

WFD Reporting and Regional Water Information Systems



Fraunhofer Institut
Informations- und
Datenverarbeitung

Dipl.-Inform.
Thomas Usländer

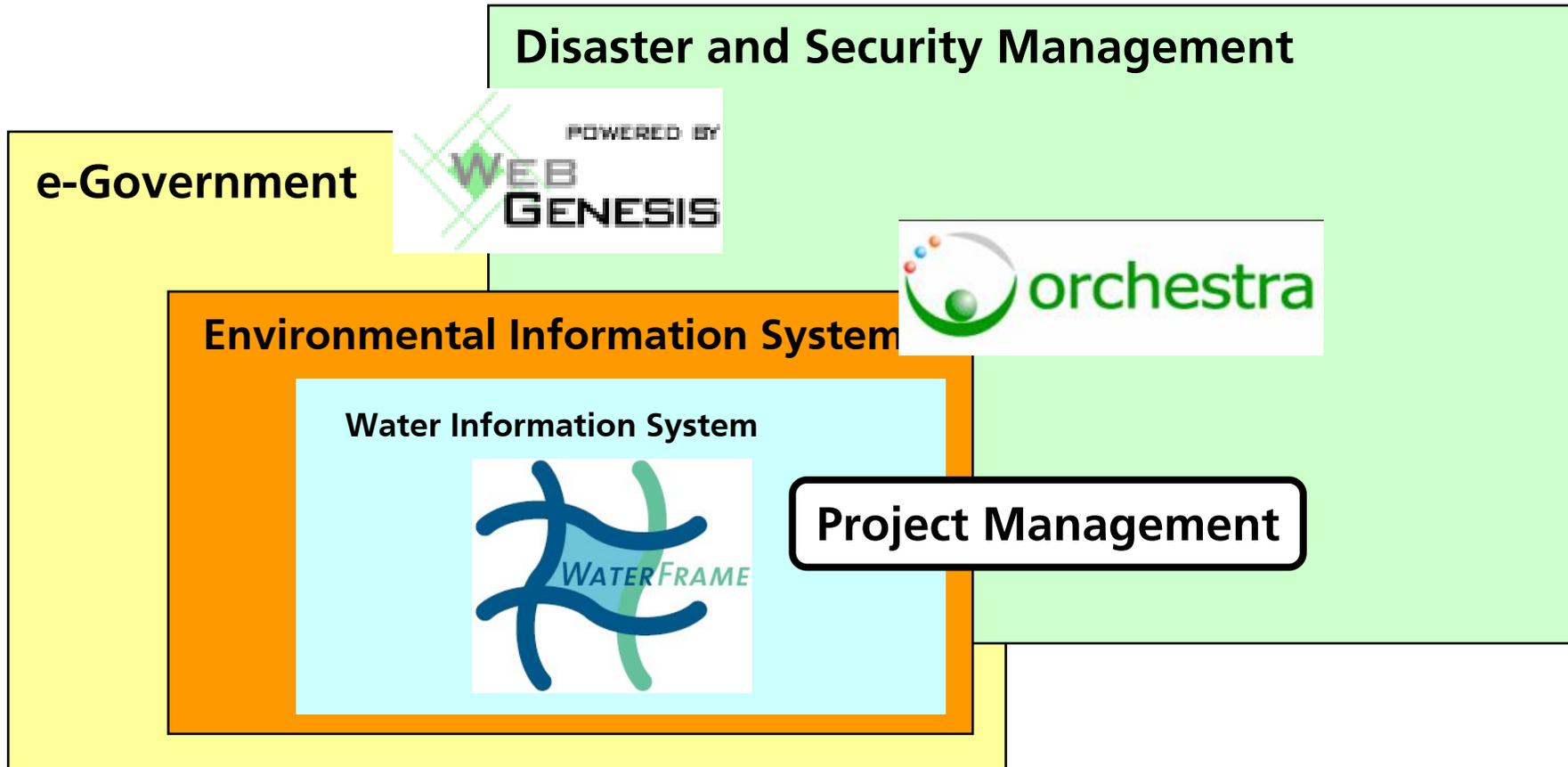
WaterFrame – Framework for Regional Water Information Systems



Investments in the WaterFrame/WasserBLICK Interface

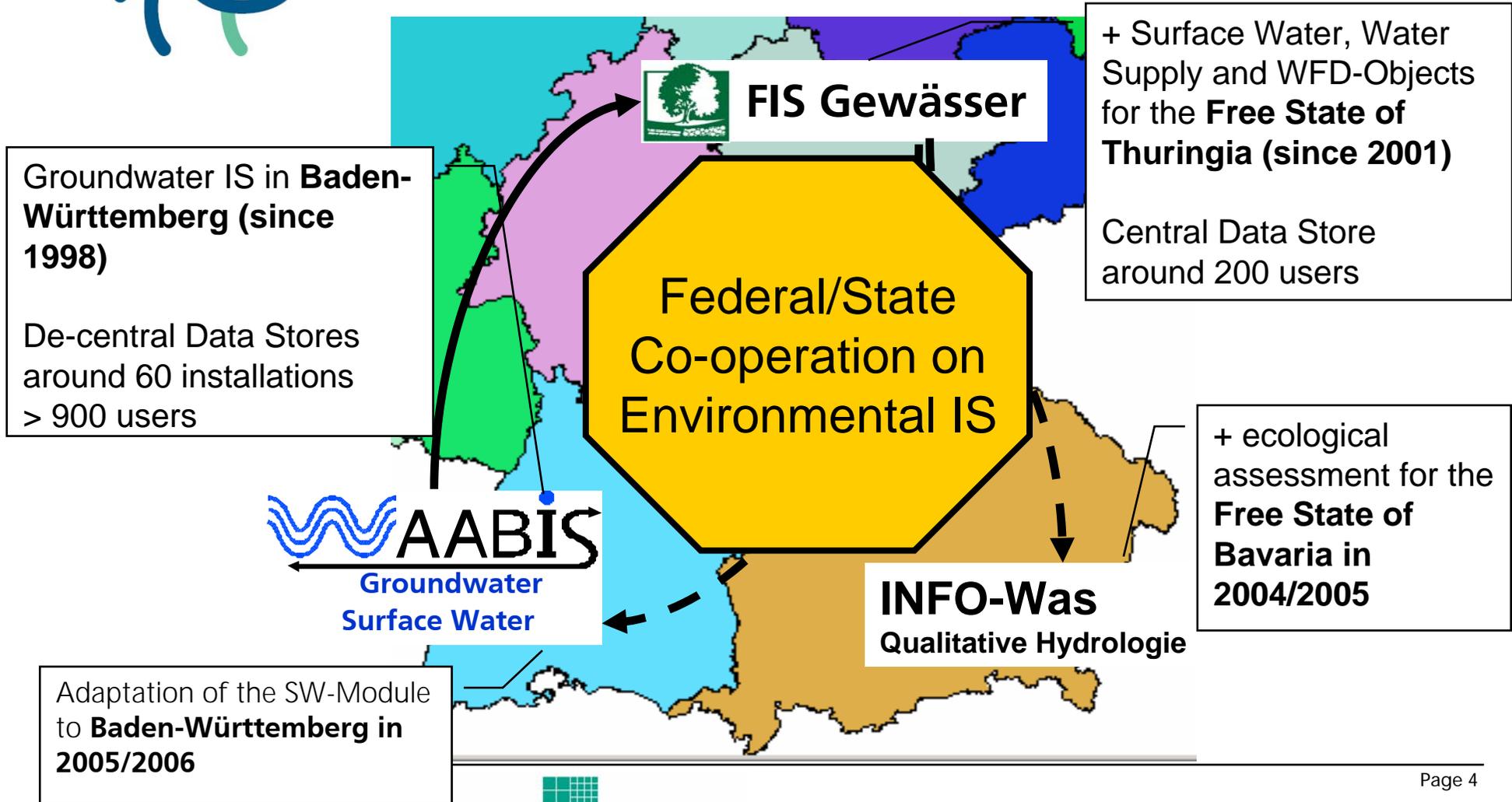
Reporting in the Context of European Initiatives like INSPIRE, ORCHESTRA and GMES

E-Government Portfolio of Fraunhofer IITB

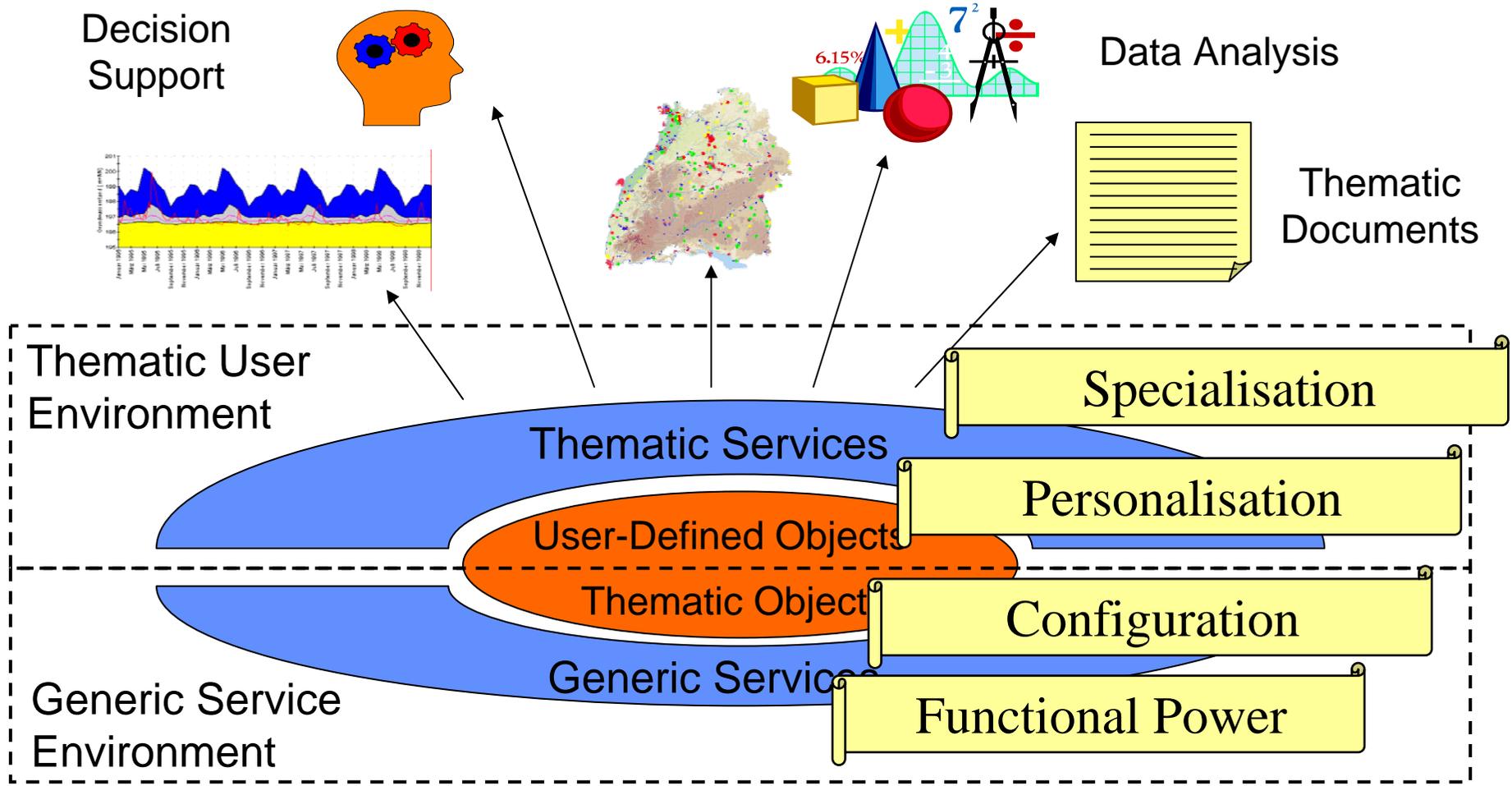




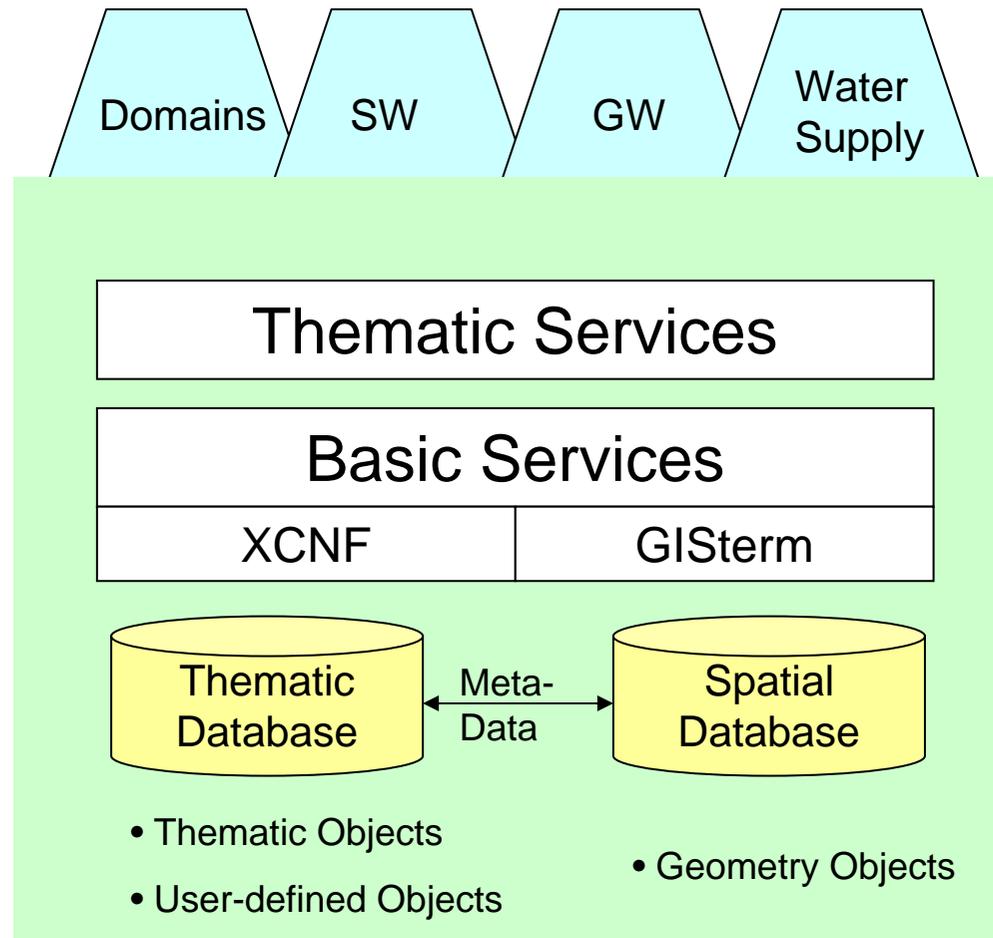
WaterFrame Information Systems



Thematic User Environment of WaterFrame IS



Structure of WaterFrame/FIS Gewässer



Information Integration in WaterFrame/FIS Gewässer

Monitoring Stations of different Domains

→ Groundwater + Surface Water + Meteorology

Measurements of different Domains

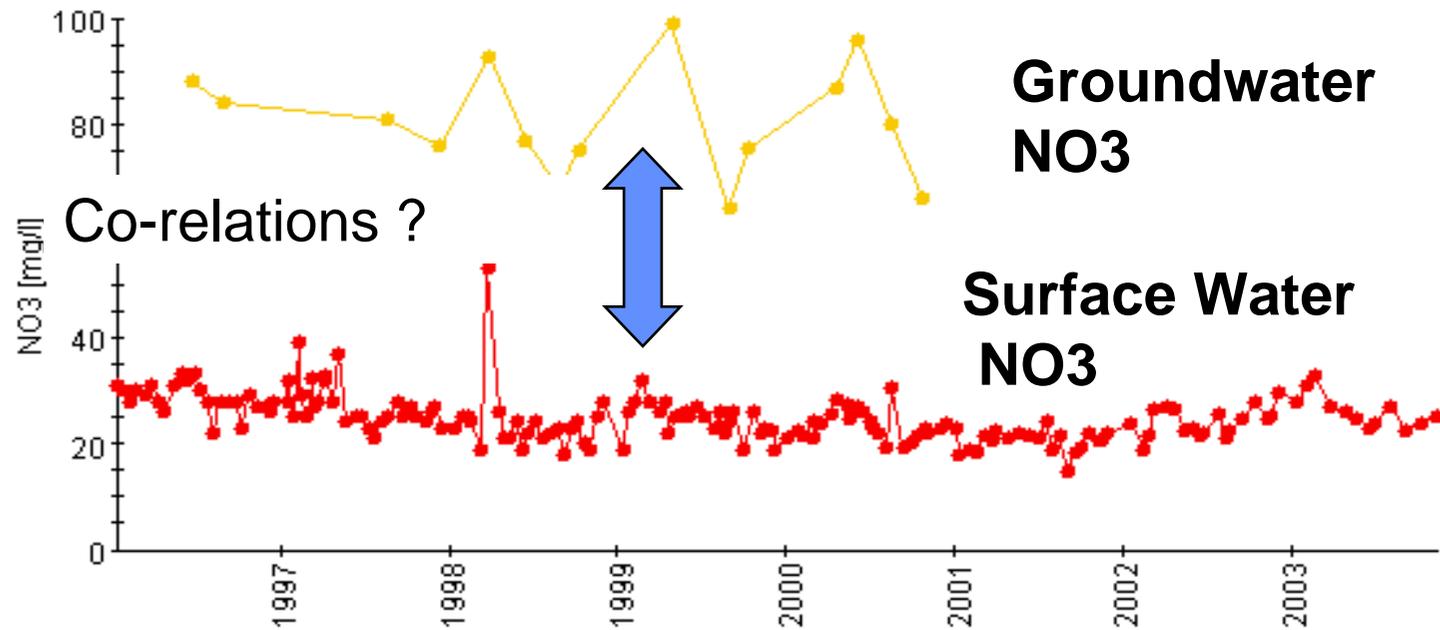
→ Groundwater + Surface Water + Meteorology

→ quantitative and qualitative measurements

Integrated and personalised view through user-defined objects

Mapping to WFD-relevant Objects

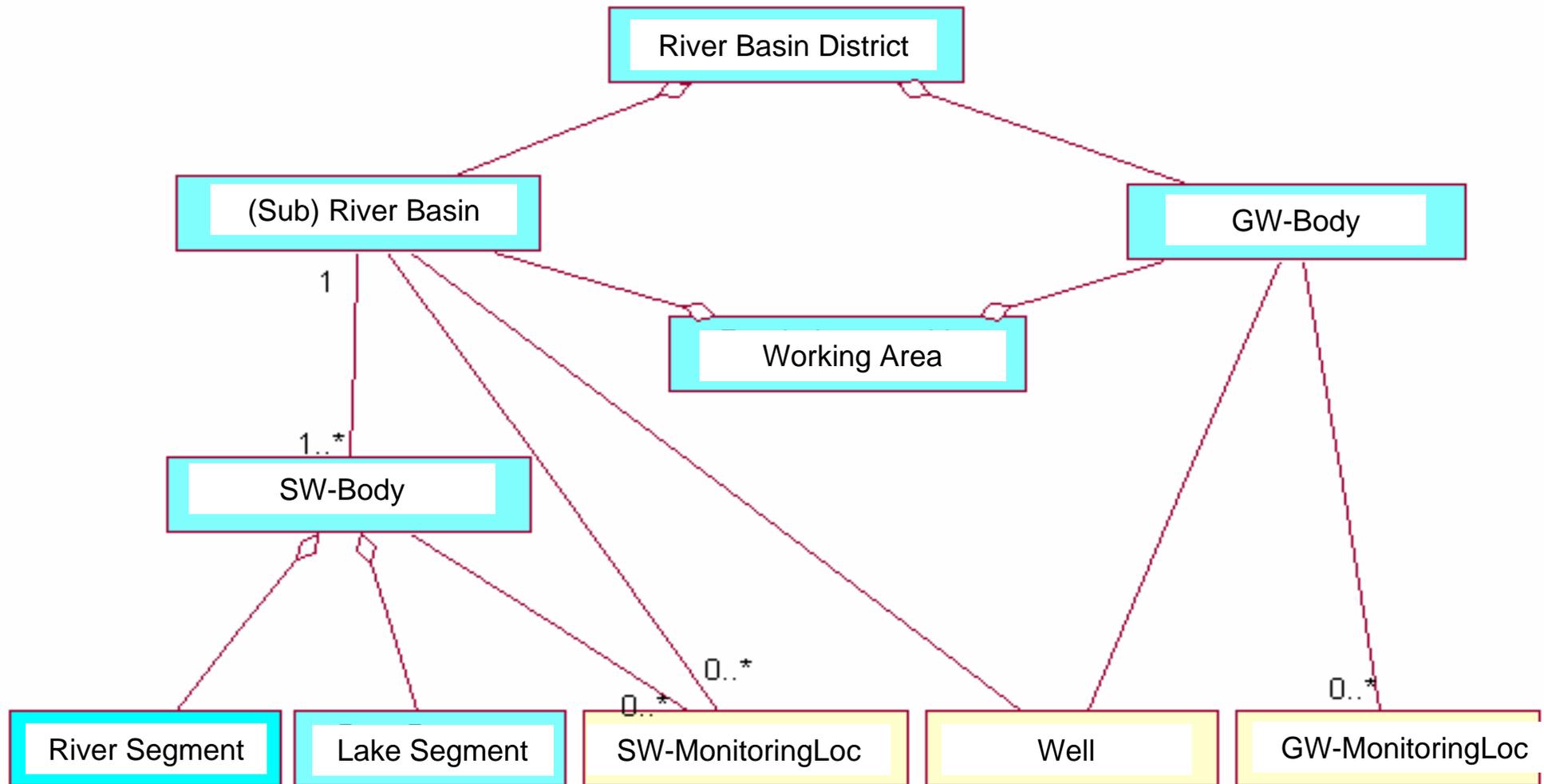
Integrated View upon Groundwater and Surface Water Measurements



- Camburg-Stöben(2198):NO3 [mg/l]
- Willschütz / alte "Biolandqu."(118180):NO3 [mg/l]

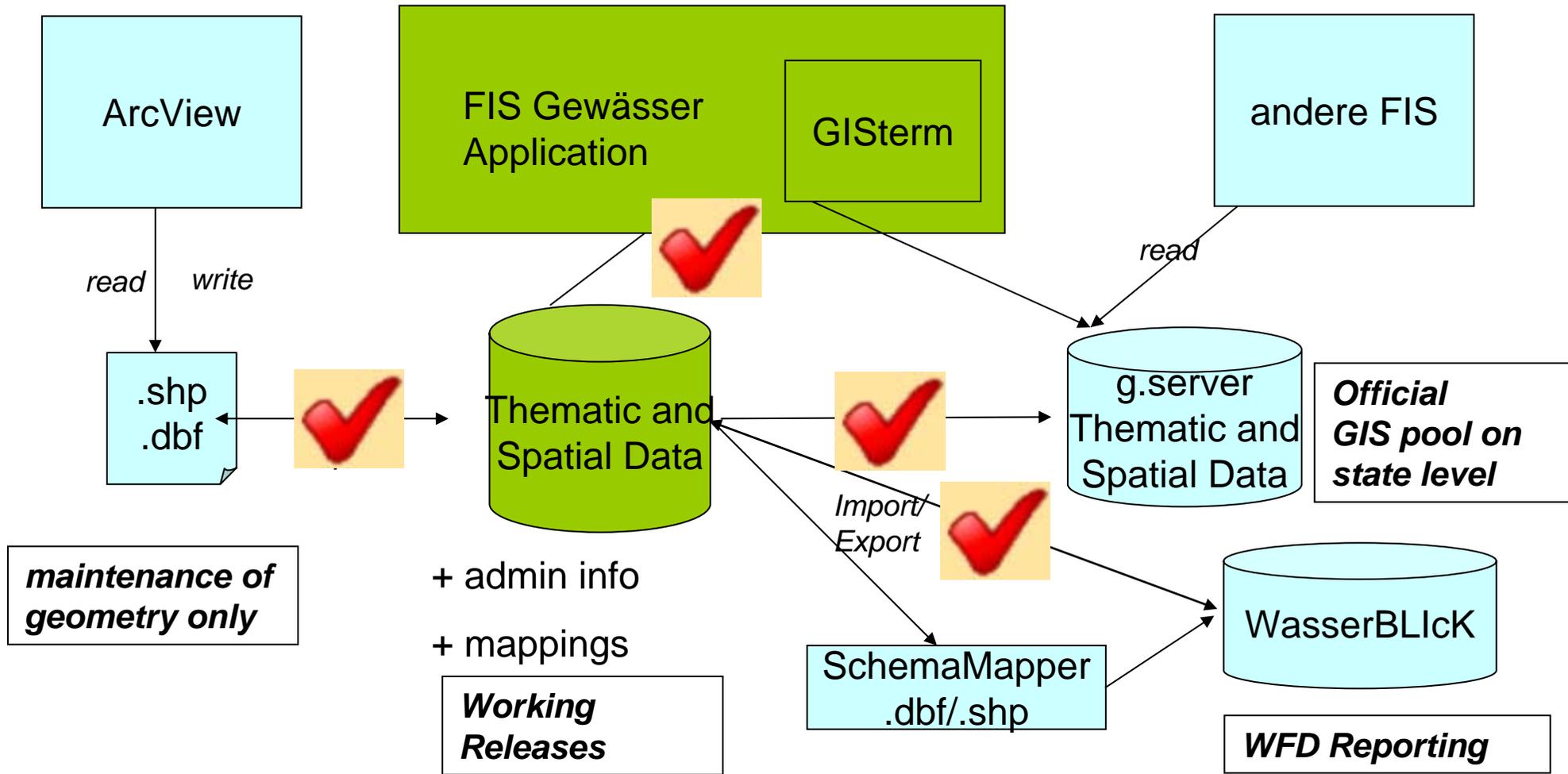


Support of WFD-Objects



IITB

Workflow for the Processing of WFD-Objects



maintenance of geometry only

+ admin info
+ mappings

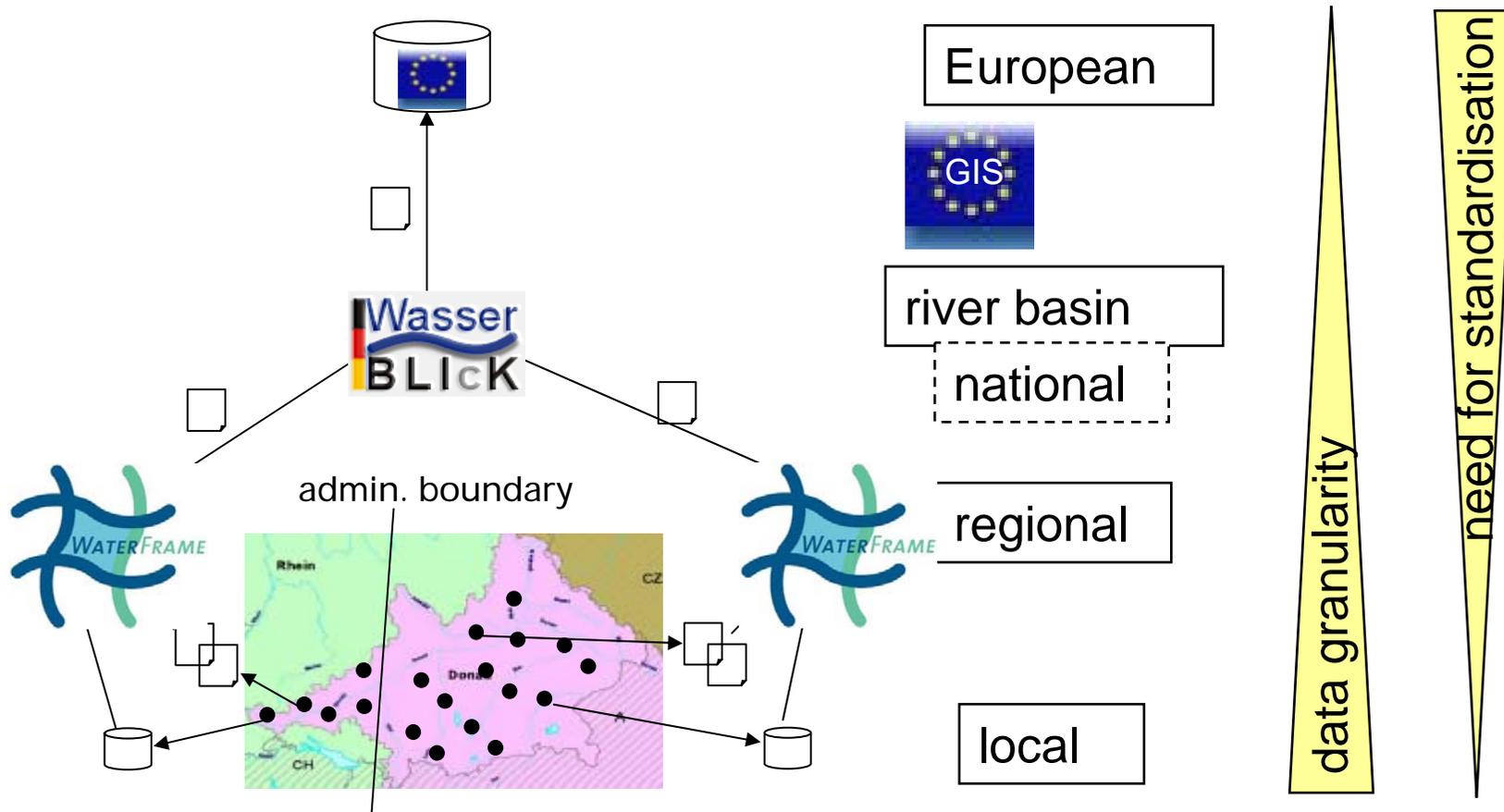
Working Releases

Official GIS pool on state level

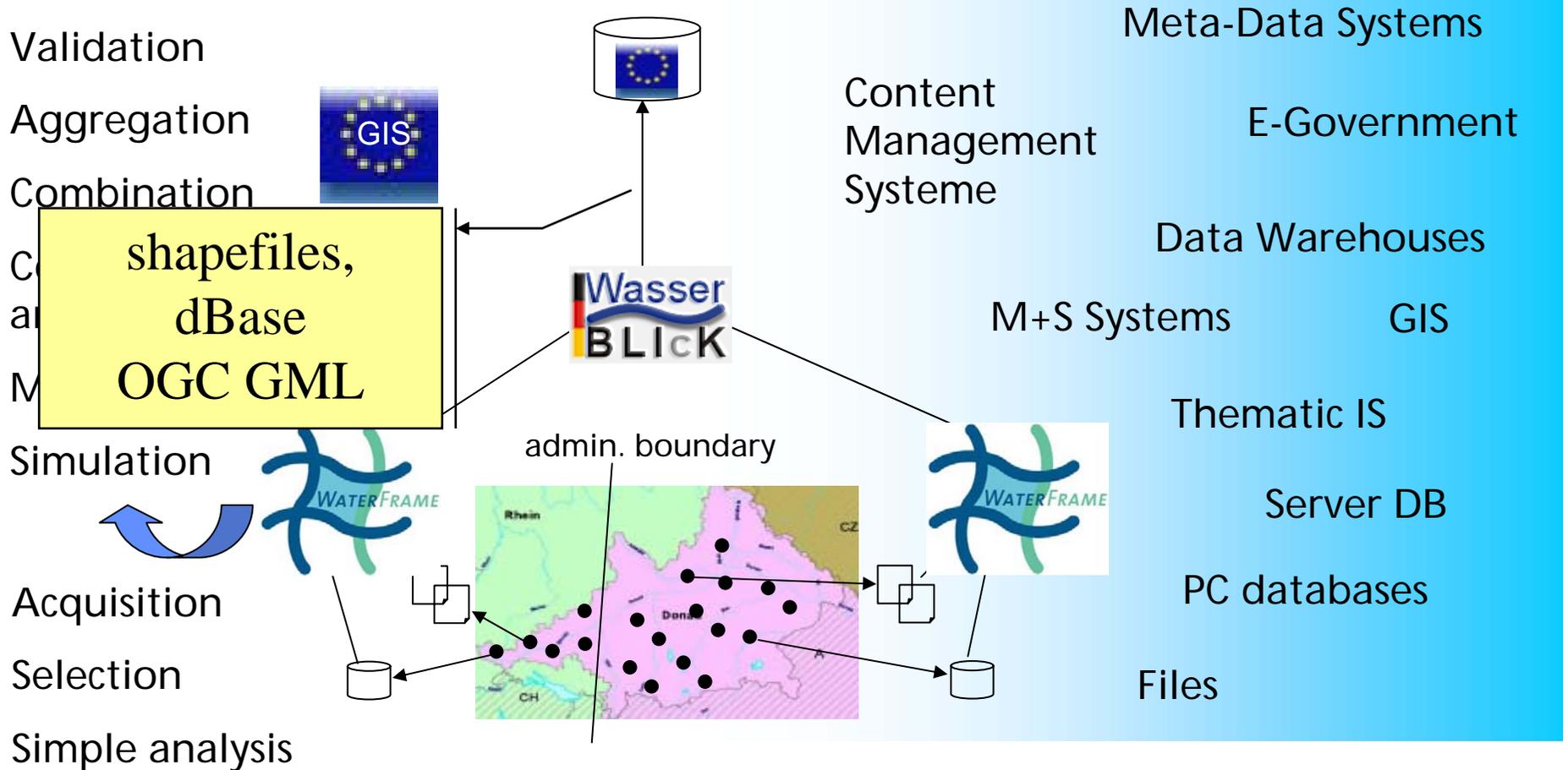
WFD Reporting



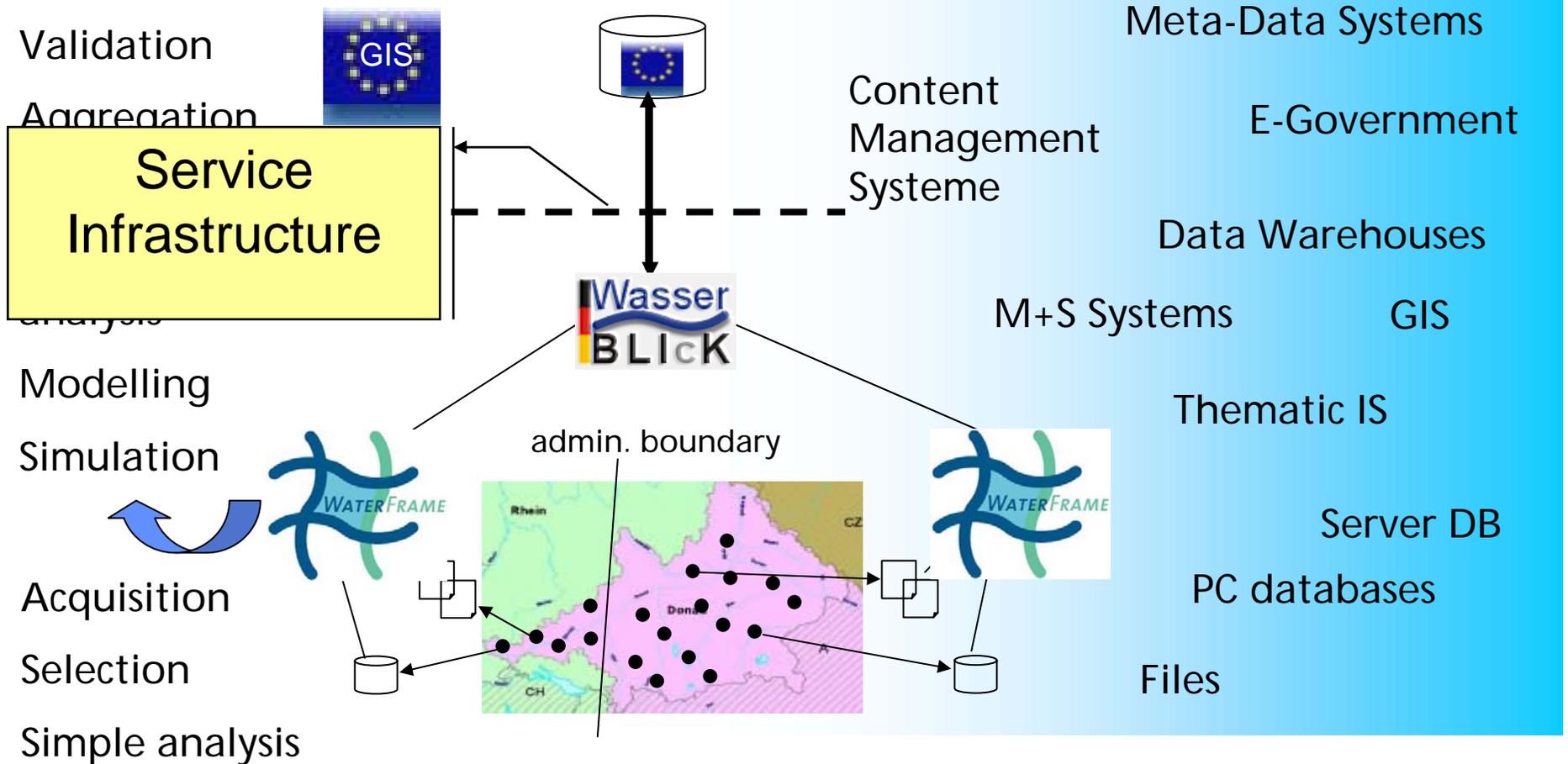
WFD-reporting: Information Flow



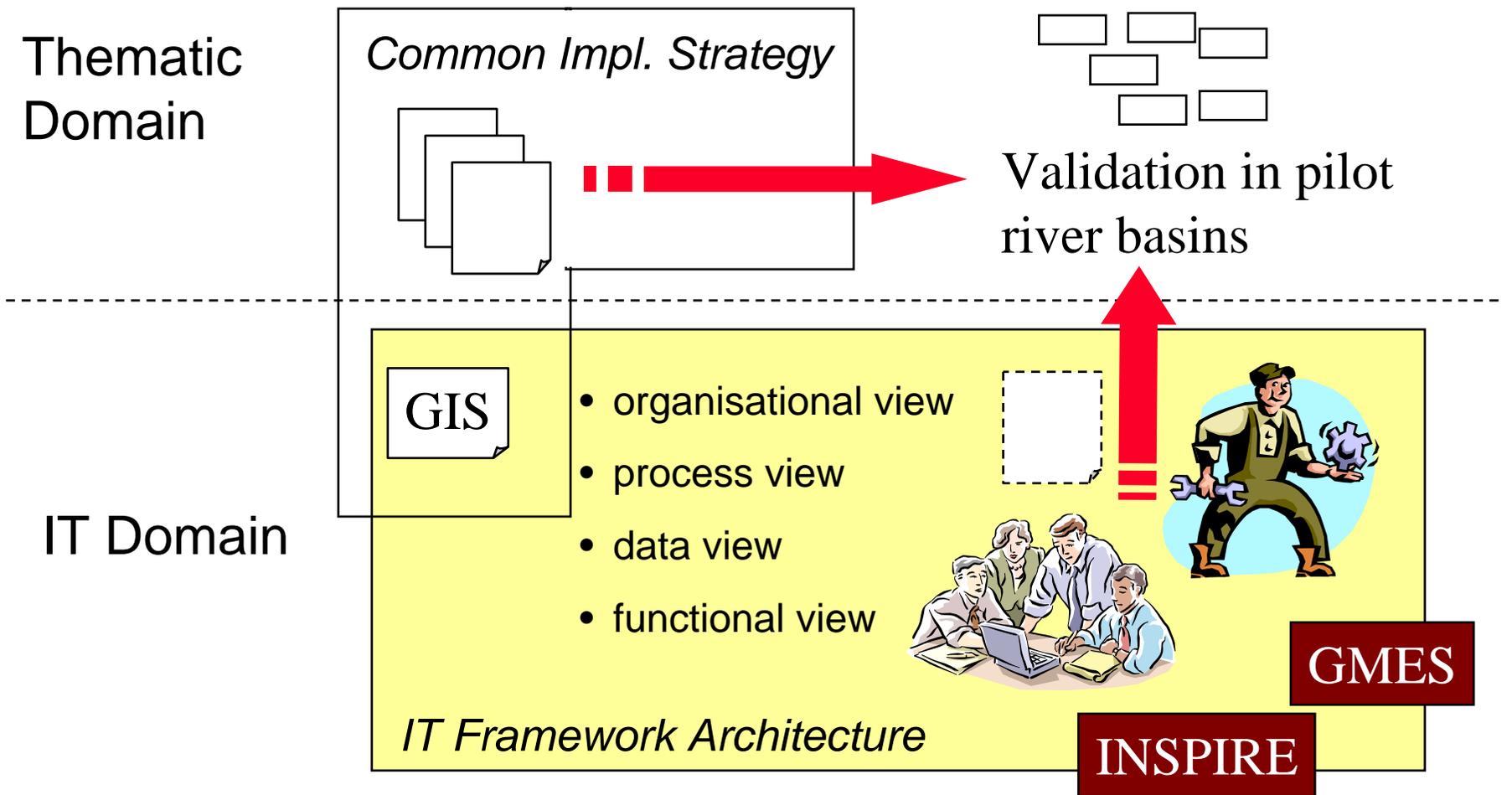
WFD-reporting: Requirements and IT Systems (1st phase, by 2004)



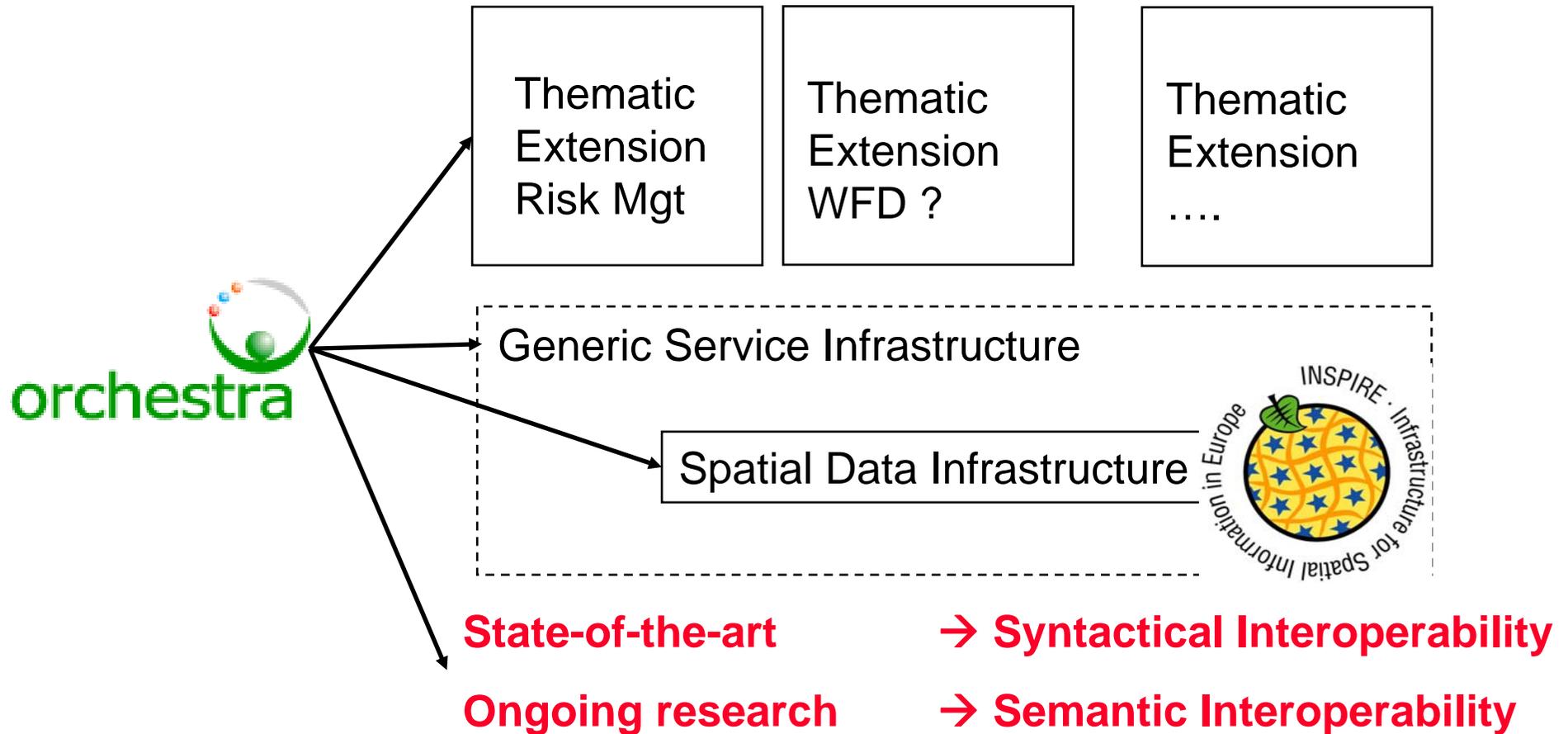
WFD-reporting: Federated WFD Geodata Server (2nd phase)



WFD Support through an IT Framework Architecture



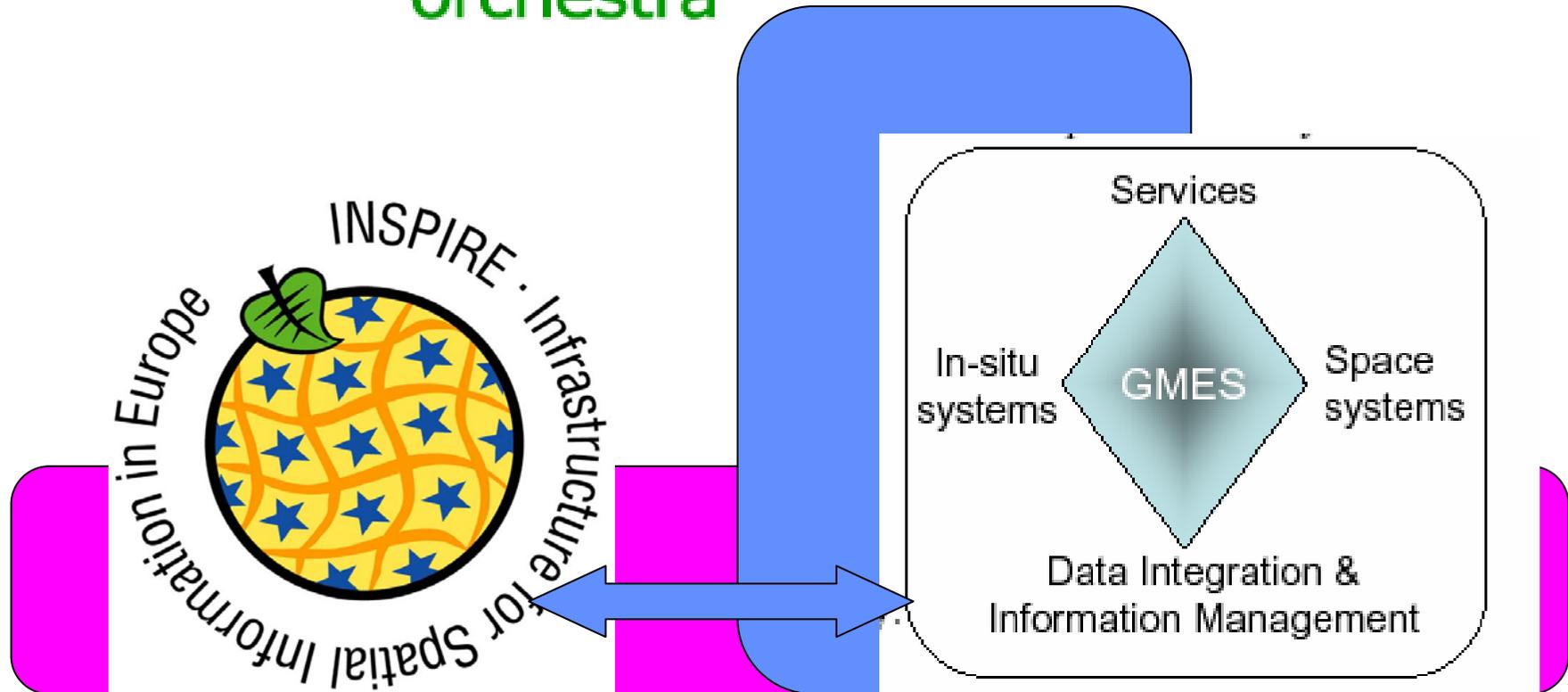
Towards a European Service Infrastructure



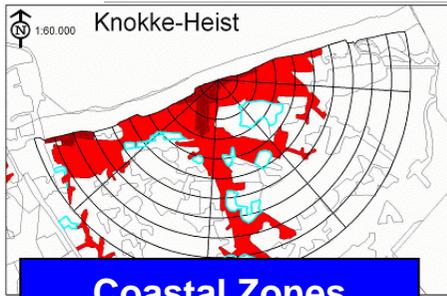
Relationship to GMES



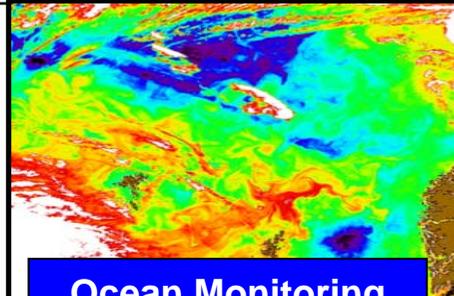
Risk Management Service with Interoperability Focus



GMES Service Areas



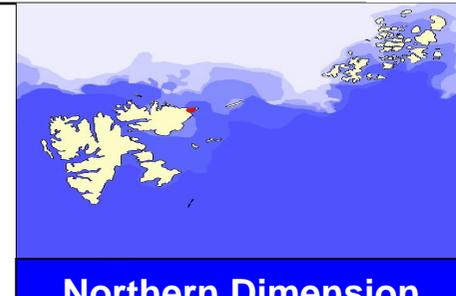
Coastal Zones



Ocean Monitoring



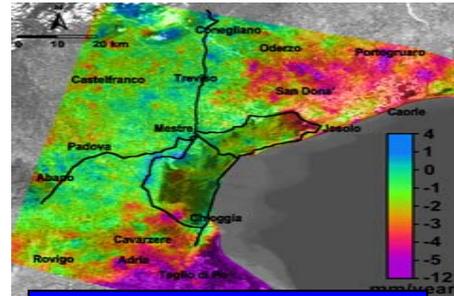
Ice Monitoring



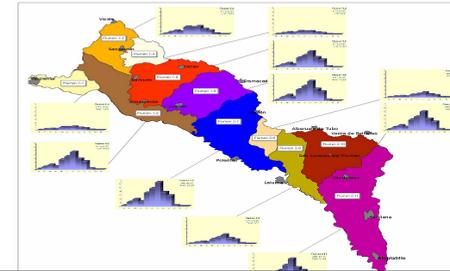
Northern Dimension



Risk: Fire & Flood



Risk: Geohazards



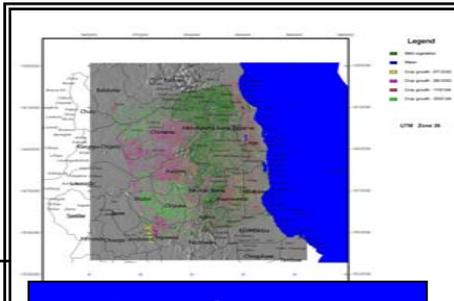
Soil & Water Quality



Forest Monitoring



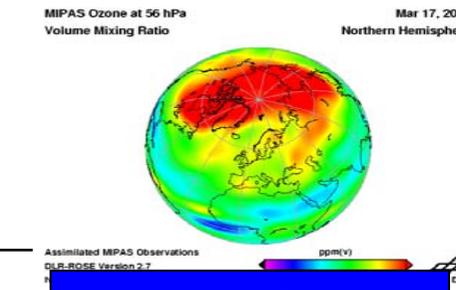
Urban Services



Food Security



Humanitarian Aid



Atmosphere

As a reminder: The INSPIRE Process...

From Commission proposal (7/2004) to Community Directive implementation - 3 phases:

- Preparatory phase (2004-2006)
 - Co-decision procedure
 - Preparation of Implementing Rules* 
- Transposition phase (2007-2008)
 - Directive enters into force
 - Transposition into national legislation
 - INSPIRE Committee starts its activities
 - Adoption of Implementation Rules by Committology
- Implementation phase (2009-2013)
 - implementation and monitoring of measures

* **The INSPIRE Prep. Phase Working Program has been published**
(<http://inspire.jrc.it>)



INSPIRE Implementing Rules Roadmap (2007-2009)

Date	Date	Description
2007	X	Entry into force of INSPIRE Directive
2007	X+3m	Establishment of the INSPIRE Committee
2007	X +1y at latest	Adoption of Implementing Rules <ul style="list-style-type: none"> • for the creation and up-dating of the metadata • for network services • on third parties use of the upload services • for monitoring and reporting • governing access and rights of use to spatial data sets and services for Community institutions and bodies
2009	X + 2y at latest	Adoption of Implementing Rules for the use of spatial data sets and services by third parties
2009	X + 2y	Adoption of Implementing Rules for harmonised spatial data specifications and for the exchange of Annex I spatial data



As a reminder: The INSPIRE requirements

Implementing Rules Metadata

- for data & services, maintaining, ...

JRC

Implementing Rules for harmonised Spatial Data Specifications (for topics given in Annexes I,II,III)

- rules for exchange & update, common ID systems, thesauri, key attributes...

Implementing Rules for Network Services

- Upload services; Discovery services; View services; Download services; Transformation services, Invoke spatial data services and the EU Geoportal

Coordination

Agreements on sharing, access and use;

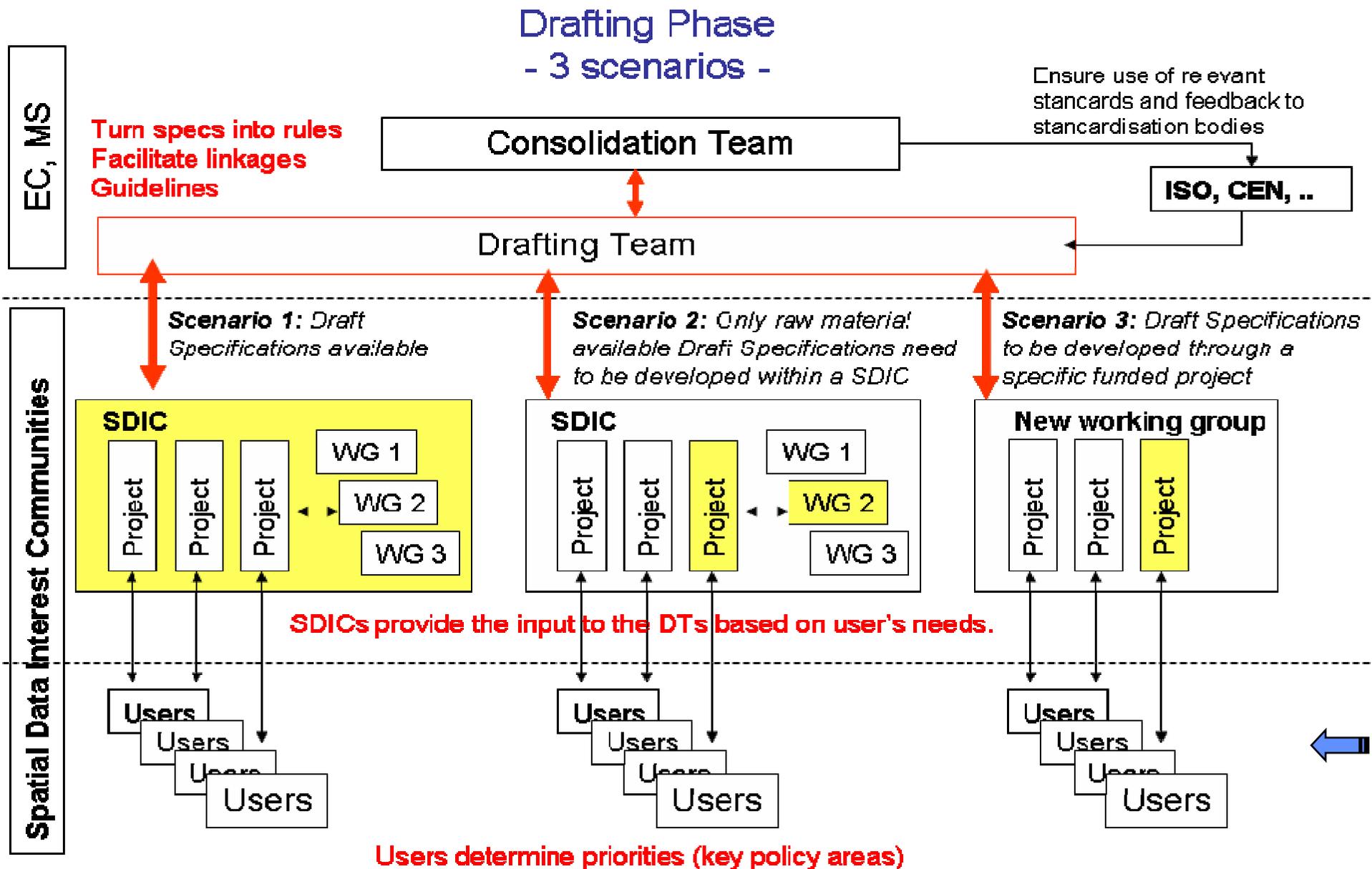
Co-ordination and monitoring mechanisms;

Process and procedures;

ESTAT



Drafting Scenarios



ORCHESTRA



Project start: September 2004

Duration: 36 months

Budget: 13.75 M€

Funding: 8.2 M€

Contract type: FP6 Integrated Project



*Open Architecture and Spatial Data Infrastructure
for Risk Management*



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WasserBLiCK/WISE-Workshop, 16/16 Feb 2005, Brussels

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ORCHESTRA Consortium



OpenGIS®



ORCHESTRA Consortium – List of Partners

ATOS Origin	Spain
JRC-IES	Joint Research Center, Institute for Environment and Sustainability, Italy
JRC-IPSC	Joint Research Center, Institute for the Protection and the Security of the Citizen, Italy
EIG	Environmental Informatics Group, Germany
OGCE	OGC Europe Ltd., United Kingdom
ETHZ	ETH Zürich, Switzerland
IITB	Fraunhofer IITB, Germany
ARCS	Austrian Research Center Seibersdorf, Austria
OS	Ordnance Survey, United Kingdom
DATAMAT	Datamat S.p.a., Italy
INTECS	Intecs S.p.a., Italy
TYPSA	Typsa, Spain
BRGM	Bureau de Recherche Geologiques et Minières, France



ORHCESTRA in the Disaster Management Cycle



Prevention and Mitigation

- Risk assessment
- Spatial Planning
- Eco-structural measures
- Public Awareness
- Education..

Preparedness

- Risk forecasting
- Organisation
- Planning of resources
- Emergency Planning
- Training
- Public awareness..

Disaster
Management
Cycle

Disasters



Reconstruction

- Permanent rehabilitation
- Infrastructures reconstruction
- Building reconstruction
- Reinforcement of structures, ..

Post-Disaster

- Damage Assessment
- Follow-up of rehabilitation measures, ..

Response

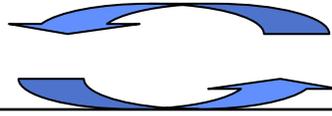
- Alarm
- Life, property saving
- Reduction of impact of disaster
- Information dissemination
- Communication

Rehabilitation

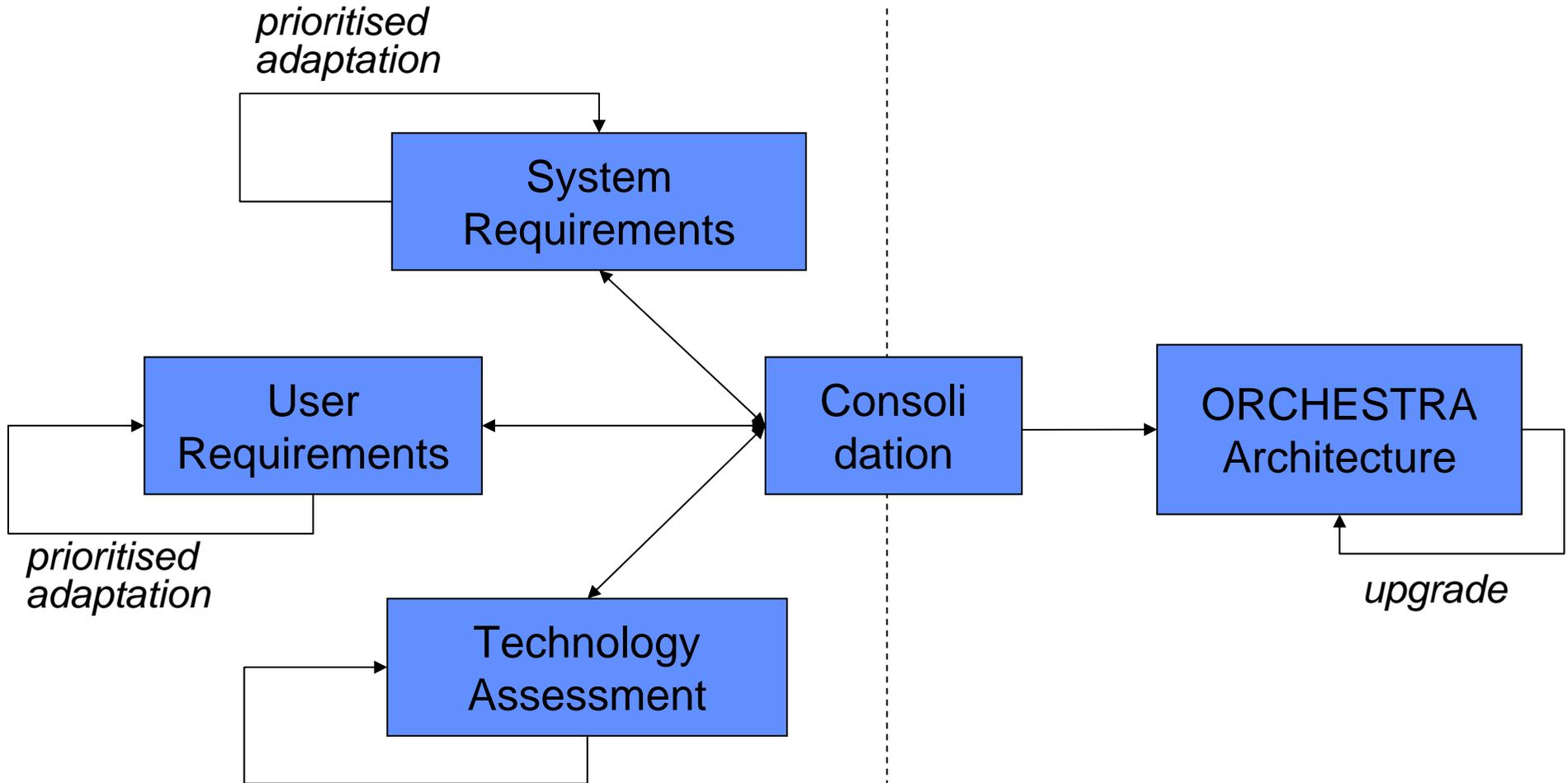
- Temporary rehabilitation
- Re-establishing Transport systems
- Re-establishing communication routes..



Analysis Phase



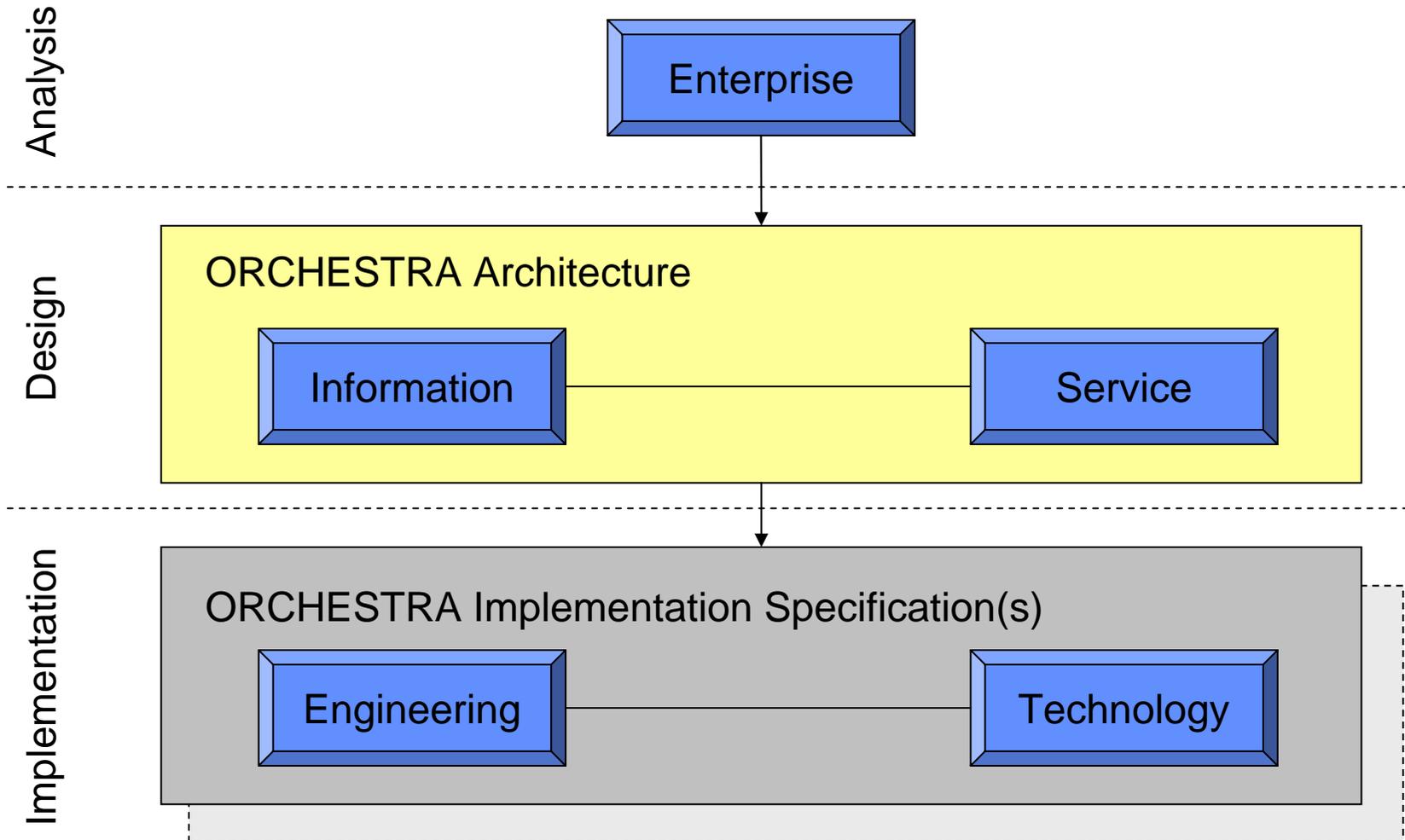
Design Phase



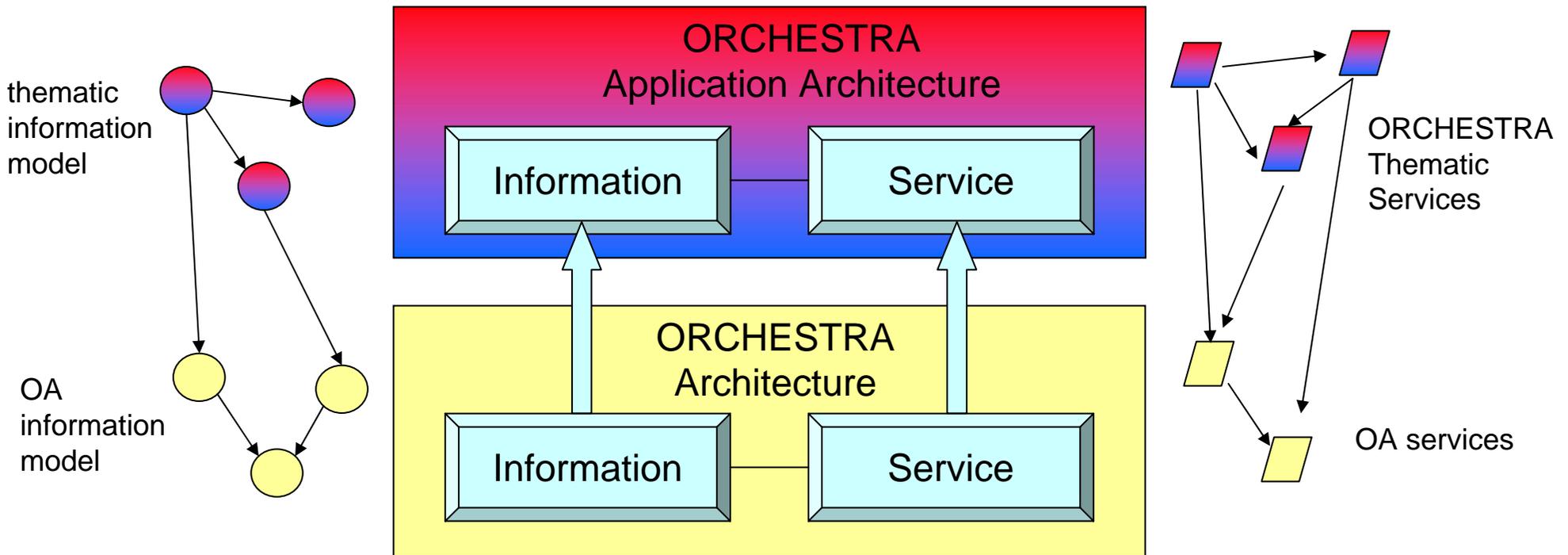
observation



ORCHESTRA Reference Model

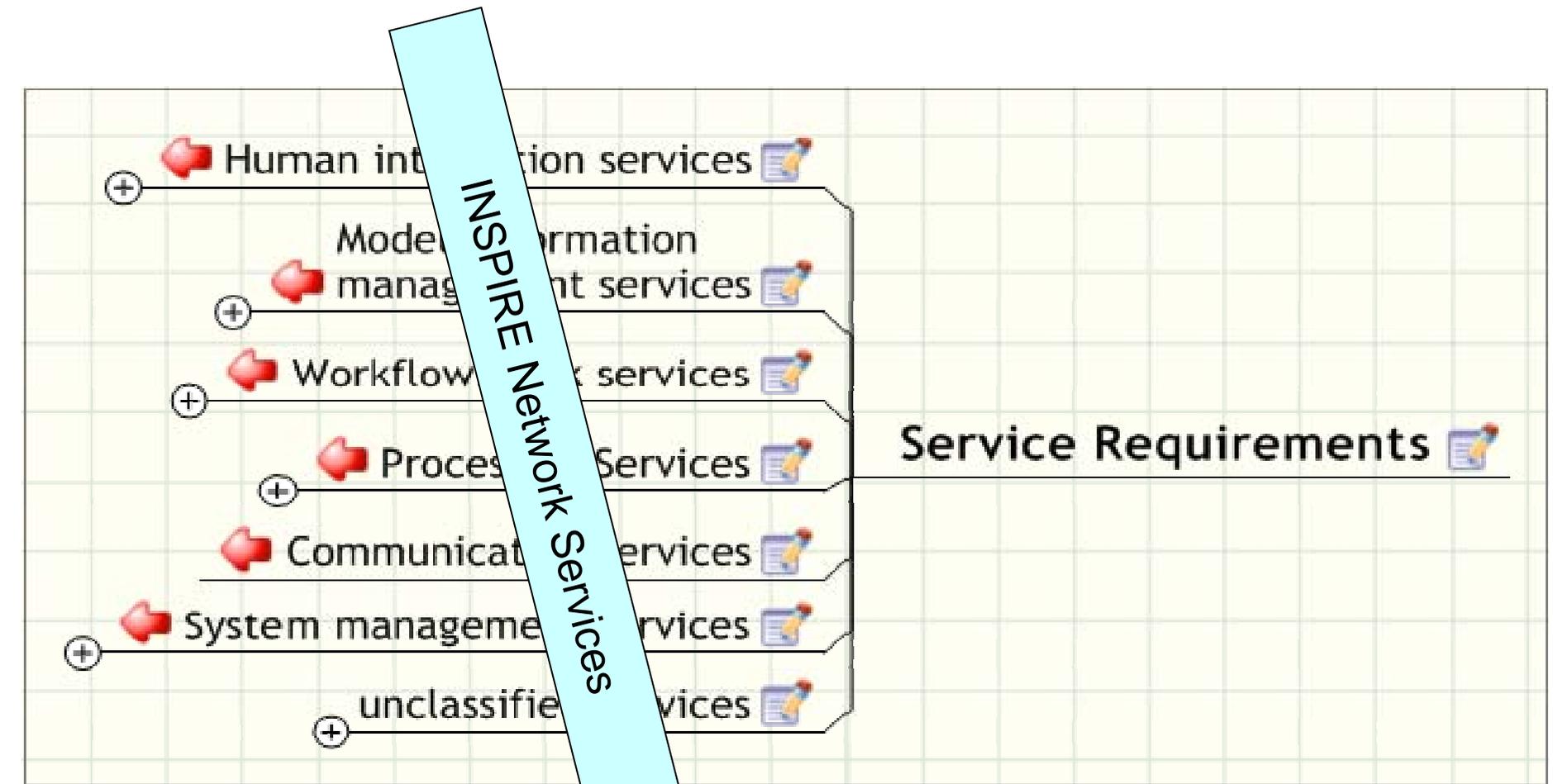


ORCHESTRA Application Architecture

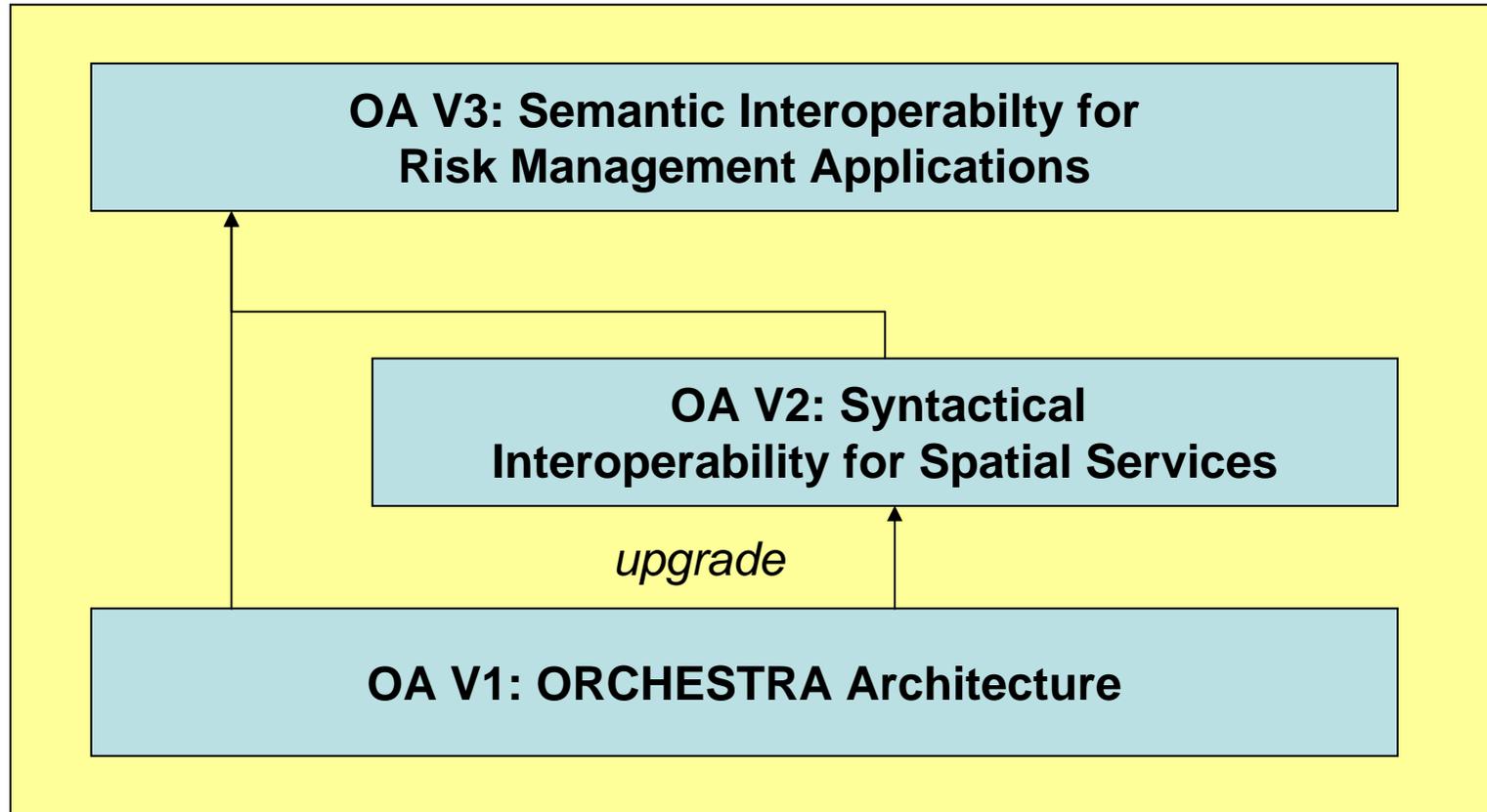


An ORCHESTRA Application Architecture (OAA) is an instantiation of the ORCHESTRA Architecture by inclusion of thematic aspects stemming from a particular application domain (e.g. a risk management application).

Prio 1: Focus on INSPIRE Network Services ?



Versions of the ORCHESTRA Architecture



Development Dimensions (1)

Semantic interoperability based on	Common understanding	Partial common understanding	No common understanding	
Interpretation based on	Fully structured information	Semi-structured information	Unstructured information	
Navigation / search paradigms	Isolated paradigms	Technically integrated (user integrates semantics)	Fully semantically integrated (system does semantic integration)	
Knowledge of data models (end users and agents)	Complete knowledge needed	Some knowledge needed	No knowledge needed (implies intelligent support)	
Collaboration	Stand-alone	Intra-agency	Inter-agency	



Development Dimensions (2)

Collaboration methods	Manually (no system support)	Standardised data exchange	Shared data	Shared services
Business process support (across network)	Built-in, change only by new version	Formally defined, change by configuration	Ad-hoc, spontaneous (user is doing it)	Intelligent guidance (system is assisting)
Thematic domain interaction	Intra domain	Inter domain		
Scale (# of semantically integrated information)	Up to 10 / 100	Up to 100 / 1000	Up to 1000 / 10000	More than 1000 / 10000
Overall system adaptability	Through reprogramming	Through fixed mappings	Through dynamic interpreted mapping	Fully descriptive, self reconfiguring



Conclusion

- **Take into account existing investments and experiences made according to the specifications of the GIS Guidance Document**
 - WFD data model
 - interfaces (e.g. WasserBLiCK templates)
- **Recommendation to actively contribute to the INSPIRE specification process through SDICs**

THANK YOU
FOR YOUR
ATTENTION



Fraunhofer Institut
Informations- und
Datenverarbeitung

Business Unit „Information
Management“

- Information and Knowledge Logistics
- Thematic Information Systems (Environment)
- Simulation Systems
- IT consulting

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