



d4SCIENCE

# OGF-Europe Outreach Seminar Digital Repositories -Interoperability Using Grid Technologie

05 June 2008

Barcelona

## Natural Resource Science: Environmental Monitoring and Fisheries and Aquaculture Resource Management

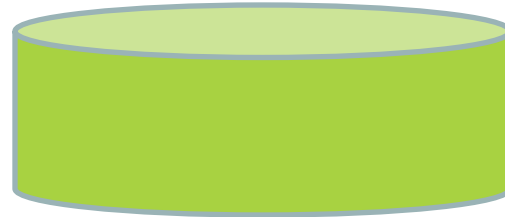
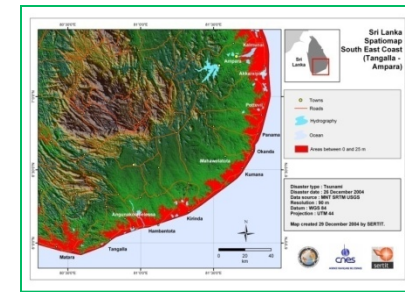
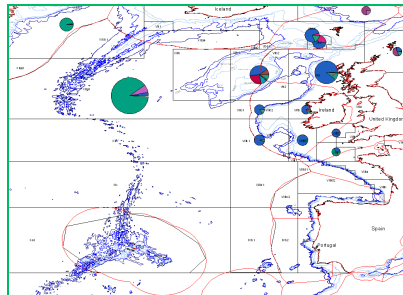
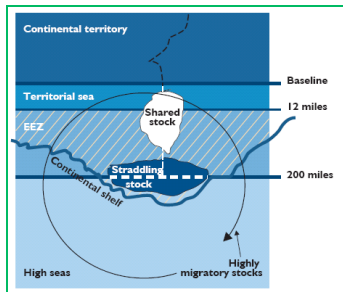
Donatella Castelli  
CNR-ISTI



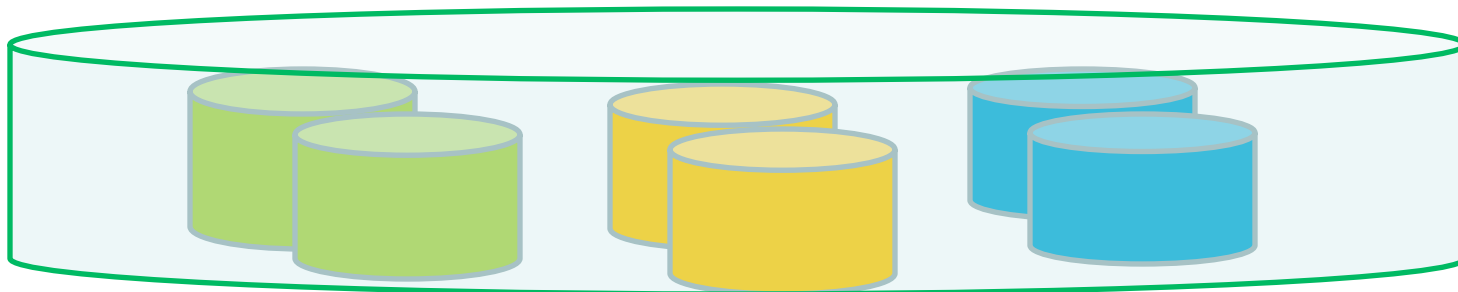
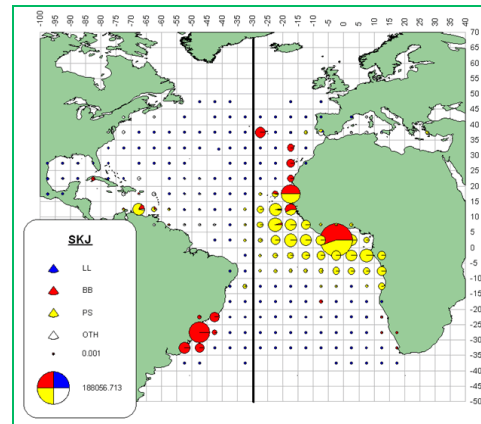
- Context
- Use scenarios
- DILIGENT / D4Science
- Concluding remarks

- Interpreting large scale natural phenomena requires a large variety of information of different types
- Many projects/organisations with a limited temporal and spatial cover are carrying out individual studies collecting specific information
- Most data collection is paid for directly or indirectly by public funds with the intent that they ultimately benefit society through research, development and resource management

- Multiple types of analysis can be conducted by processing the same data with specialised tools (the same data can serve multiple usages)



- By combining the results from many studies massive information sources can be created that make possible analyses on a different scale



- Probability of a species in a particular area (*habitat function*):

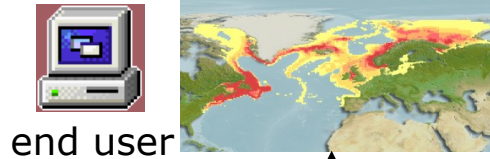
$$P(s,a) = f(\text{species profile, area environmental factors})$$

factors = temperature, bottom types, salinity, chlorophyll, etc.

- Species profiles and environmental factors for an area are collected by integrating data from a variety [authority, type] of sources

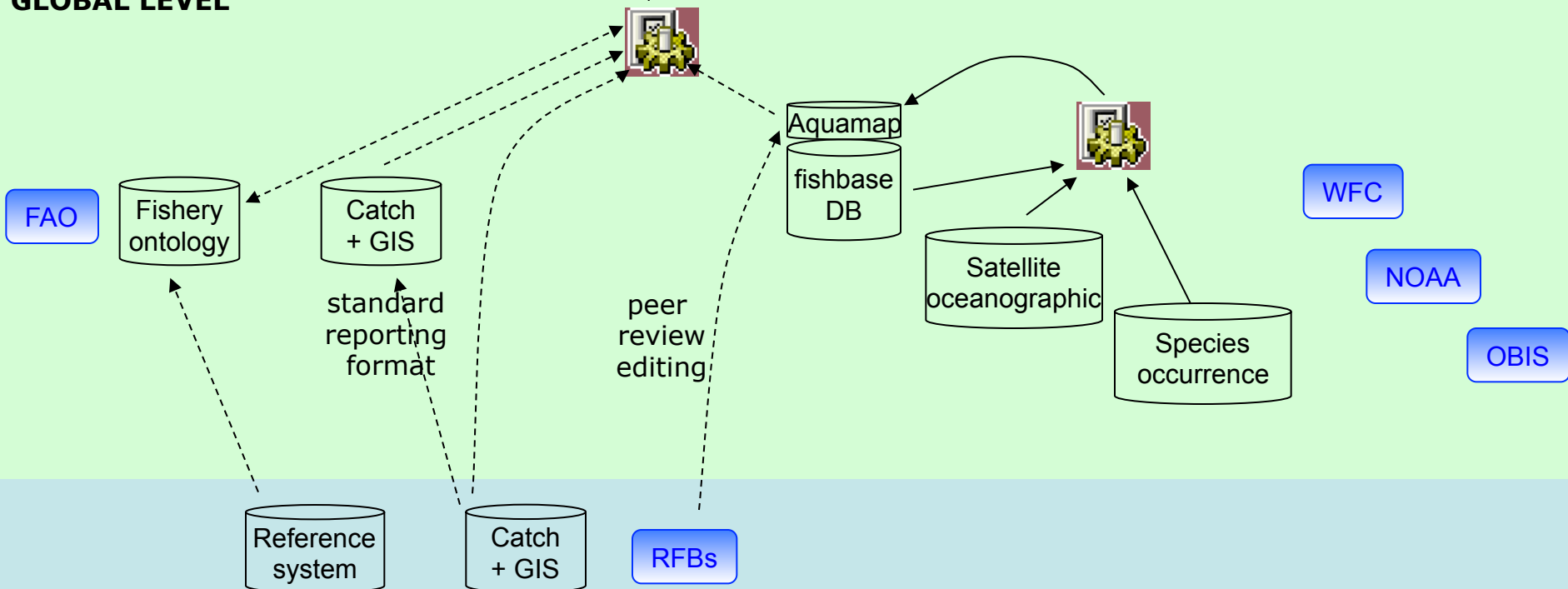
# 3.2 Organizational level and workflow

## Global organizational framework: High Seas



- Needs for High Seas fisheries
  - Organigram of possible workflow

### GLOBAL LEVEL



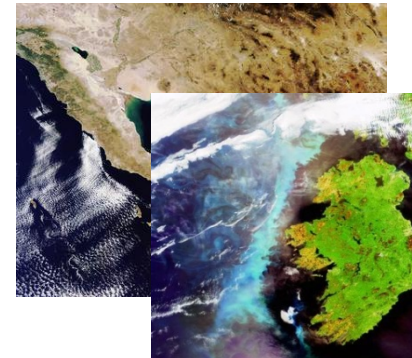
D4Science kick-off meeting, Marc Taconet  
10 January 2008, Sophia Antipolis (France)

- Predictive models on how species habitats may change are based on modifications that are happening or may happen to environmental factors
- The availability of data sources from different “providers”, e.g. pollution maps generated in the EO area, enhances the quality of the predictive models





- Ability to deal with a large variety of multi-type information sources
- Tools for extracting consumable knowledge from data
- Capability of identifying problem-specific set of resources

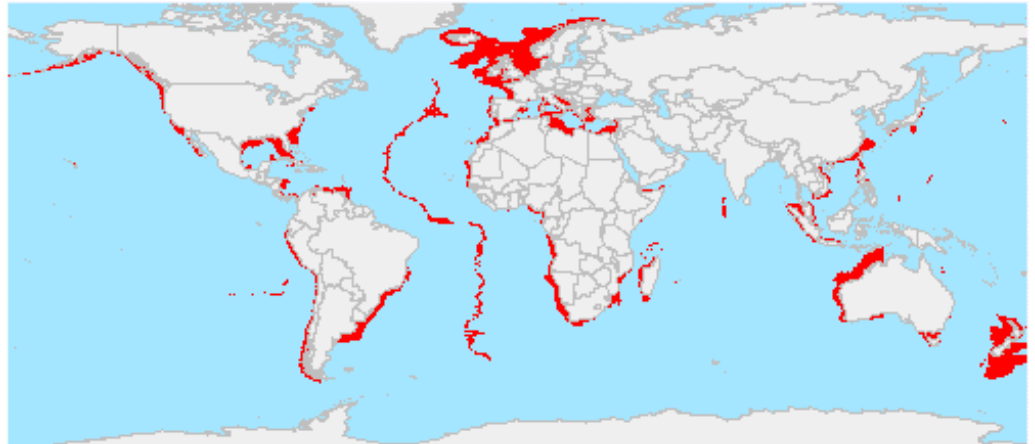


- Fishery and Aquaculture Country Profiles report the assessment of activities and trends in fisheries and aquaculture for the country concerned
- Broad array of actors involved in creating country profiles, they work together to retrieve and assemble the necessary data



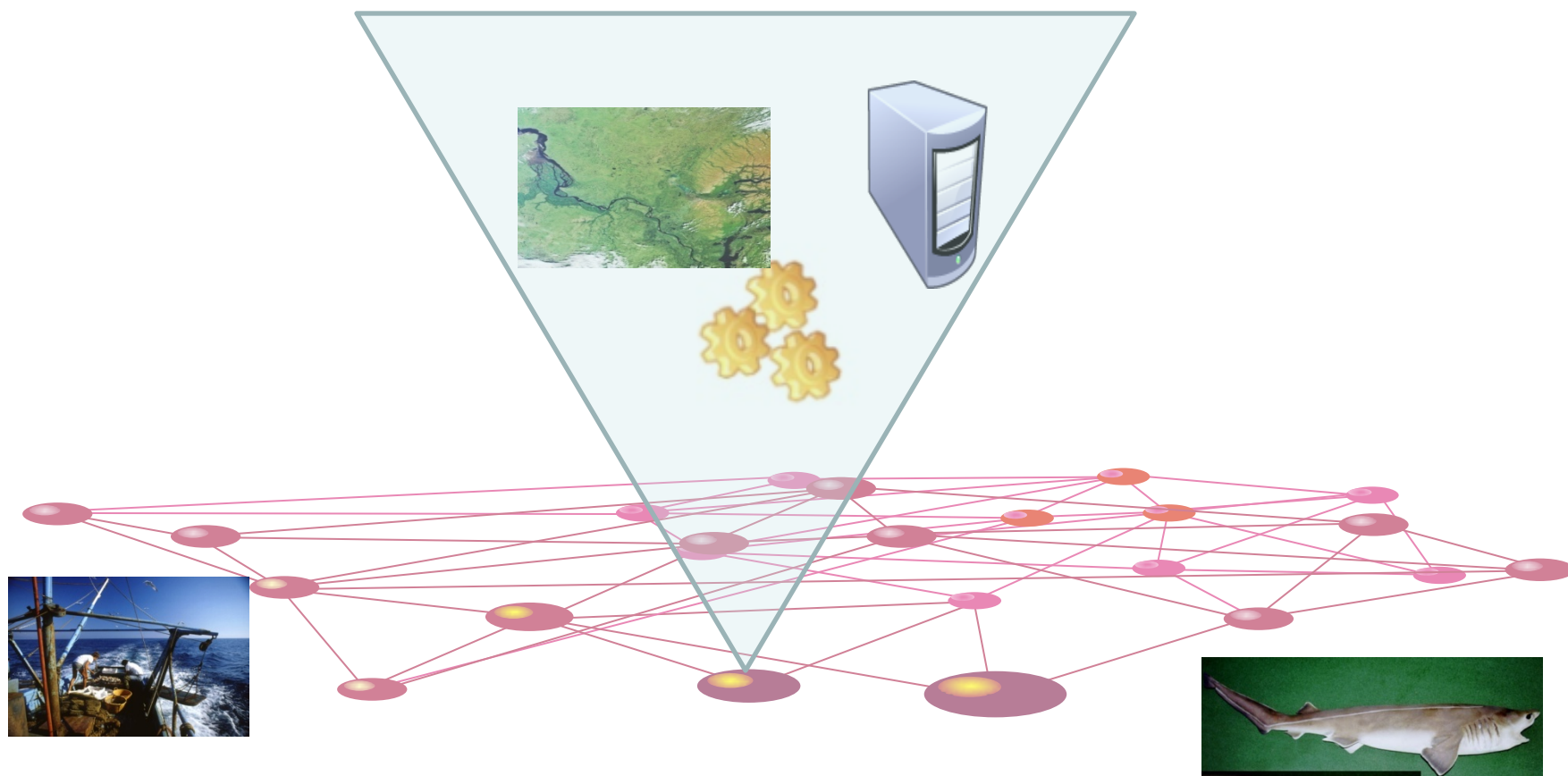
- Fisheries and aquatic resources inventories
  - Spreadsheets going through multiple versions from national to FAO level
- Management information
  - Text data produced at FAO level
- Statistics
  - Time-series statistics on capture, production, commodities and fleets by country, species and year
  - Food balance data, trade data
- GIS data
  - Species distribution
  - Aquaculture production
- Factsheets
  - XML-based content on aquatic species, aquatic resources, water areas, countries, aquaculture
- Other documents
  - Legal regulations
  - Document metadata
  - RSS news and events

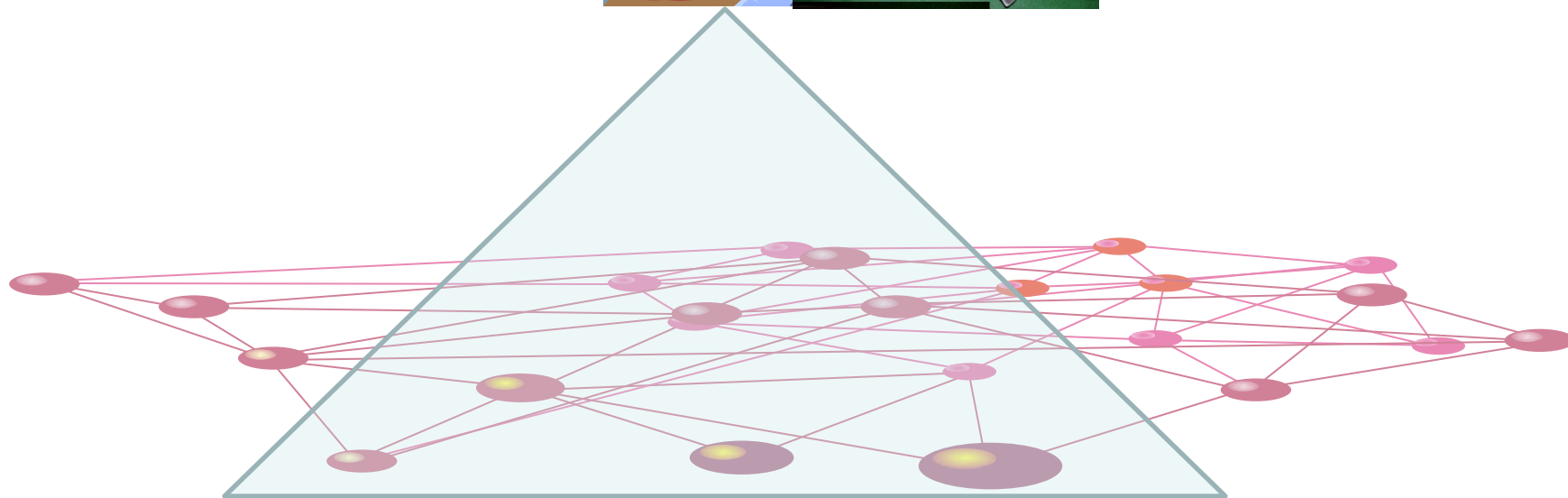
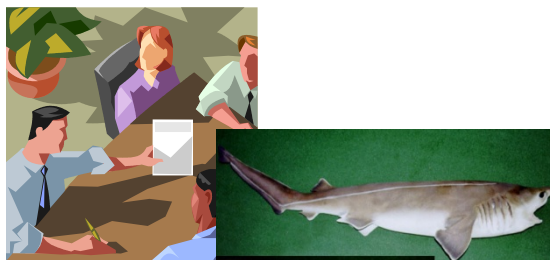
- Producing a country profile is a cumbersome process that takes a lot of time and consumes many resources
- It soon becomes outdated



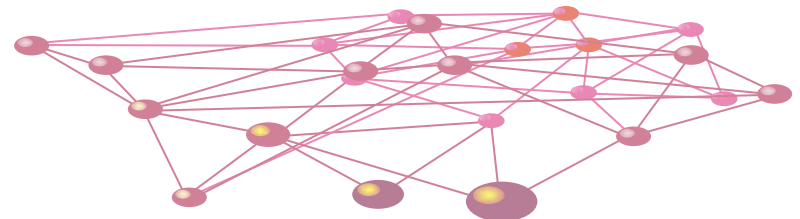
- Framework for simplifying discovery, access and production of relevant information
- Collaborative environments
- “On-demand” country profiles







- The problem is complex
  - Data resources are extremely heterogeneous
  - Data, services and processing resources must be used in synergy
  - Serving the needs of the user requires many layers of functionality
- The use of standards certainly facilitates the development of appropriate solutions





<http://www.d4science.eu>