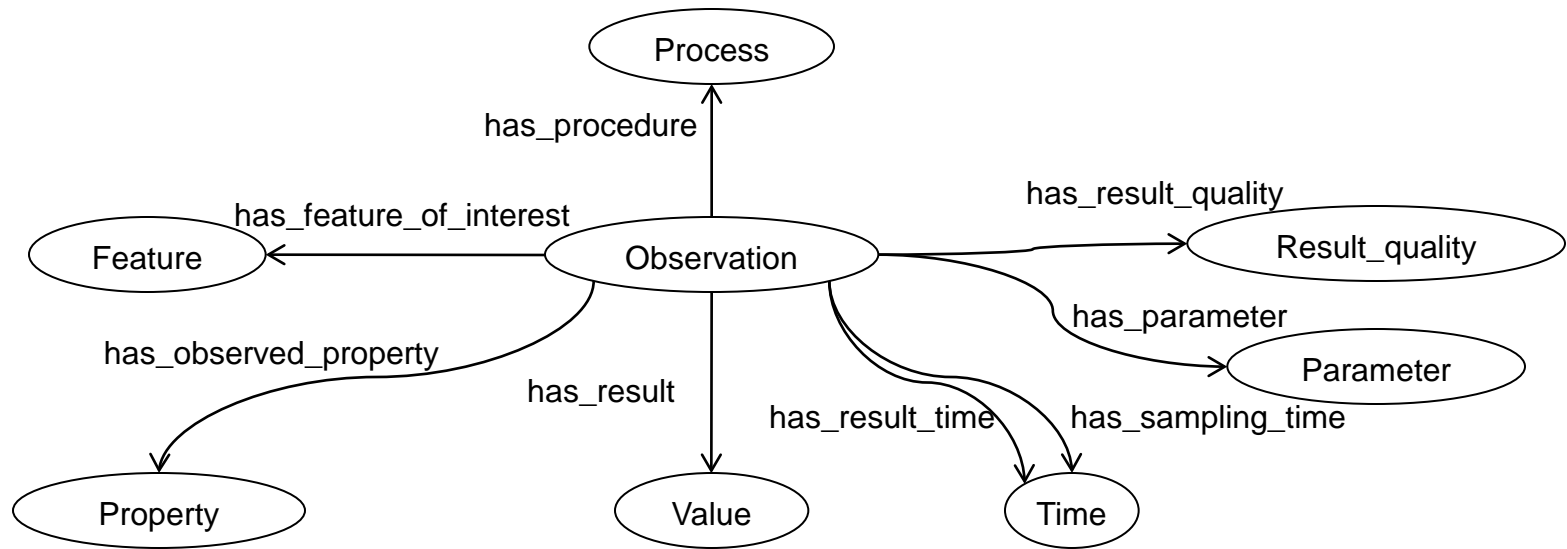
# Ontologies in SSG4Env



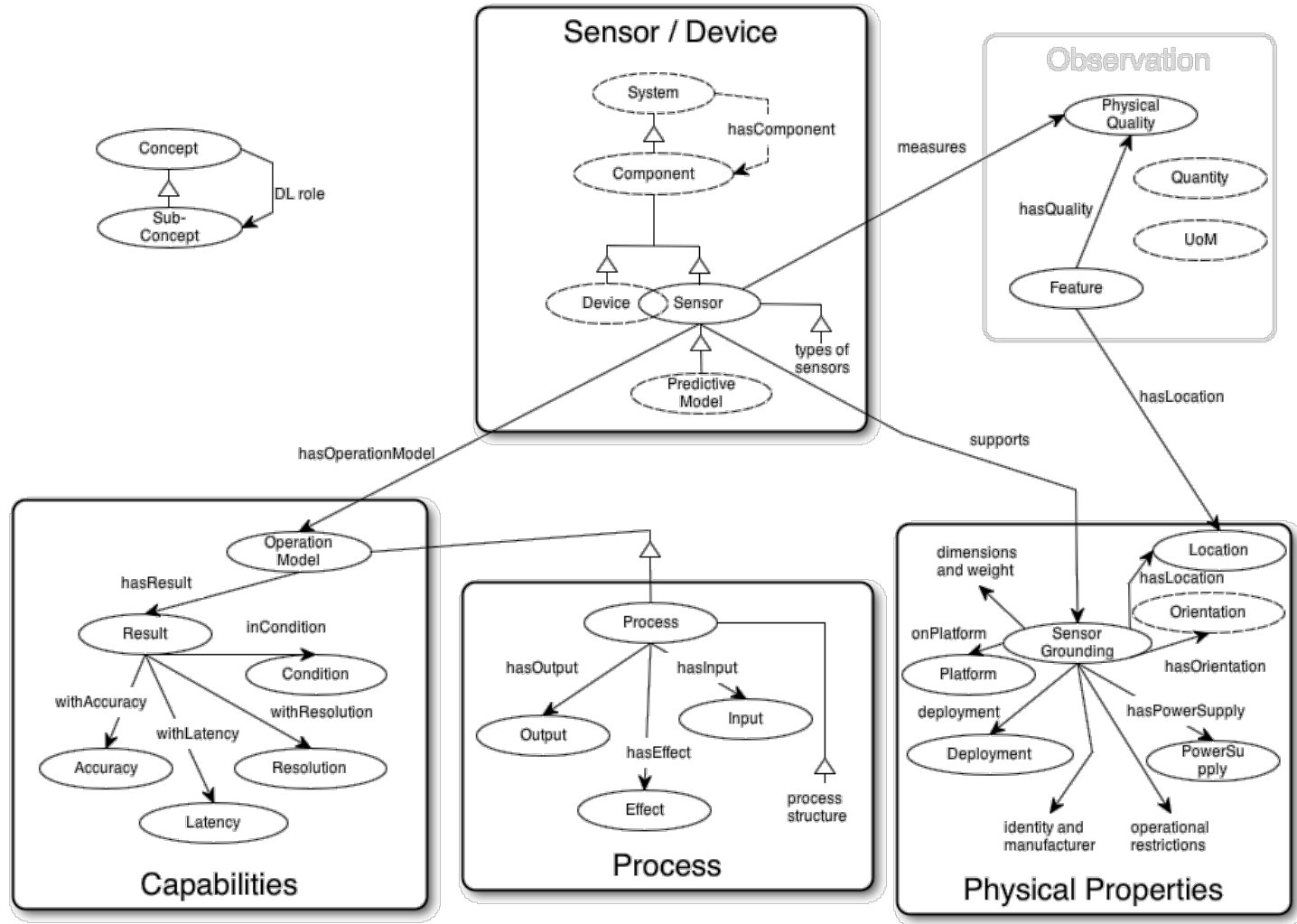
# Flood use case ontologies



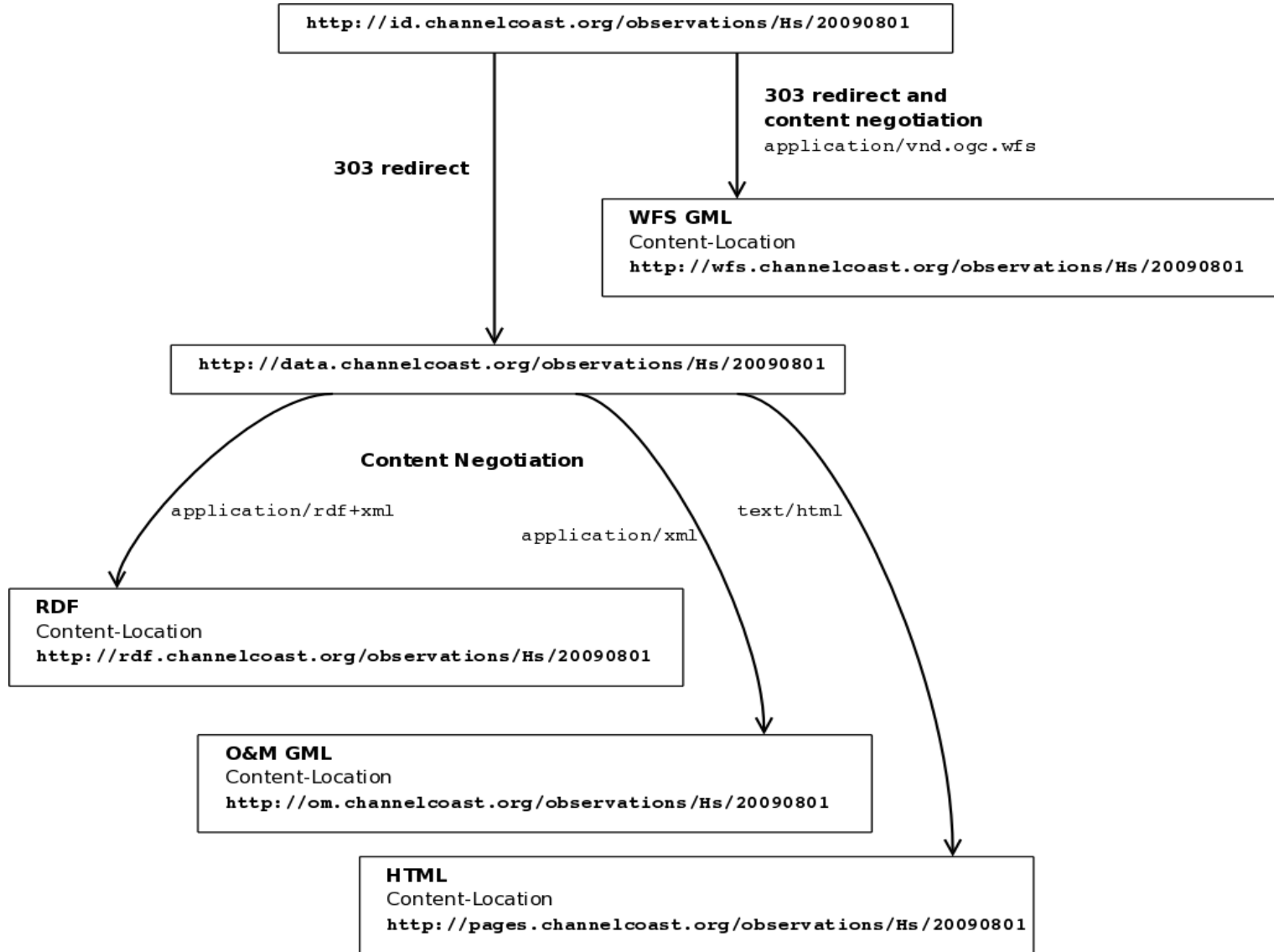
# Observations and Measurements ontology



# Sensor ontology



# CCO sample





Wave period  1 December 2009  Boscombe  application/xml



Measurement date:

Requested URI:

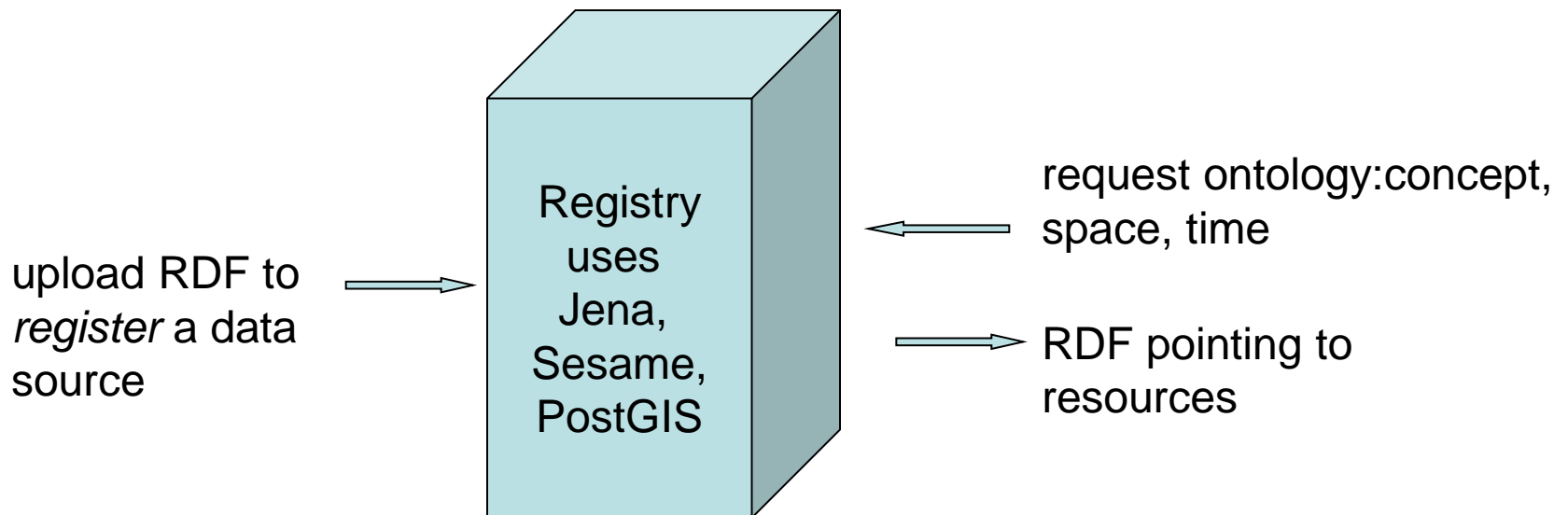
<http://om.channelcoast.org/services/sensors/observations/Boscombe/tpack/20091201>

```
</om:member>
<om:member>
  <om:Observation gml:id="110000">
    <om:resultTime>
      <gml:TimeInstant gml:id="T110000">
        <gml:timePosition>20091201#110000</gml:timePosition>
      </gml:TimeInstant>
    </om:resultTime>
    <om:samplingTime>
    </om:samplingTime>
    <om:procedure xlink:href="http://id.channelcoast.org/services/sensors/Boscom
    <om:observedProperty xlink:href="http://marinemetadata.org/2005/08/ndbc_wave
    <om:featureOfInterest xlink:href="http://www.eionet.europa.eu/gemet/concept?
    <om:result xsi:type="gml:MeasureType" uom="ogc:def:uom:OGC:s">6.250</om:resu
    </om:Observation>
  </om:member>
  <om:member>
    <om:Observation gml:id="103000">
      <om:resultTime>
        <gml:TimeInstant gml:id="T103000">
```



# “Registry”

- provides SPARQL endpoint for queries such as “oceanographic data”
- but includes spatio-temporal part of query
- replies with RDF containing usable URIs

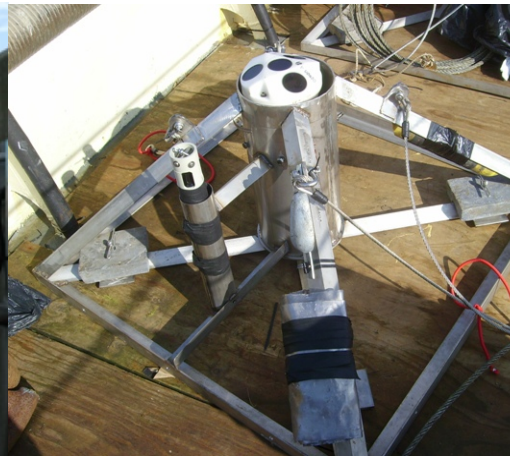


# Coping with data streams

- continuous data may be the result of a query
  - useful for monitoring and live views
- project is testing SNEEqI
  - in small deployments of TelosB nodes

# For more information

- [www.semsorgrid.eu](http://www.semsorgrid.eu)
- W3C Semantic Sensor Network Incubator group:  
[www.w3.org/2005/Incubator/ssn/](http://www.w3.org/2005/Incubator/ssn/)
- [kirk@ieee.org](mailto:kirk@ieee.org)



# Links

- [http://www.channelcoast.org/data\\_management/sensors.html](http://www.channelcoast.org/data_management/sensors.html)

API test