EUMIS - an open portal framework for interoperable marine environmental services

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Outline

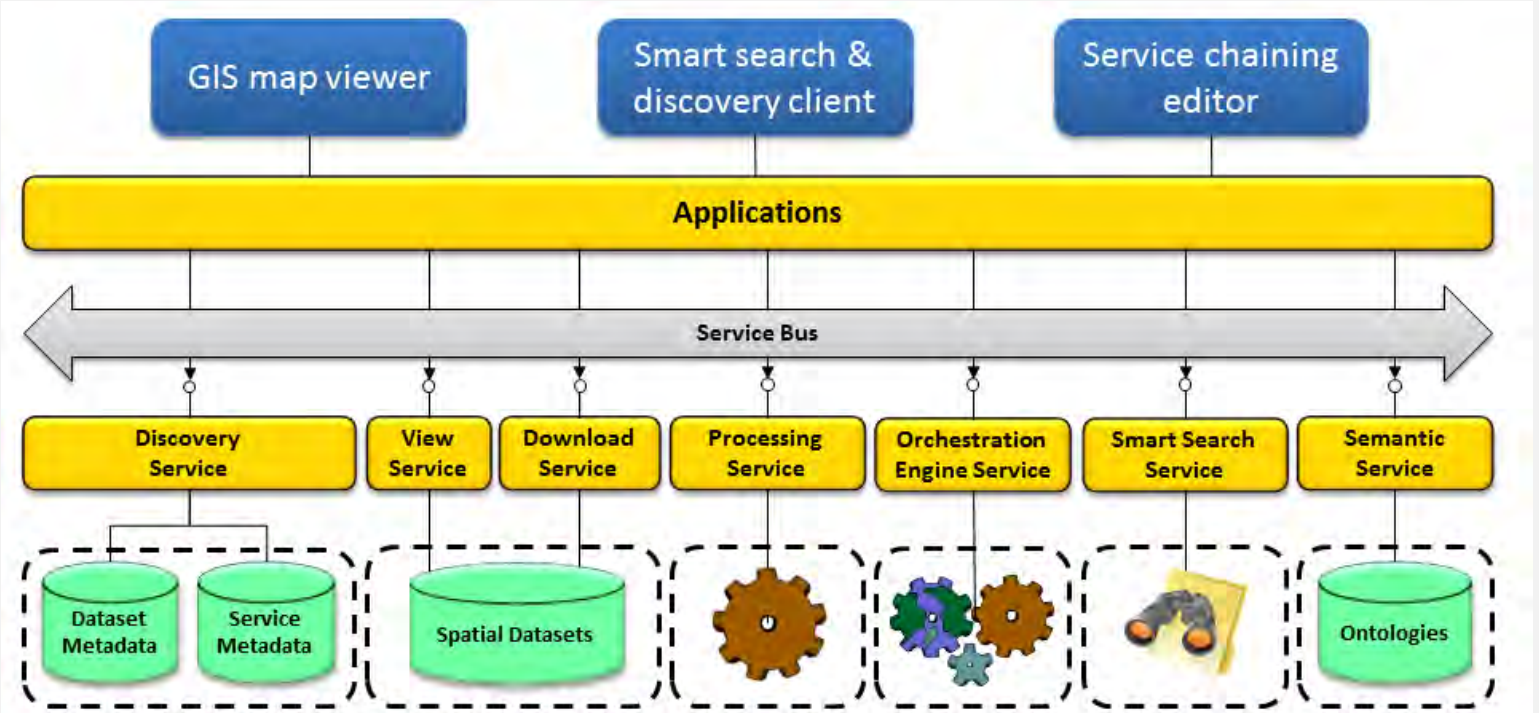
- Objectives and concepts
- Pilots
- Ontologies and semantic framework
- EUMIS portal and components
  - GIS Viewer
  - Discovery Client
  - Service Chaining Editor
- Conclusion

Objectives and concepts

- NETMAR aims to develop a ***pilot European Marine Information System (EUMIS)*** for searching, downloading and integrating satellite, in situ and model data from ocean and coastal areas. It will be a user-configurable system offering ***flexible service discovery, access and chaining facilities*** using OGC, OPeNDAP and W3C standards. It will use a ***semantic framework coupled with ontologies*** for identifying and accessing distributed data, such as near-real time, forecast and historical data. EUMIS will also enable further processing of such data to generate ***composite products and statistics*** suitable for decision-making in different marine application domains.

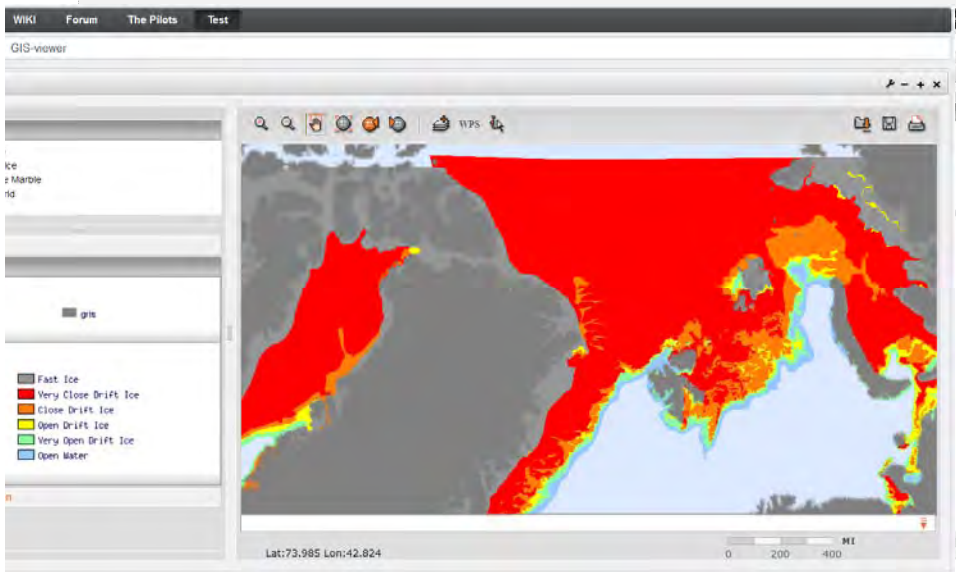
Objectives and concepts

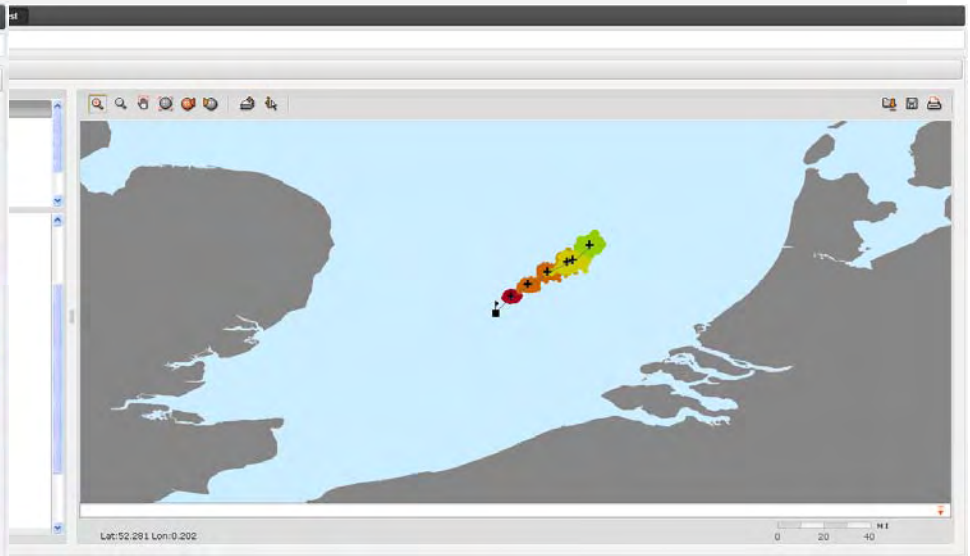
- NETMAR Service Oriented Architecture
  - Portal and components by JSR-168 JSR-286
  - Services by OGC, W3C and OASIS standards



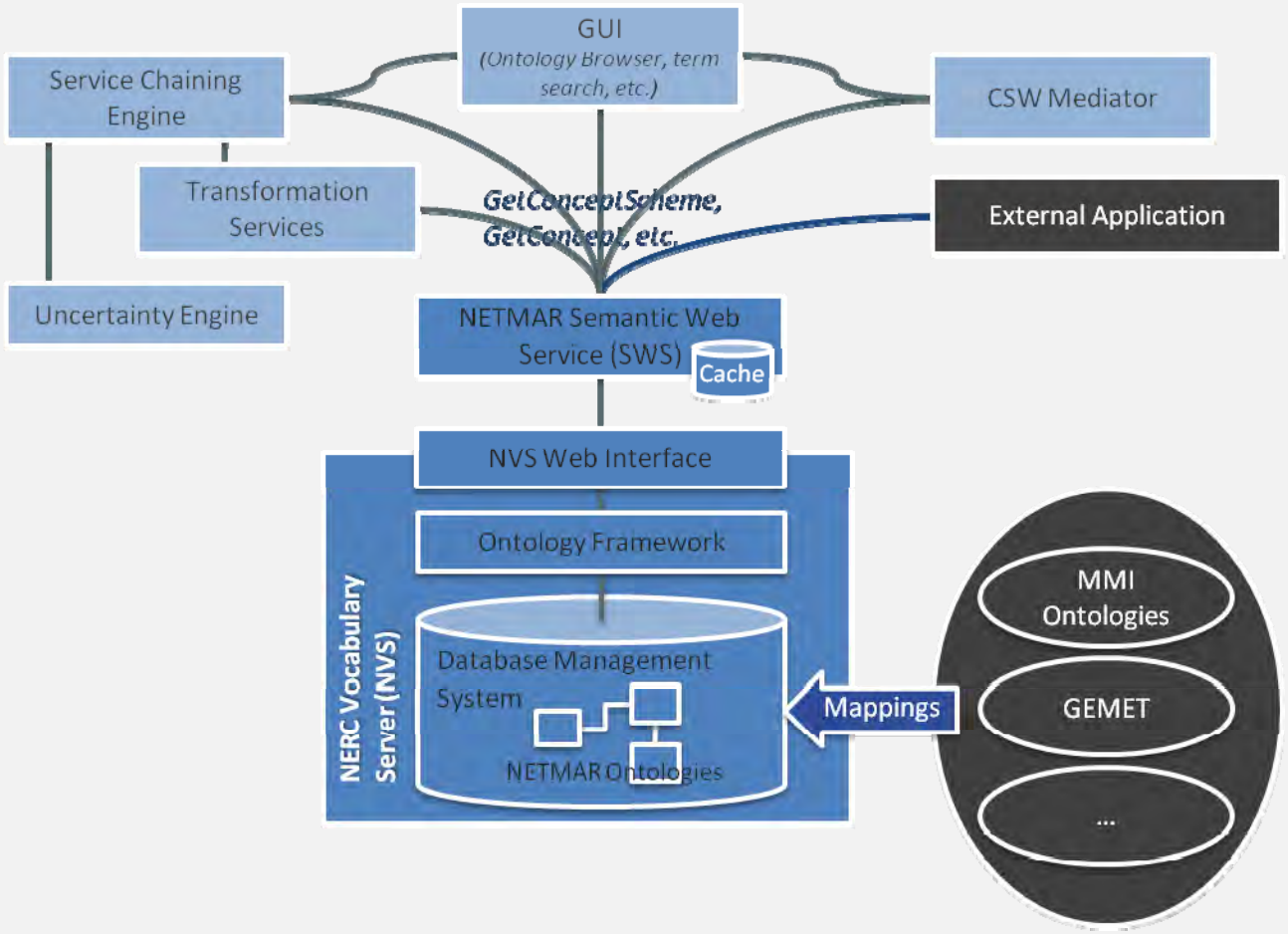
Pilots

- Pilots in NETMAR
  1. Arctic Sea Ice monitoring and forecasting
  2. Oil spill forecasting and shoreline cleanup
  3. Ecosystem monitoring and modelling
  4. ICAN (International Coastal Atlas Network)



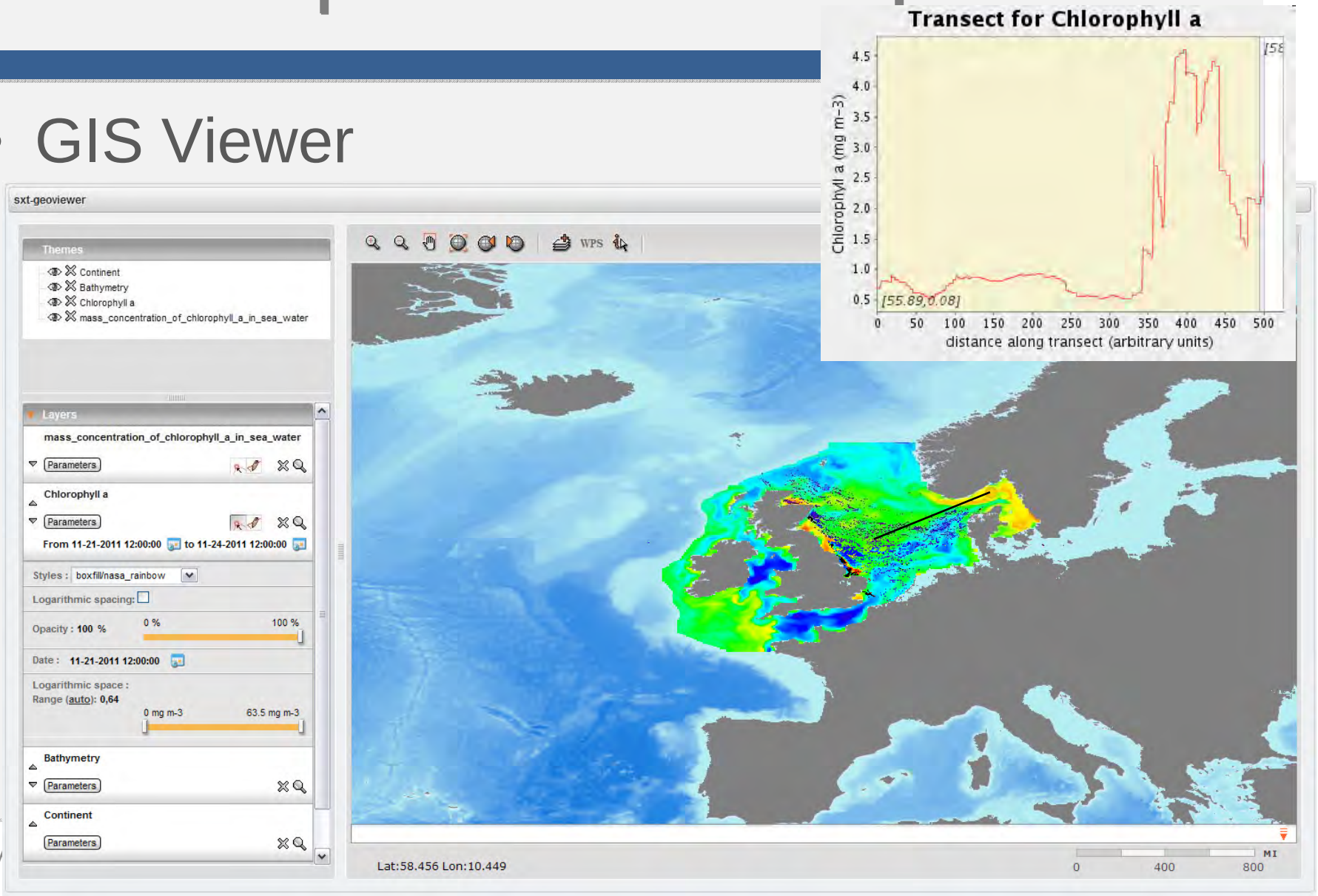


Ontologies and semantic framework



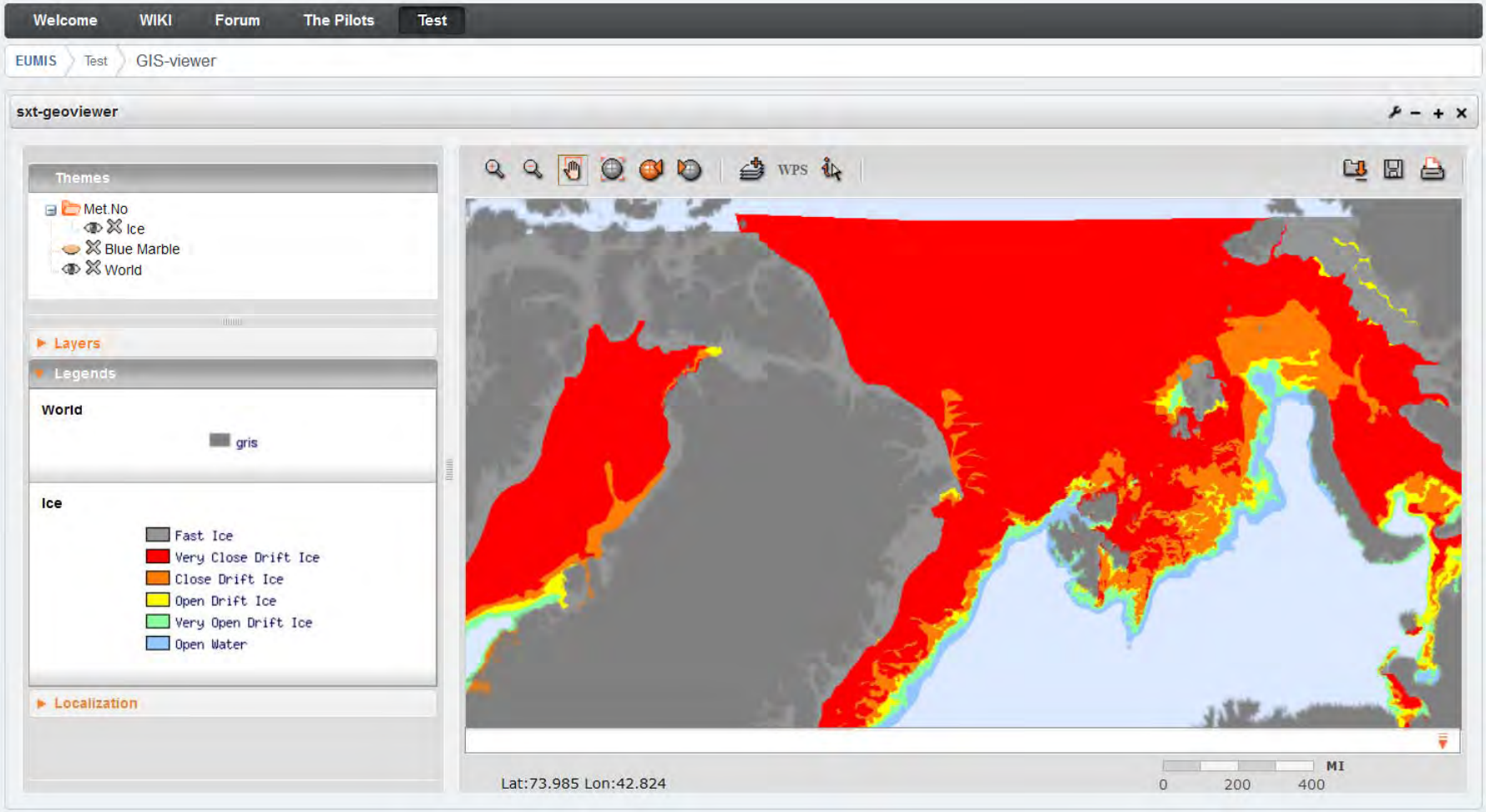
EUMIS portal and components

- GIS Viewer



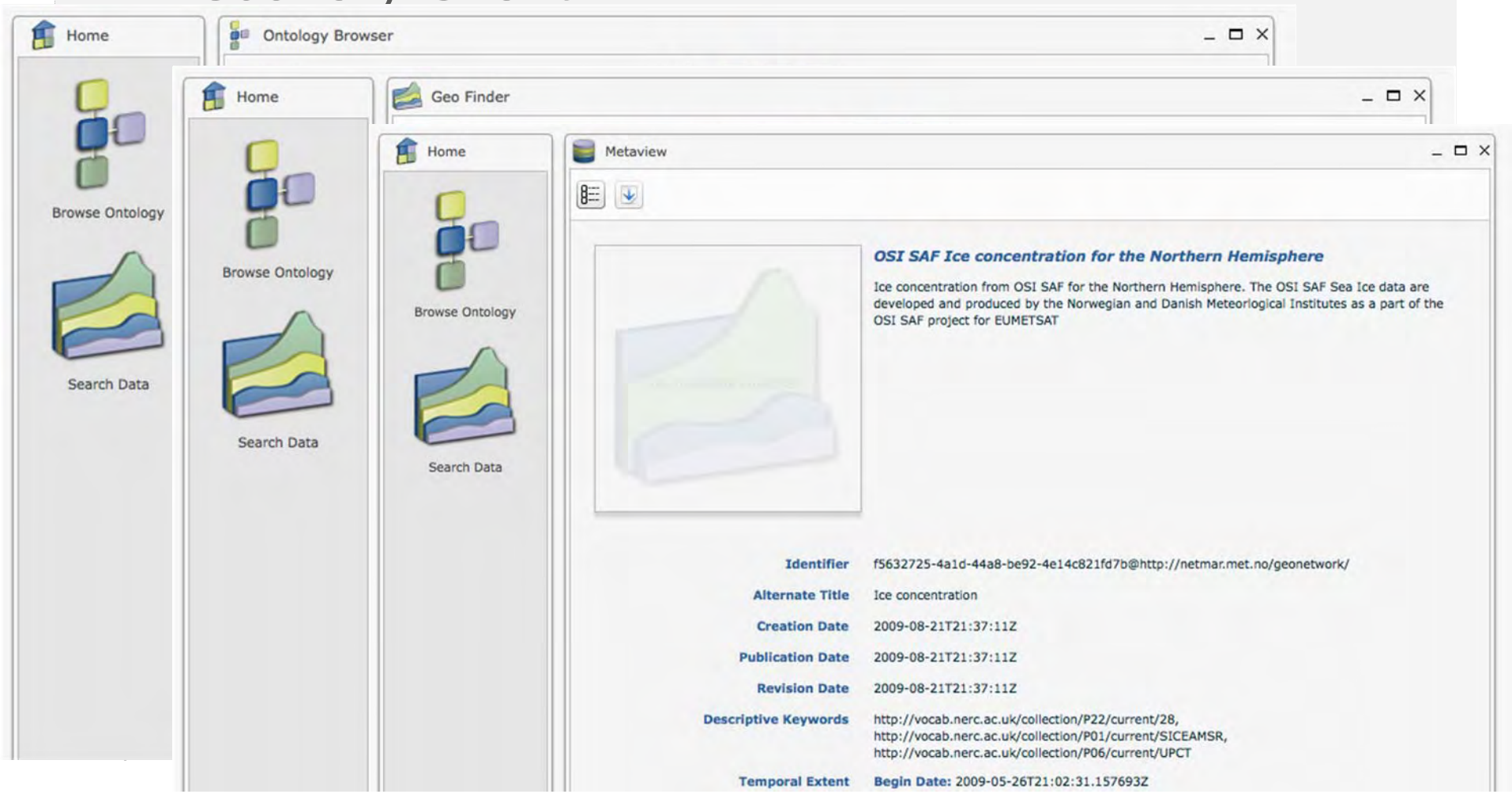
EUMIS portal and components

- GIS Viewer



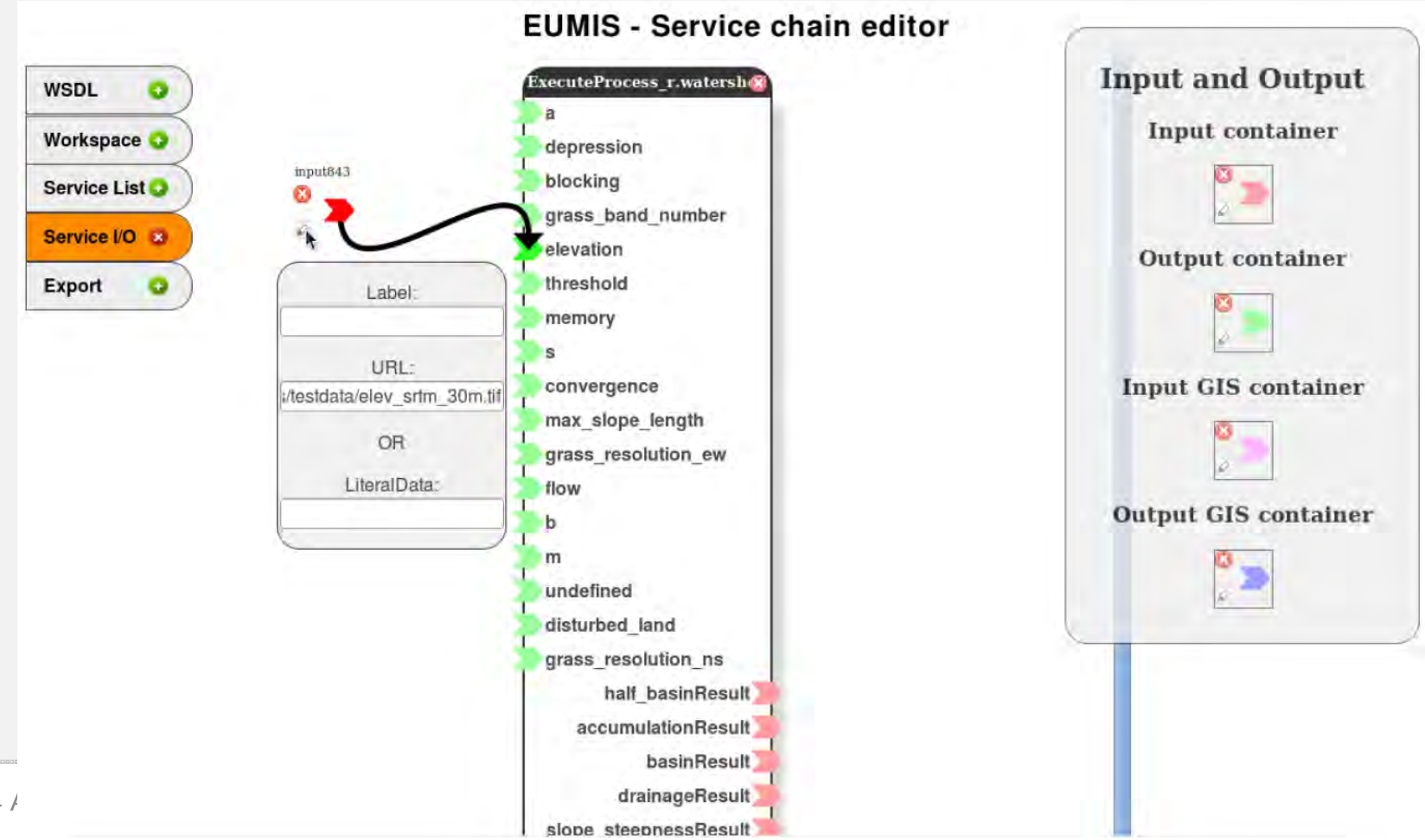
EUMIS portal and components

- Discovery Client



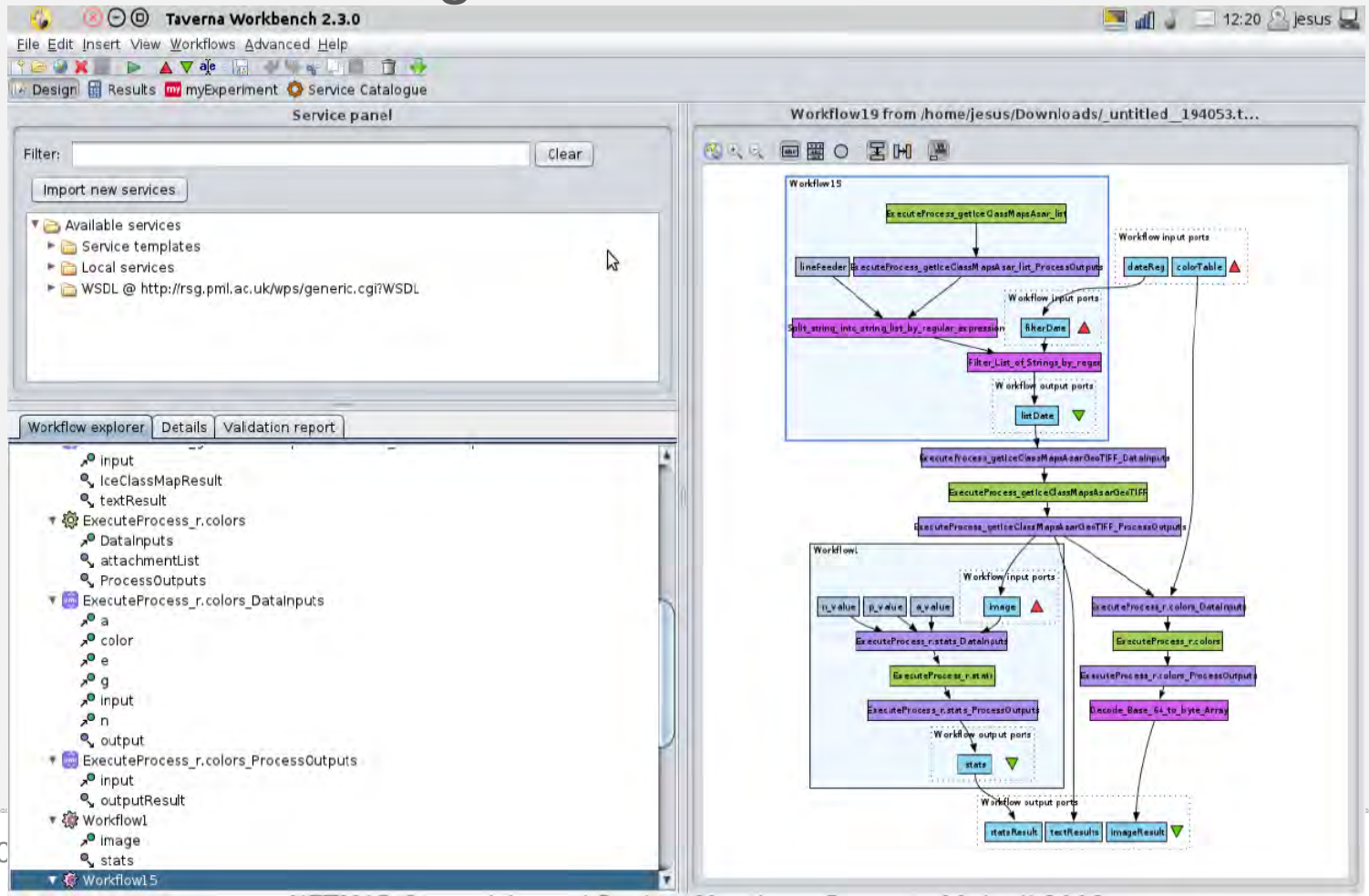
EUMIS portal and components

- Service Chaining Editor



EUMIS portal and components

- Service Chaining Editor



Conclusion

- We have implemented a SOA for the EUMIS portal with a set of components
  - GIS Viewer - Discovery Client
  - Service Chaining Editor - Wiki, Forum, RSS feeds

  using multiple programming languages, and deployed them within the Liferay platform.
- The first version of EUMIS was tested for the four pilots in different marine application domains. User feedback was used to improve services and components.
- Positive experience with the Java Portlet Specification standard and the portal framework. With further work EUMIS can be developed into a sustainable system.

More information

- NETMAR Public Splinter Meeting
  - Wednesday 25 April, 13:30-15:00, Room SM5
  - Presentations + Demonstrations
- NETMAR web site: http://netmar.nersc.no
- Contact Torill Hamre (torill.hamre@nersc.no)

Thank you!

T. Hamre[1], S. Sandven[1], A. Leadbetter[2], V. Gouriou[3], D. Dunne[4], M. Grant[5], M. Treguer[6], and Ø. Torget[7]

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Using SOA Patterns to promote understanding across disciplines

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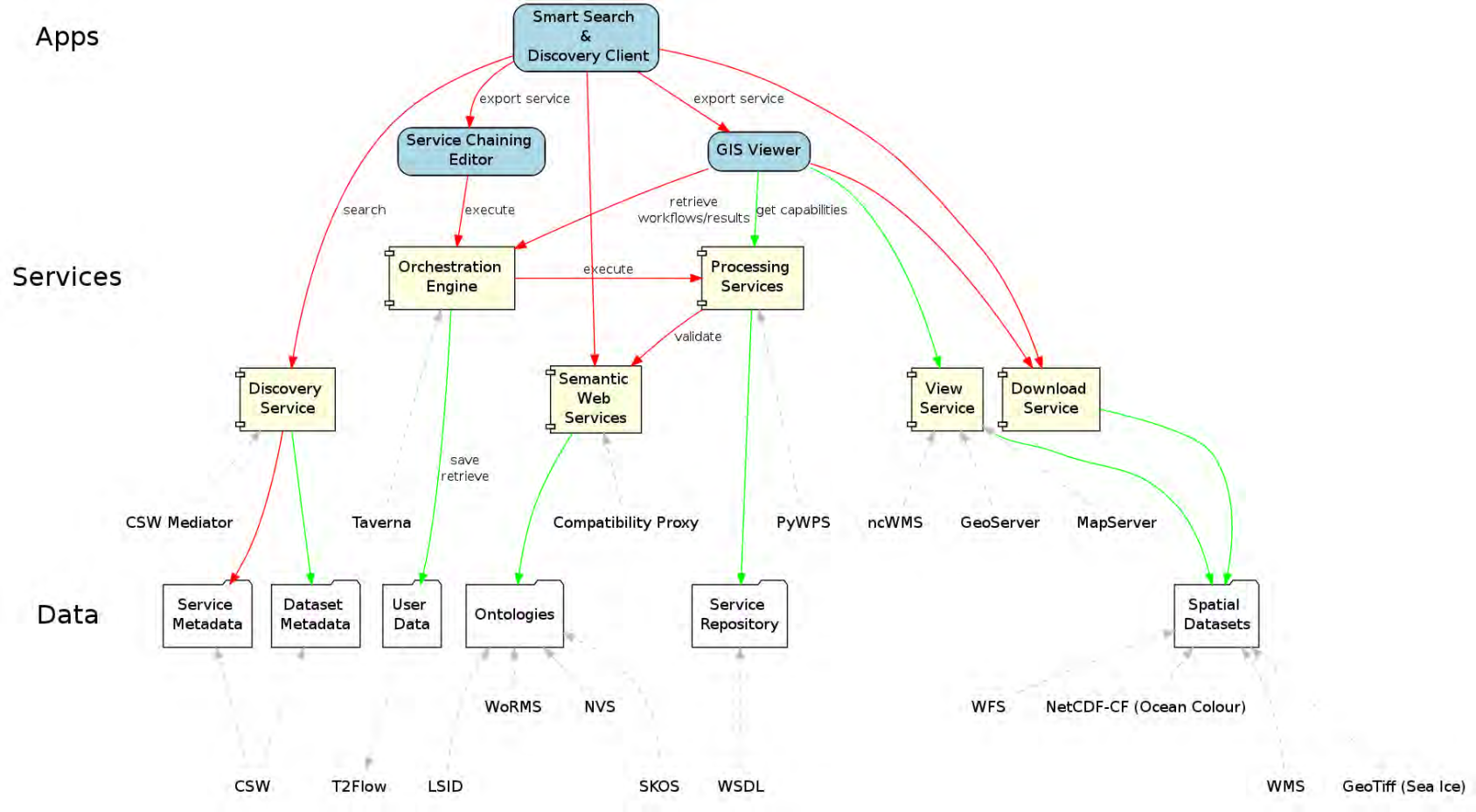
EGU 2012 – Vienna – 26 April 2012

NETMAR


Apps
Smart Search & Discovery Client
export service
export service
Service Chaining Editor
GIS Viewer
search
execute
retrieve workflows/results
get capabilities
Services
Orchestration Engine
execute
Processing Services
validate
Discovery Service
Semantic Web Services
View Service
Download Service
save retrieve
CSW Mediator
Taverna
Compatibility Proxy
PyWPS
ncWMS
GeoServer
MapServer
Data
Service Metadata
Dataset Metadata
User Data
Ontologies
Service Repository
Spatial Datasets
WoRMS
NVS
WFS
NetCDF-CF (Ocean Colour)
CSW
T2Flow
LSID
SKOS
WSDL
WMS
GeoTiff (Sea Ice)

Definitions

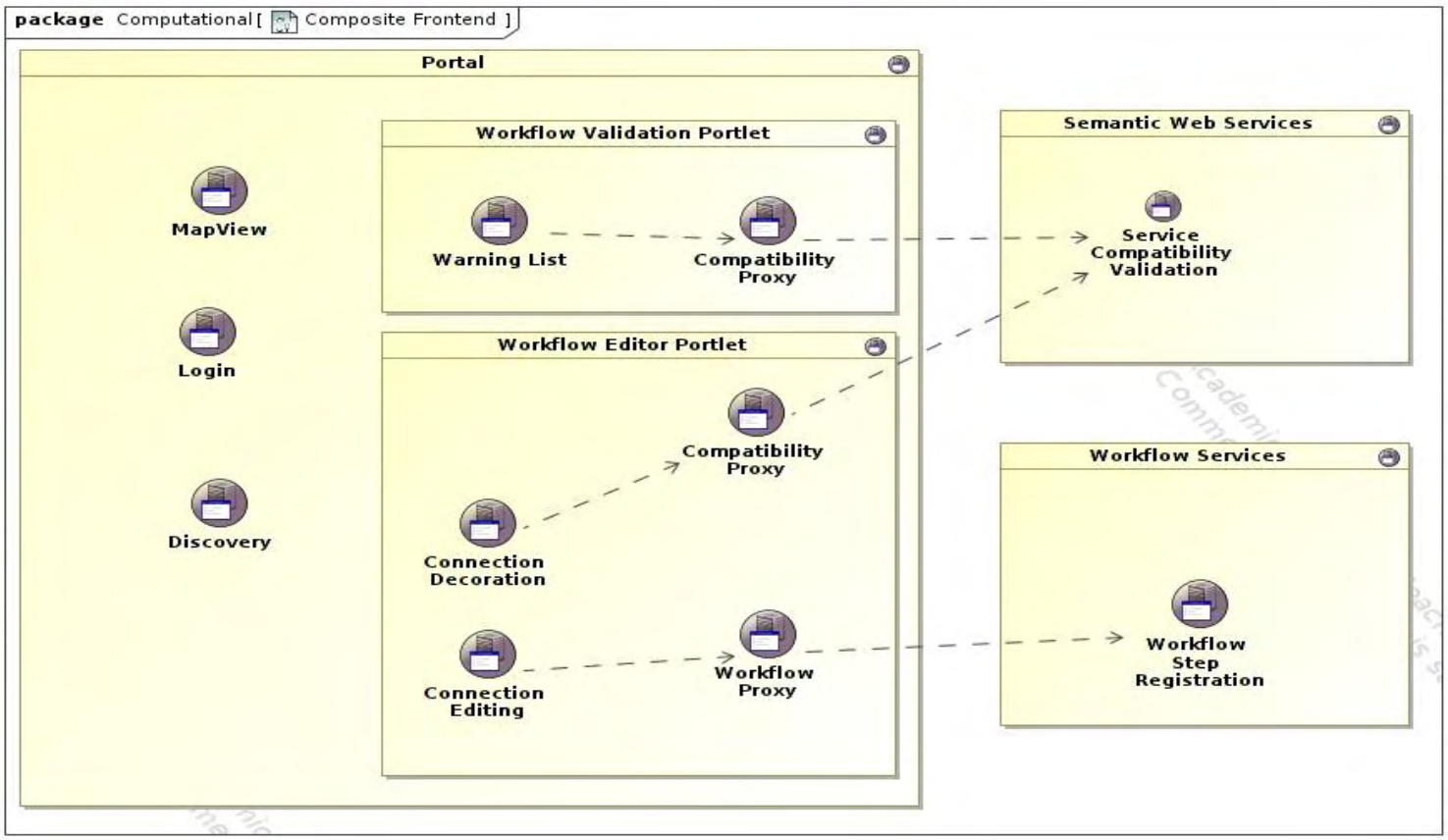
- Architecture
  - Fundamental decisions
  - Meet quality attributes
- Patterns
  - Solution + context
- Service Oriented Architecture
  - Set of patterns
  - Business logic (getting stuff done)

OO v SOA

- NERC Vocabulary Server
- OO View
  - REST calls, returning XML representing terms
- Service View
  - Governance
  - Authoritativeness
  - Provenance
  - Mapping

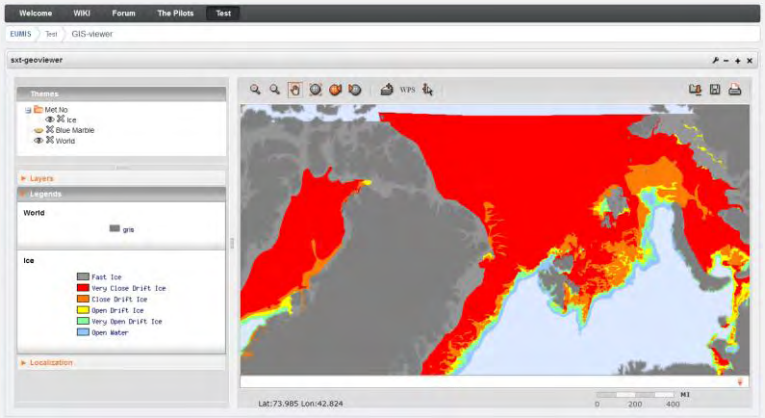
Composite Front End (Portal)

How do you we interact with multiple services, get an integrated, cohesive user interface and still preserve SOA principles and modularity benefits? *Rotem-Gal-Oz - SOA Patterns*

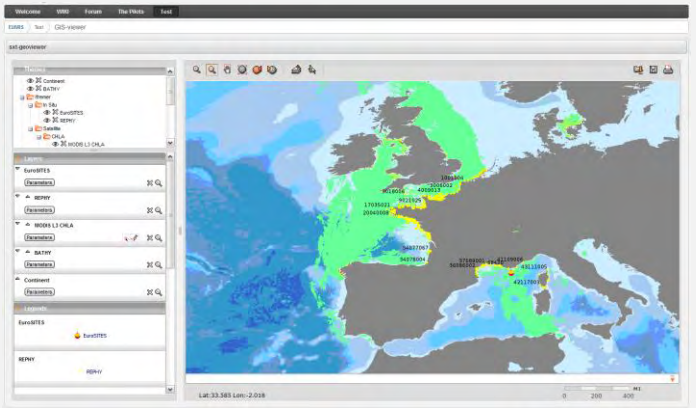


Multiple User Domains

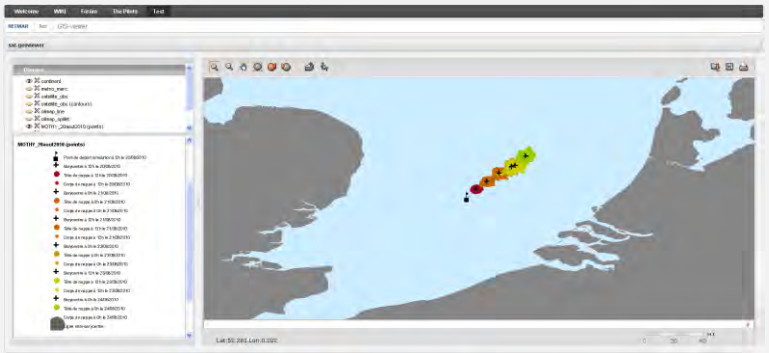
Ice pilots



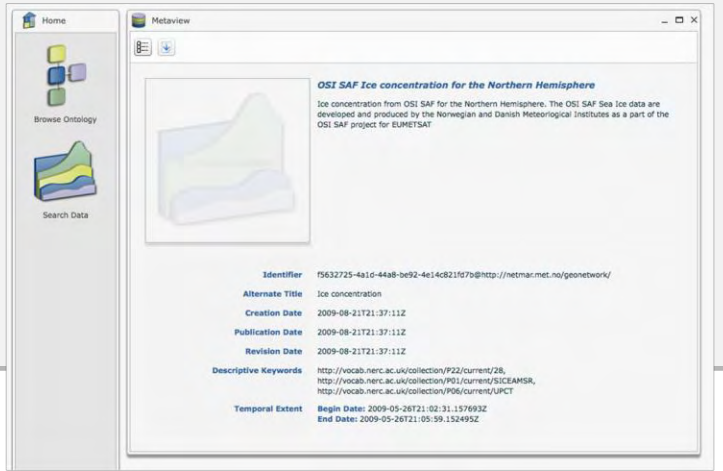
Oil slick monitoring



Oceanography

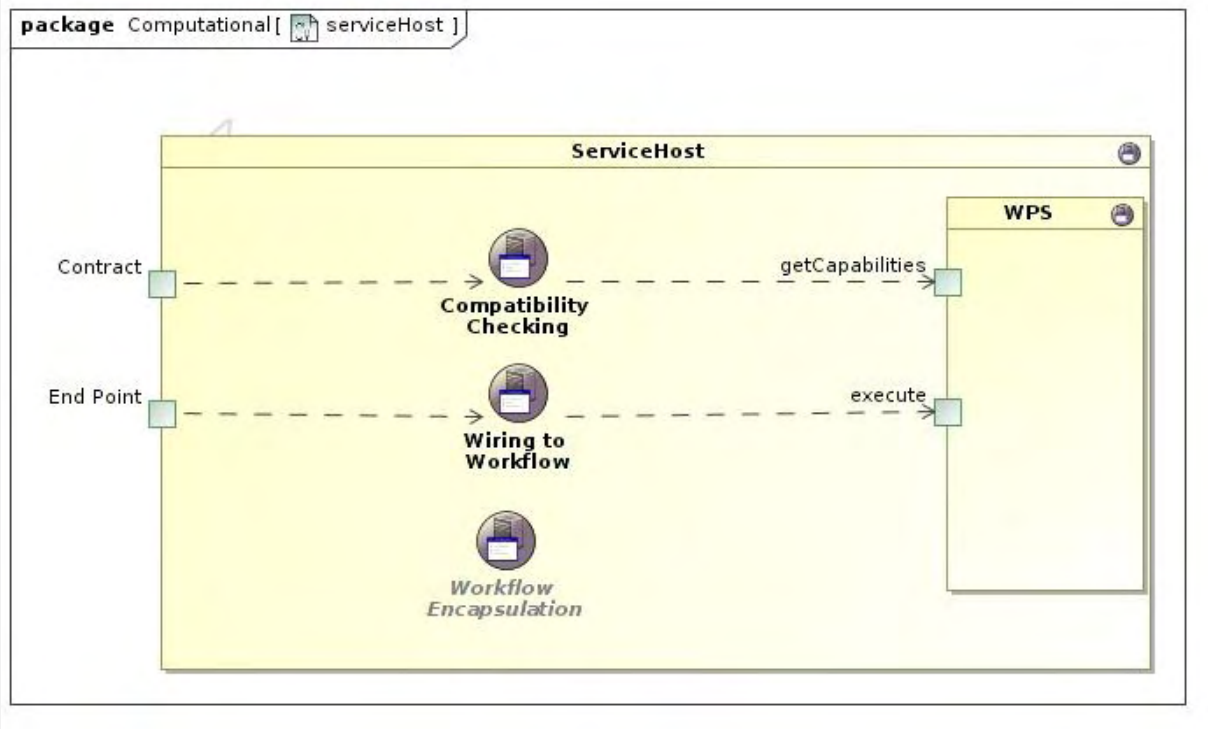


Coastal Atlas



Service Host

There needs to be a way to easily configure services, and avoid duplicating the effort of mundane tasks such as setting listeners, and wiring components, for each service.



Multiple Disciplines

- Geographical / Earth Sciences
  - WPS, Grass GIS modules
- Biological
  - Taverna, MyExperiment

PBAR

- Patterns Based Architecture Reviews
  - Harrison, Avgeriou, *IEEE Software*
- Focused stakeholder conversation
- Agile approach to architecture
- Checklist based on ATAM General Scenarios
  - Software Engineering Institute

Conclusion

- Architecture guides conversation
- Emphasise added value over interfaces
- Concrete guidance
- Agile architecture
- Bridge between IT and domain experts

Thank you, any questions?

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