- Introduction
  - The GENESIS FP7 project
  - The GENESIS solution’s architecture
- GENESIS experience with INSPIRE Network Services
  - INSPIRE Discovery services (and Catalogues and Metadata)
  - INSPIRE View and Download Services
  - INSPIRE Transformation and Invoke Services
  - Web services security
- Use case: Bavaria Air Quality Pilot
Project headlines:

- FP7 Call 2 DG INFSO Collaborative systems for environment management
- 3 years R&D project, starting September 2008
- Multidisciplinary team
- 29 partners in Europe
- Thematic application: Air Quality, Fresh Water Quality

The GENESIS FP7 project
Provide the technology to facilitate the construction of a network of services, so that:

- Each user can access and use a wide range of data and services independently from the data/services physical locations.
- Expert users/services providers can enrich the network by adding new services.
- Integrators can easily customise the solution for different thematic applications.
In convergence with GEOSS and INSPIRE, the GENESIS solution is based on Service Oriented Architecture:

- Eases the **discovery and access** to data and processing services through the Web (Portal, Geo Data visualisation portlets, Catalogues, Data access, Web Processing components)
- Provides a way to **wrap legacy systems into Web services** (Toolbox)
- Allows easy **orchestration of Web Services** in workflows (Workflow management)
- Provides a **set of generic** (thematic-neutral) **services** to speed up the set-up of an application
The GENESIS Architecture ‘extends’ the INSPIRE Architecture.
Discovery – Server Side

- Choice for ebRIM Application Profile to allow discovery of multiple resource types
- Supported Extension Packages
  - EO Products
  - Cataloguing of ISO Metadata (CIM)
  - Sensor ML
- OSS Implementation (Buddata)
- Interoperability with INSPIRE:
  - Facade that exposes CS-W ISO Application Profile
  - Allows discovery through CSW ISO AP Client

Diagram:

- Catalogue 2.0.2
  - OGC 07-006
- CSW ISO AP
  - OGC 07-045
- CSW ebRIM AP
  - OGC 07-110
- RIM
  - ISO/TS 150003
- Facade
- Metadata
  - ISO 19115, ISO 19119, ISO 19139
- GML Appl. Schema for EO Products
  - OGC 06-080
- SensorML
  - OGC 07-000
- eBRIM extension package for ISO (CIM)
  - OGC 07-038
- eBRIM extension package for EO
  - OGC 06-131
- eBRIM extension package for SensorML
  - OGC 09-163
- EO Collection Metadata
- EO Service Metadata
- INSPIREDatasetMetadata
- INSPIREdatasetSeriesMetadata
- INSPIREServiceMetadata
- GML 3.1.1
  - OGC 03-105
  - ISO 19136
- EO dataset Metadata
- GML 3.1.1
  - OGC 03-105
  - ISO 19136
- EO sensor Metadata
- O&M
  - OGC 07-022
  - ISO 19056
Discovery – Client Side
- Generic Portal framework that contains “client portlets”

- Extensible System that allows easy incorporation of additional Web Service Interfaces

- Currently Supported Catalogues
  - CS-W ebRIM – CIM
  - CS-W ebRIM – EOP
  - CS-W ebRIM – Sensor
  - CS-W ISO Application Profile

- Customizable Discovery GUI with choice of queryables

- Support for cross-catalogue discovery
Data Access via

- FTP, OGC WMS, OGC WFS, OGC WCS, OGC SOS
- Used as input or output of processing
- Archive service stores in a consistent way data and associated metadata to be later accessed via standard interfaces

Development of a prototype “INSPIRE NS SOAP Facade Component” that

- “SOAP Enables” existing OGC WMS/WFS implementations
- Follows the INSPIRE Technical Guidances/ WSDL proposal / SOAP Framework: SOAP 1.1 and using SOAP Header where possible
- Adds “static” multilinguality support
- Default SOAP Version is 1.1 but can be migrated to SOAP1.2 (in attendance of WSI Basic Profile 2.0)

Portal Dedicated Portlet (GeoData Visualisation) for the data display on the map and graphics (time series) also supports SOAP bindings.
GENESIS « Transformation Services »
- « Geo Information Services » typical GIS operations on vector and raster data
- Based on Web Processing Service OGC 05-007 Version 1.0.0
- With support for SOAP Bindings
- Apart from « Polling » also supporting W3C WS-Addressing and OASIS WS-Notification as means for supporting long running processes

GENESIS « Invoke Spatial Data Services »
- Orchestration of GENESIS Services
- Workflow Engine supporting OASIS BPEL 1.1
- Workflow itself published as OGC WPS

Other GENESIS Services published as WPS
- Data Fusion Services
- Decision Support Services
- Archiving and Resource Management Service
- Report Publishing Service
GENESIS WPS (Client Side)

- Portal (JSR286 Compliant) that hosts clients for various Services
- Portal Portlet Client gets configured with Facelets file (JSF View definition framework) + XSLT (transformation of user input into WPS ExecuteProcess input message)
- Automatic generation of « default » facelets and XSLT File on the basis of WPS Process Descriptions.
GENESIS Web Service Security

Based on User Management Interfaces for EO OGC 07-118 (Candidate Impl. Spec)

Composed of

- Security Token Service (STS)
- Policy Enforcement Point (PEP)
Display of results: Integrated health indexes over postal code zones via WMS
Thank you for your attention

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