

S@NY

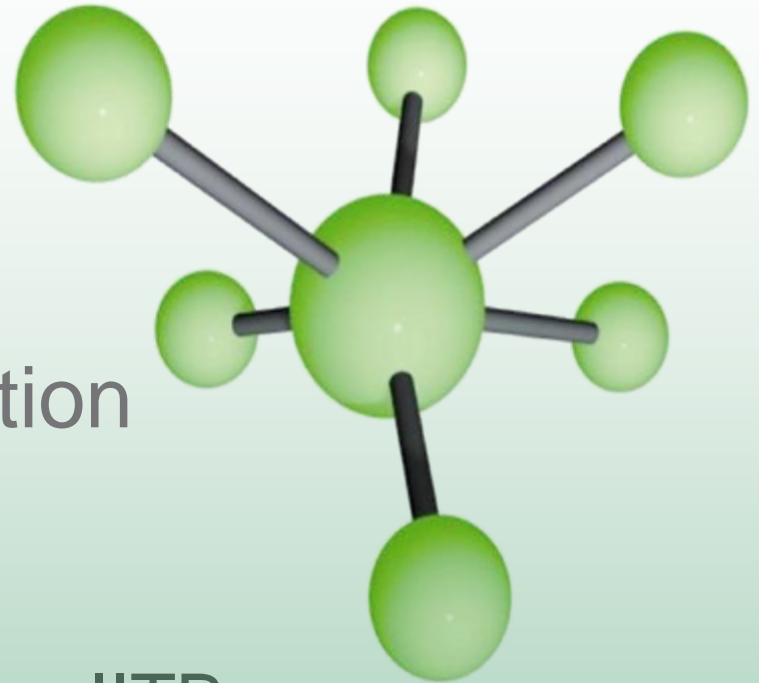
Automatic Creation of
INSPIRE Meta-information
from SWE Services

Désirée Hilbring, Fraunhofer IITB

hilbring@iitb.fraunhofer.de

Agile 2009 – Challenges in Geospatial Data Harmonization,
Hanover

Copyright © SANY Consortium



1. Motivation
2. Mapping from SOS to INSPIRE
3. Architecture
4. Semantic Annotation
5. Demo-Movie

INSPIRE requirement:

- ✿ Provision of metadata about geospatial data

Situation at concerned institutions:

- ✿ Services exists or are in development to support everyday needs
- ✿ Example case: Austrian UBA develops a Sensor Observation Service to access their air quality data resources

Idea:

- ✿ Usage of metadata provided by SOS for creation of INSPIRE metadata

Offerings of example SOS:

- ✿ Observations from different stations in Austria
- ✿ Spatially combined observations regarding air quality phenomena

INSPIRE metadata schema is an adapted version of ISO 19115 for datasets and ISO19119 for services:

- ✿ Metadata about data and services is required

Metadata source:

- ✿ Metadata source: capabilities of SOS

SOS Capabilities

ows:Title = SOSuwedat10
ows:Post = „http://enviro5.at/sos“
sos:ObservationOffering gml:id=„component-RF“
sos:ObservationOffering gml:id=„station-S176“

ISO 19119 (Service)

gmd:Title = „SOSuwedat10“
gmd:CI_OnlineResource = „http://enviro5.at/sos“
ows:Post = „http://enviro5.at/sos“

ISO 19115 (Data)

gmd:Title = „Component: Relative Feuchte“
gmd:MD_Identifier=„component-RF“

ISO 19115 (Data)

gmd:Title = „Station Kristein“
gmd:MD_Identifier=„station-176“

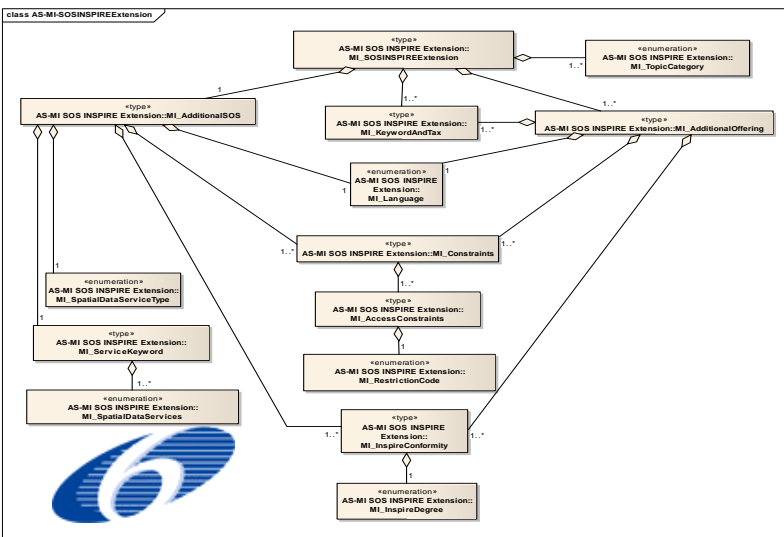
INSPIRE required element	m/o	Availability in typical SOS instances	Explanation
Title	m	yes	
Abstract	m	only for service metadata	
Type	m	yes	
Resource Locator	o	yes	
Identifier	m	yes	
Coupled Resource	m	yes	
Resource Language	m	no	Not foreseen in SOS Capabilities
Topic Category (fixed list)	m	no	Not foreseen in SOS Capabilities
Spatial data service type (fixed list)	m	no	INSPIRE service types != OGC service types

INSPIRE required element	m/o	Availability in typical SOS instances	Explanation
Keyword Value	m	only for service metadata	INSPIRE requires GEMET Keyword != SOS observable properties
Keyword Vocabulary	m	no	INSPIRE requires specification of used taxonomy
Geographic Location	m	yes	
Temporal Reference	m	yes	
Lineage	m	no	Different lineage statements are needed for each offering
Spatial Resolution	o	no	

INSPIRE required element	m/o	Availability in typical SOS instances	Explanation
Conformity	m	no	Similar issue on OGC mailing list to use ows:constraint
Conditions for access and use	m	only for service metadata	Different conditions are needed for each offering
Limitations on public access	m	only for service metadata	Different limitations are needed for each offering
Responsible Party	m	yes	
Responsible Party Role	m	yes	
Metadata Point of Contact	m	no	Usage of harvester capabilities
Metadata Language	m	no	Automatic creation: same as „Resource Language“

How to solve the problems?

- ✿ Provision of missing required information in an External Document (XML) by service administrator
- ✿ Link External Document to capabilities of SOS
- ✿ Once the External Document has been created it can be reused via updating metadata documents of the SOS
- ✿ Usually adaption of External Document will be needed, if new SOS offerings are created



```

- <ows:ServiceProvider>
  <ows:ProviderName>Austrian Research Centers</ows:ProviderName>
  <ows:ProviderSite xlink:href="http://www.arcs.ac.at"/>
- <ows:ServiceContact>
  <ows:IndividualName>Thomas Bleier</ows:IndividualName>
  <ows:PositionName/>
- <ows:ContactInfo>
  + <ows:Phone></ows:Phone>
  + <ows:Address></ows:Address>
  <ows:OnlineResource xlink:href="http://sany-inspire.iitb.fraunhofer.de/axis2/UweDatExtDoc.xml"/>
</ows:ContactInfo>
<ows:Role>resourceProvider</ows:Role>
</ows:ServiceContact>
</ows:ServiceProvider>
  
```



Service Administrator tasks:

- Register new SOS



Web Harvest Client

Web Catalogue Client

Harvester

SANY Catalogue

Transaction

GetCapabilities

SOS

Capa-
bilities

ISO
19139

ISO
19139

SOS
Capabilities

External Document

XSLT-
Mapping

INSPIRE Catalogue

Problem:

- ✿ Different SOS use different URNs for phenomena with identical semantic meaning:
 - ✿ “Relative moisture” has label “rf” in Austrian SOS
 - ✿ “Relative moisture” has label “relativeHumidity” in German SOS

Idea:

- ✿ Annotate the SOS with an ontology describing phenomena (SAWSDL)
- ✿ Metadata documents can be extended with ontology concepts

Service Administrator tasks:

- Register new SOS



Web Harvest Client

Web Catalogue Client

Harvester

SANY Catalogue

Transaction

GetCapabilities

SOS

property:
relativeHumidity

ISO 19139

ISO 19139

ISO 19139

rm

SOS Schema with SAWSDL

Ontology

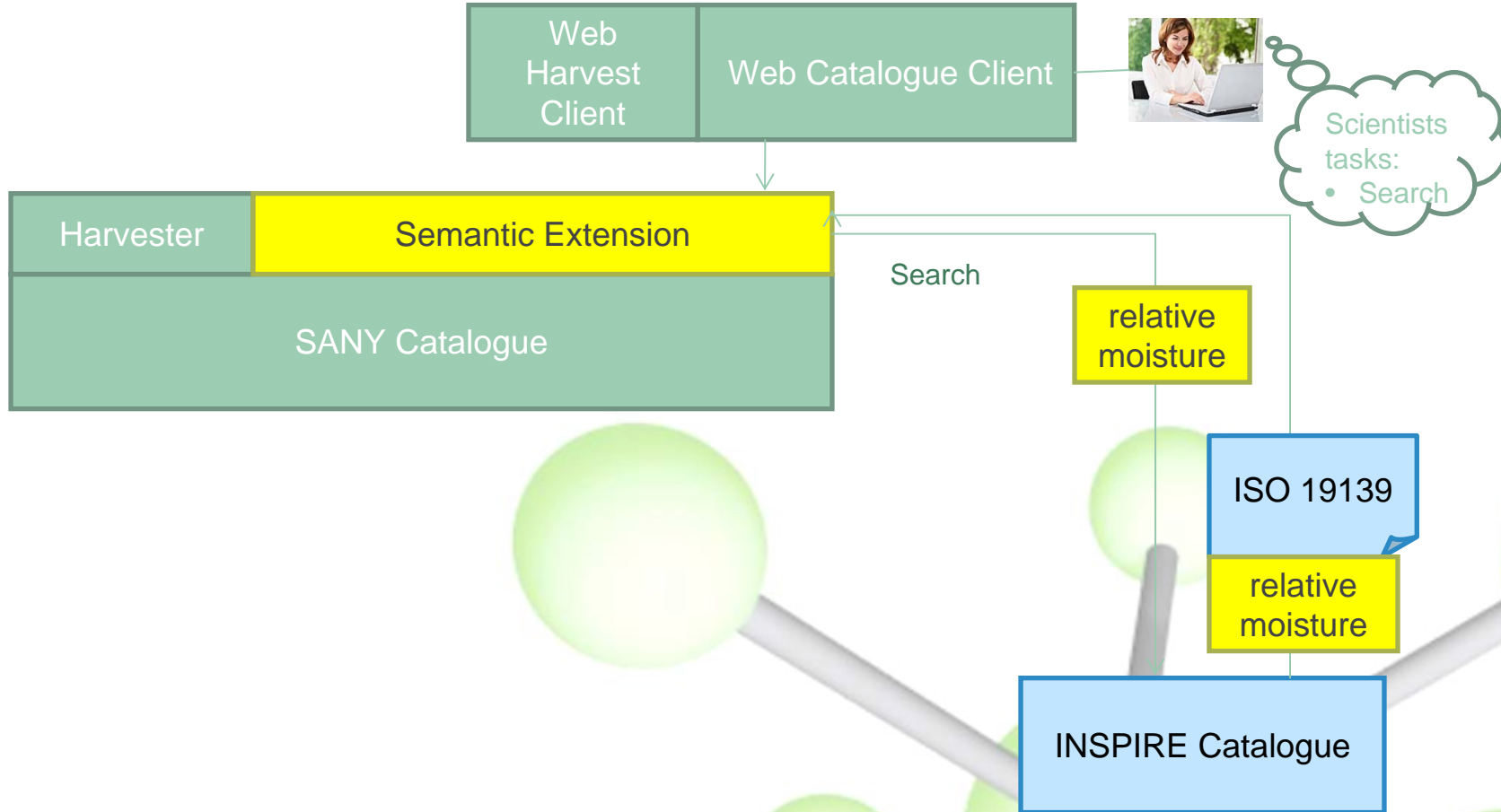
Lifting Mapping Schema:

relativeMoisture =
relativeHumidity =
rf

relative
moisture

Semantic
Annotation

INSPIRE Catalogue



The movie will show:

- ✿ How to harvest an existing SOS
- ✿ Advantages of semantic annotation for the discovery of metadata

Test client:

- ✿ Client URL: catalogueclient.iitb.fraunhofer.de
- ✿ Catalogue: SANY Inspire

- ✱ First test implementation realising harvesting of the air quality data of the Austrian UBA is in development
 - ✱ Need for an adequate ontology containing air quality phenomena
 - ✱ GUI of Harvester Client will be improved to support creation of the External Document
- ✱ Principle could be re-used to support other OGC services