



INSPIRE DT on Network Services, Status and work plan

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Content



Network services Drafting team

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1 - Objective



To draft Implementing rules for INSPIRE network services:

- **Discovery** services: to search for spatial data sets and services using metadata
- **View** services: to display spatial data sets, legend information and metadata
- **Download** services: to download copies of spatial data sets, or parts of such sets
- **Transformation** services: to transform spatial data sets for achieving interoperability
- “**Invoke** services”: to invoke spatial data services (chaining services)

- The possibility to link spatial data sets and services to the network (art.12)

2 – Organisation



DT Members:

Active members	
Olaf Østensen	NO
Markus Müller	DE
Didier Richard	FR
Tapani Sarjakoski	FI
Jean-Jacques Serrano (Chair)	FR
Graham Vowles (Co-Chair)	UK
Dominique Flandroit	BE
Michel Grothe	NL
Roland Wagner	DE
Lars Bernard	DE
Marek Brylski	PL
Lassi Lehto	FI
Christian Elfers	DE

One sub-group for each service

Facilitators :

- Michel Millot – JRC
- Ioannis Kanellopoulos - JRC

Additional members	
Yves Coene	BE
Wernher Hoffmann	AT
Corrado Iannucci	IT
Pedro J. Álvarez Pérez-Aradros	ES
Martin Tuchyna	SK

3 – Progress – Architecture & Discovery, View services



- Documents available for comments by SDIC/LMOs Dec. 2007:
 - Network Services Architecture.
 - Draft Discovery and View services IR.
- Documents commented by SDIC/LMOs => Feb. 2008
 - Architecture: ~ 200 comments.
 - Discovery and View services: ~ 800 comments.
- Comments resolution => May 2008
 - NS DT Meeting March 2008 (Munster).
 - Comment resolution workshop with SDIC/LMOs May 2008 (Ispra).
- Update of Network Services Architecture => June 2008
- Rewrite Draft Discovery and View services IR => June 2008
 - Draft IR document: abstract point of view, technology independent.
 - Technical Guidance: implementation point of view, link with standards, lifecycle adapted to technology changes and MS feedback.

3 – Progress – Download, Transformation services



- Download services
 - Draft IR available (NS DT internal document)
 - Technical Guidance
 - Based on WFS and FE (Filter Encoding)
 - Depends on current ISO projects for WFS and FE (in progress)

=> Download: item for the NS DT meeting (Maribor, 27&28 June)

- Transformation services
 - Draft IR available (NS DT internal document)
 - Technical Guidance available (NS DT internal document)

=> Transformation: item for the NS DT meeting (Maribor, 27&28 June)

- Invoke spatial data service services
 - No progress

4 – Technical overview



- Architecture
- Discovery services
- View services
- Download services
- Transformation services

⇒ More technical details Tuesday 24, 14:30 in the NS Workshop:

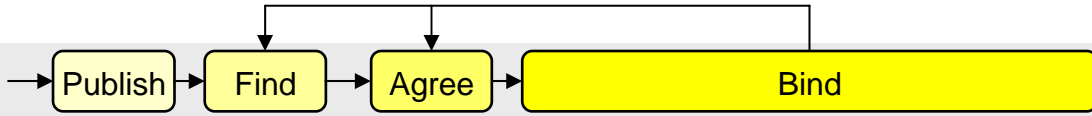
- Architecture
- Discovery services
- View services

4 – Technical overview - Architecture



- Architecture diagram (next slide):
 - Publish-find-bind pattern
 - Separation between 4 layers: Application, GeoRM, Service, Data
- INSPIRE services shall be Web Services (W3C):
 - SOAP protocol to be used for INSPIRE services
- Transport of a Rights Management Key
 - No standards available for managing licences
 - GeoRM is a conceptual model, with some test implementations
- Multilingualism: rules for each service, language parameter mandatory
- Performance requirements => 6 criteria selected
 - Performance, Capacity, Availability (shall be monitored)
 - Reliability, Security, Compliance

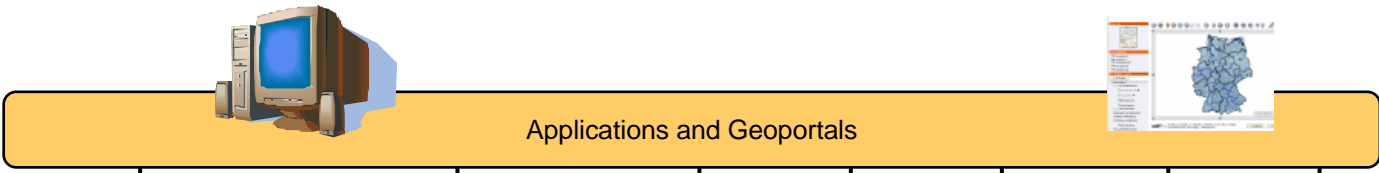
Process



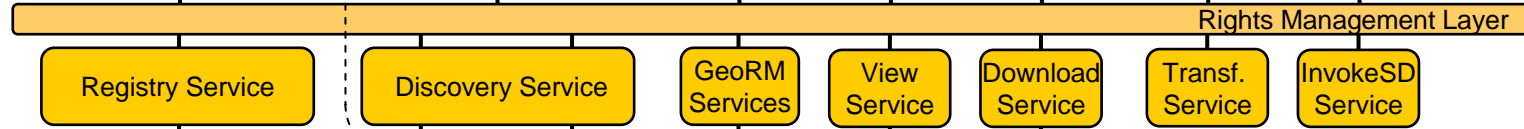
Phases

Tiers

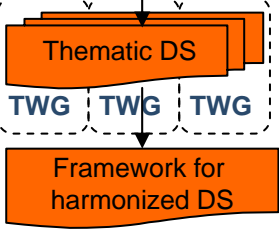
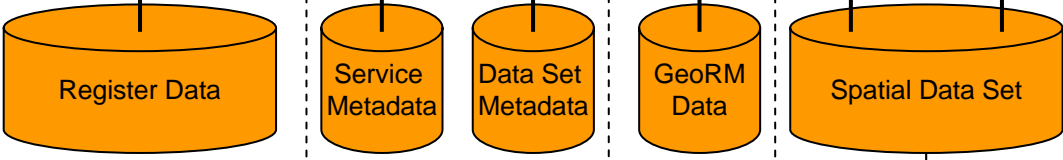
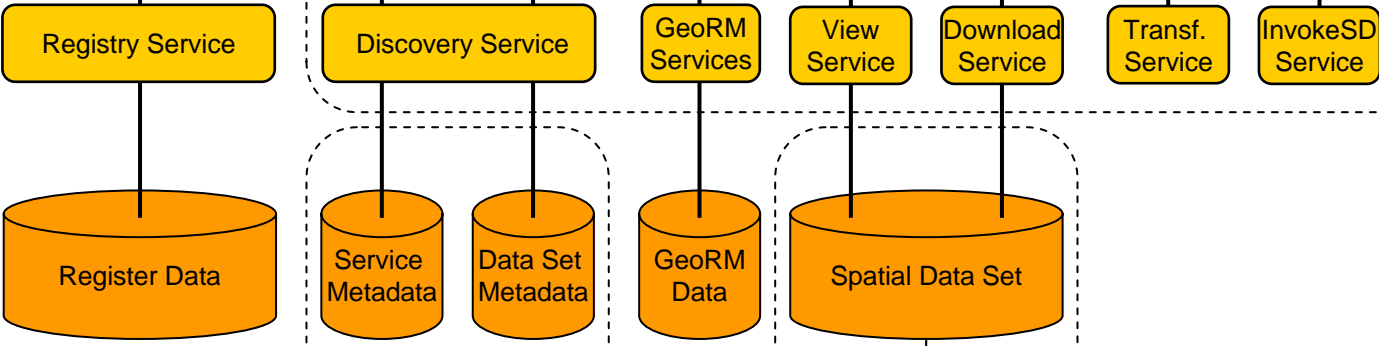
Appl.



Service



Data



- Publish-find-bind pattern
- Separation between
 - Application layer
 - GeoRM Layer
 - Service Layer
 - Data Layer

DT MD

DT DS

DT NS

4 – Technical overview – Discovery Services



- Name: INSPIRE Discovery Service
- Role: to support discovery, evaluation and use of datasets and services through their metadata properties
- The Metadata model is defined by the Metadata IR.
- The Query model defines search criteria and filter operators.

<u>Functions</u>		
Get Service Metadata	Provides information about the service	M
Get Information Model Metadata	Provides description of the information model supported by the Discovery service	M
Discover metadata	Requests metadata based on a query statement	M
Get Metadata	Retrieves metadata from a result set, based on ID	M
Get Domain Metadata	Provides the domain value of a metadata element	O
Publish Metadata	To push metadata into a discovery service datastore	(1)
Collect Metadata	To pull metadata from a discovery service datastore	(1)

(1) One of these two functions is mandatory

4 – Technical overview – Discovery Services



- Performance requirements:
 - Performance: to send one metadata record within 3 s
 - Availability: service up by 99% of the time, no more 15 mn downtime per day during working hours
 - Capacity: 30 simultaneous service requests within 1 s

- In the **Technical Guidance**, the proposal for INSPIRE Discovery services is:
 - OGC CSW : OGC Catalogue Service for the Web
 - According to requirements from Metadata IR, the proposal is to use the ISO 19115/19119 Information Model for the catalogue:
 - => standard : OGC CSW 2.0.2 AP ISO 1.0
 - Query language: OGC Filter Encoding

4 – Technical overview – View Services



- Name: INSPIRE View Service
- Role: to provide a visual representation of geographic and thematic information.
- Metadata: metadata of datasets represented in layers defined by the metadata IR.
- Temporal data dimension: for data themes with temporal dimension, the view service uses the timeline to display 2D snapshots allowing time slices representation.
- Dataset and layers: a layer is a structure of a view service used to display data. Layer elements must be defined: title, name, keywords, legend, ...

<u>Functions</u>		
Get Service Metadata	Provides information about the service	M
Get Map	Provides a map (image spatially referenced) containing information coming from the datasets	M
Get Feature Information	Provides information about features at a selected point	O

4 – Technical overview – View Services



- Performance requirements:
 - Performance: to send a 470 Kb image (800x600, 8bits) within 5 s
 - Availability: service up by 99% of the time, no more 15 mn downtime per day during working hours
 - Capacity: 20 simultaneous service requests per second

- In the **Technical Guidance**, the proposal for INSPIRE View services is:
 - => ISO 19128 : WMS (Web Map Service) 1.3

 - Contact Information: address, email, phone (email preferred)
 - Layer name & title: mandatory
 - Coordinate Reference Systems: list of CRS provided, one is mandatory
 - Legend: legend URL mandatory, format PNG or HTML
 - Language parameter mandatory
 - Styling: default style shall be defined, possibility to use various styles
 - Metadata: metadata URL, format text/xml (ISO19139)
 - Useful scale range: min and max scale denominators recommended (related to themes and also to CRS)

4 – Technical overview – Download Services



- Name: INSPIRE Download Service
- Role: to provide access to geographic and thematic information in datasets of INSPIRE themes
- Two types of Download services:
 - A. access to pre-defined datasets
 - B. direct access to data based upon user defined criteria (filter)

<u>Functions</u>		<u>A</u>	<u>B</u>	
Get Service Metadata	Provides information about the service	X	X	M
Get Features	Retrieves all feature instances in the dataset	X		M
Get Feature	Retrieves all feature instances according to user queries		X	M
Describe Feature Type	Provides the description of feature types and/or filter models offered by the service		X	M
Get Feature Attribute Value	Provides the values of selected feature properties		X	M

4 – Technical overview – Download Services



- Performance requirements (proposals, to be reviewed):
 - Performance: initial response 3 s, then > 0.5 MB/s
 - Availability: service up by 99% of the time, no more 15 mn downtime per day during working hours
 - Capacity: 100 simultaneous service requests within 3 s
- In the **Technical Guidance**, the proposal for INSPIRE Download services should be:
 - Pre-defined data sets => standard Internet protocols (like FTP)
 - Direct access data with queries =>
 - Web Feature Service: OGC WFS / ISO 19142 (project)
 - Filter Encoding: OGC Filter Encoding / ISO 19143 (project)

4 – Technical overview – Transformation Services



- Name: INSPIRE Transformation Service
- Role: to transform data content from native data forms to INSPIRE compliant forms
- High relation with “direct access” Download service

<u>Functions</u>		
Get Service Metadata	Provides information about the service	M
Transform	Carries out the current transformation process	M
Get Transformation	Retrieves the definition of a specific transformation	O
Put Transformation	Stores a transformation definition into the service	O

Transform Parameters: Input data, Source Model, Target Model, Model Mapping

Main transformation types: format transformations, language translations, geometric transformations, and schemas translations.

4 – Technical overview – Transformation Services



- Performance requirements: not yet assessed
- In the **Technical Guidance**, the proposal for INSPIRE Coordinate Transformation service should be:
 - An Application Profile of the Web Processing service (WPS) based on the Web Coordinate Transformation Service (WCTS)
 - WPS is an OGC standard specification. Specific processes can be specified as Application Profiles of the WPS.

A mapping is defined between INSPIRE Transformation Service and WPS:
ex: Transform operation => Execute (TransformCoordinate)

4 – Next steps (proposal)



Description	Milestone	Who
Discovery and View services		
SDIC/LMO Consultation	2007 – 12	DT
Final Draft IR	2008 – 06	CT
Adoption of IR	2008 – 11	Comitology
Download services		
SDIC/LMO Consultation	2008 – tbd	DT
Final Draft IR	2009 – tbd	CT
Adoption of IR	2009 – tbd	Comitology
Coordinates Transformation Services		
SDIC/LMO Consultation	2008 – tbd	DT
Final Draft IR	2009 – tbd	CT
Adoption of IR	2009 – tbd	Comitology



Thank you for your attention

More technical details Tuesday 24, 14:30 in the NS Workshop:

- Architecture
- Discovery services
- View services