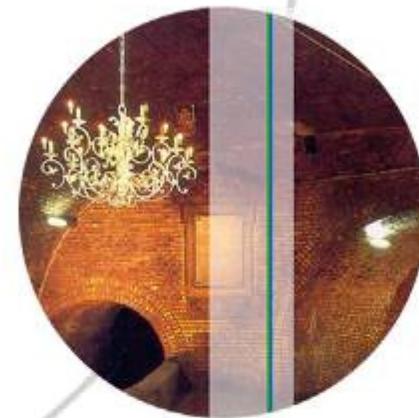


# INSPIRE and environmental reporting

Practical examples from

Water Framework Directive (WFD), Flood Risk Directive (FRD) and INSPIRE

Heino Rudolf





## **INSPIRE and environmental reporting** **Practical examples from WFD, FRD and INSPIRE**

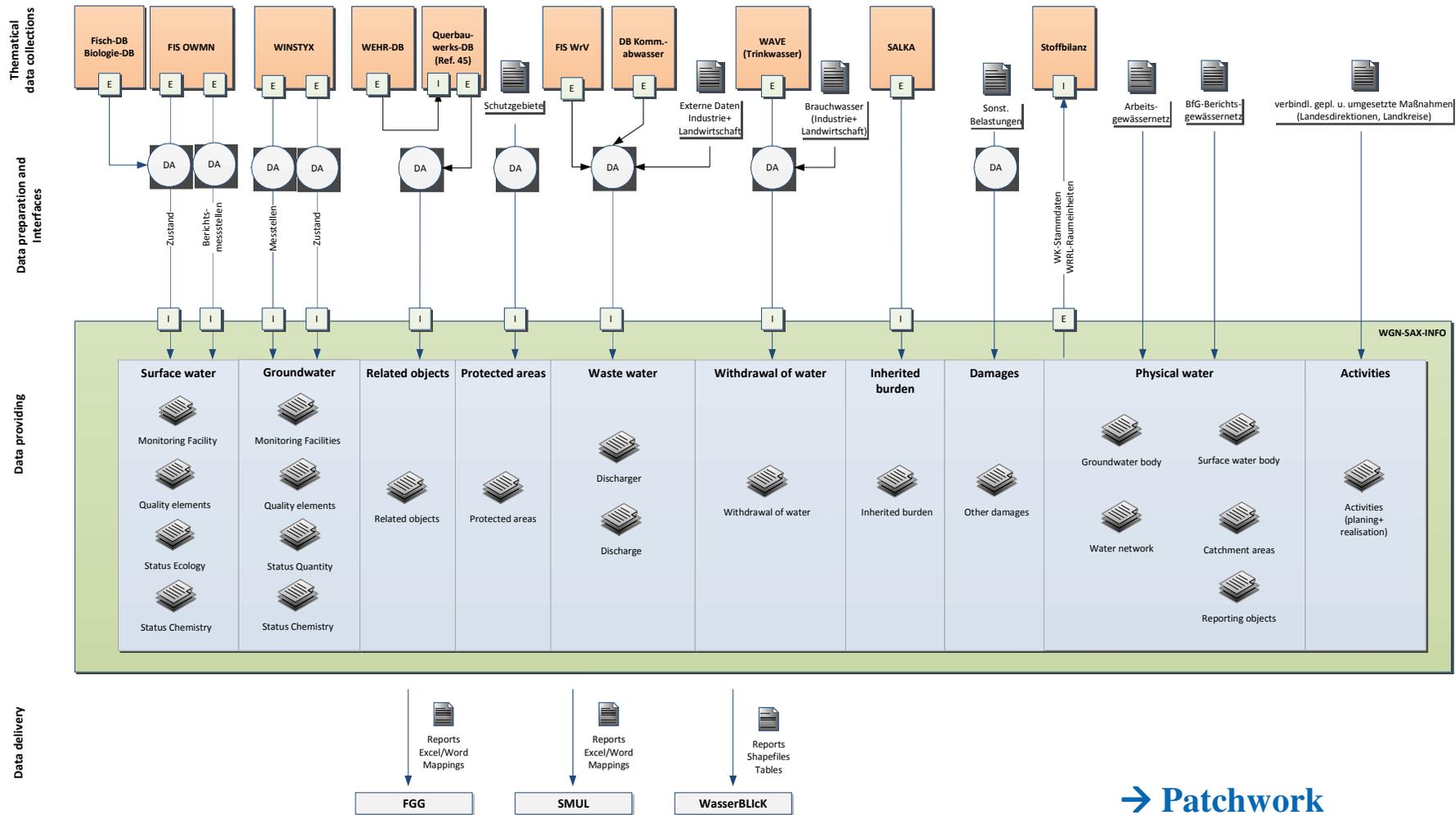
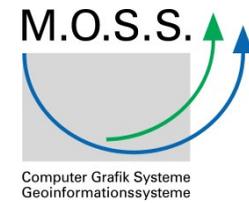
- Target
- Initial situation and challenges
- Quo vadis INSPIRE?
- Methodology of the solution: **INSPIRE.Insight**
- INSPIRE: compliance of the duty OR additional benefits?

## Legal framework

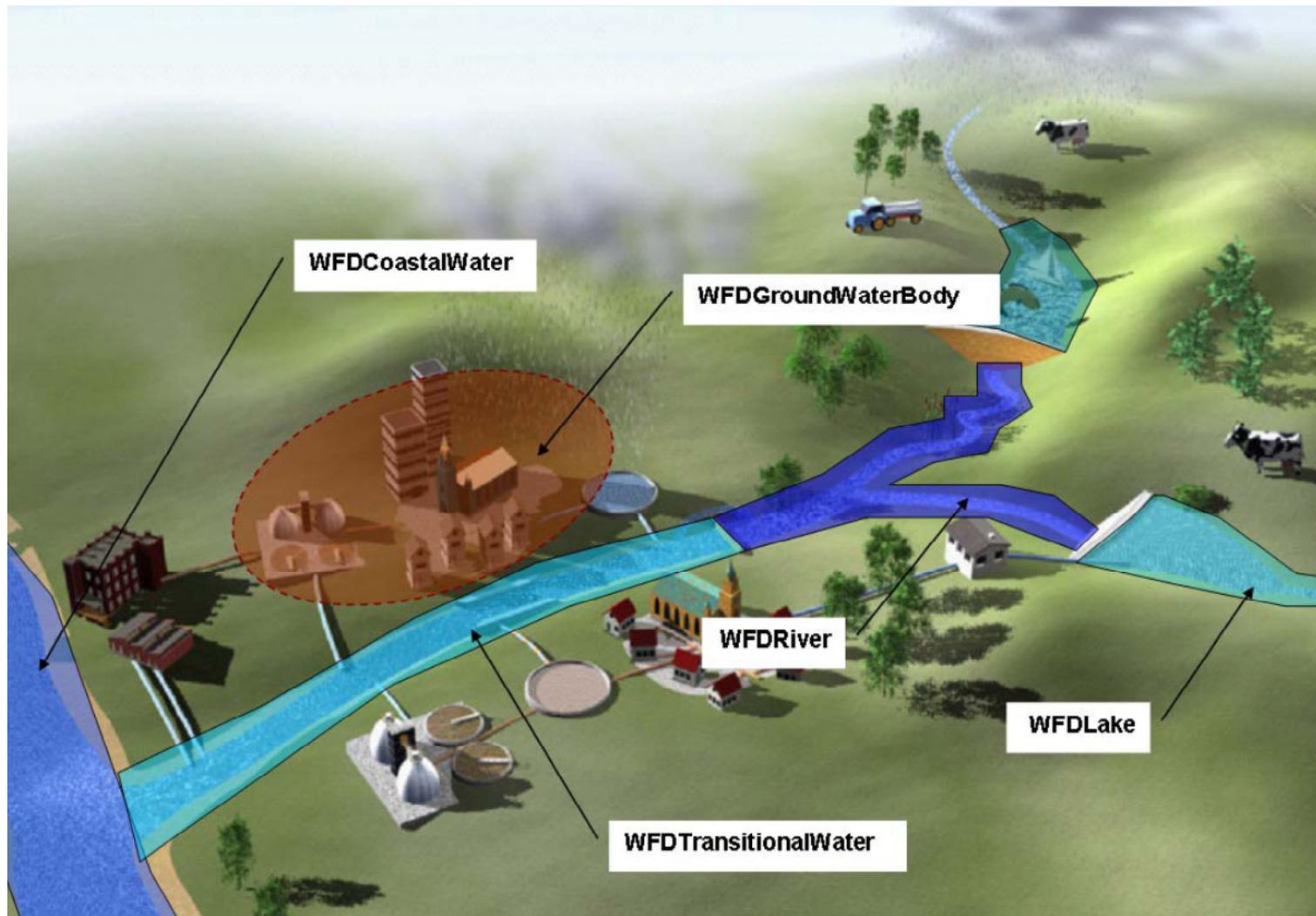


- INSPIRE  
(Directive 2007/2/EC)
  - establishing an Infrastructure for Spatial Information in the European Community
  - Annex I Hydrography
- Water Framework Directive - WFD  
(Directive 2000/60/EC)
  - enhancement of the water quality
  - ecological functioning of the surface waters
  - usability of the ground water
- Flood Risk Directive – FRD  
(Directive 2007/60/EC)
  - reduce the risks and effects of floods especially for: human health, life, environment, cultural heritage, economy, infrastructure

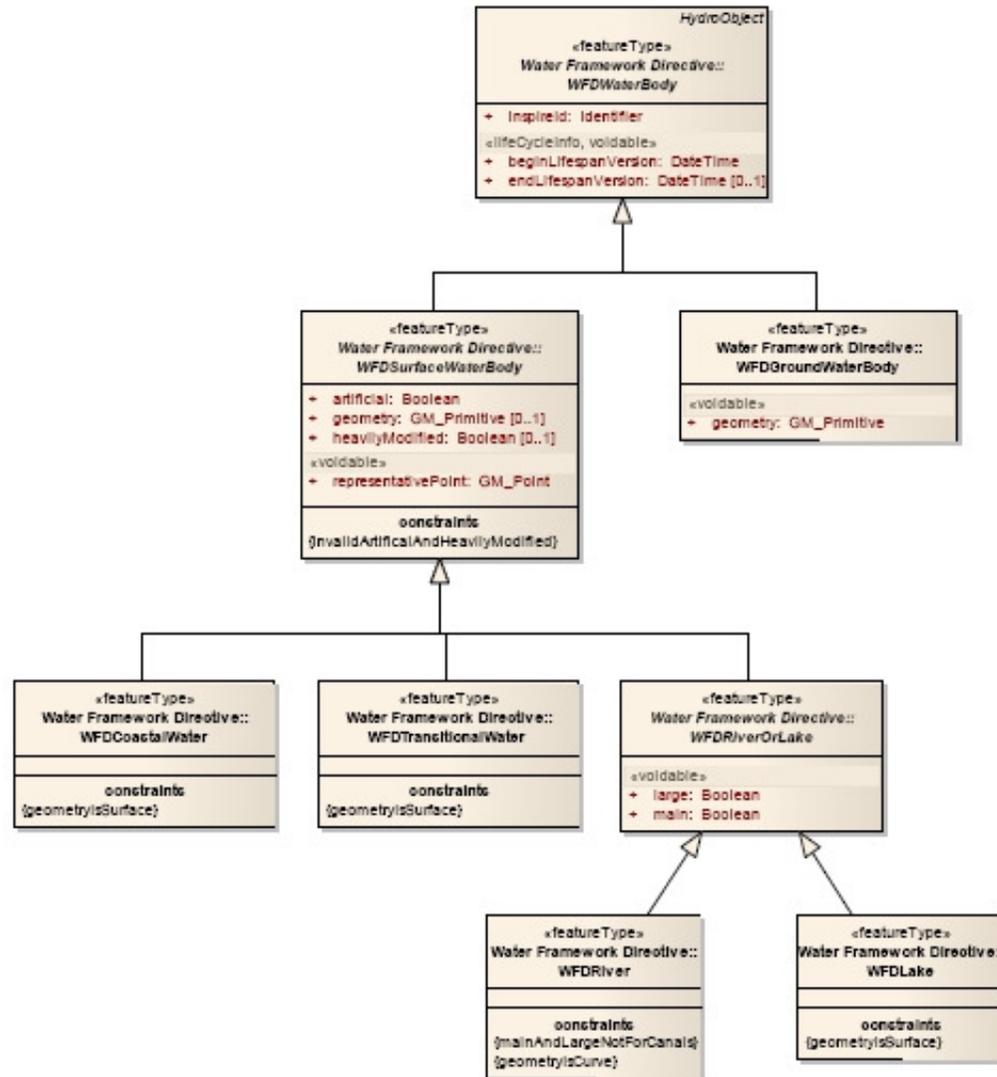
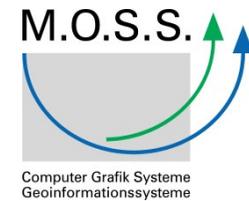
# Initial situation



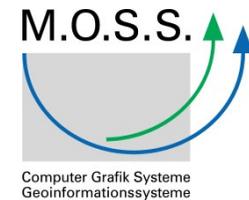
# INSPIRE Hydrography



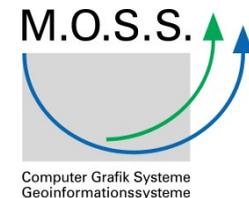
# INSPIRE Hydrography



# INSPIRE-Services



## INSPIRE-Services



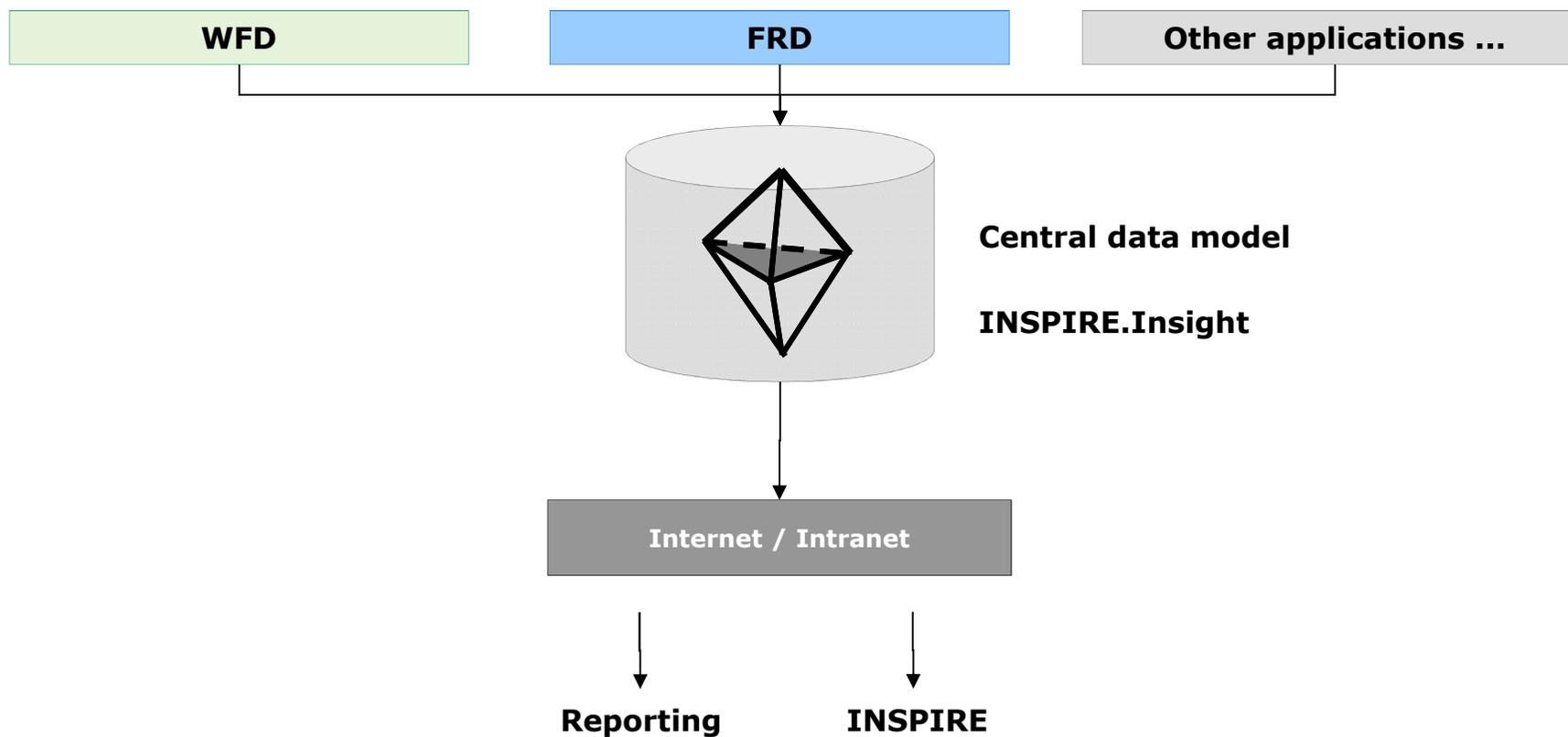
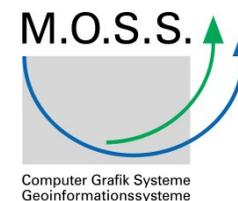
```
<wfd:WFDGroundwaterBody gml:id="idca0e67ee-24b7-4183-b108-b9f39c18cef6">
<wfd:beginLifespanversion xsi:nil="true" nilReason="UNKNOWN"></wfd:beginLifespanversion>
<wfd:endLifespanversion xsi:nil="true" nilReason="UNKNOWN"></wfd:endLifespanversion>
<wfd:inspireId>
  <base:Identifier>
    <base:localId>322</base:localId>
    <base:namespace></base:namespace>
    <base:versionId xsi:nil="true" nilReason="UNKNOWN">0</base:versionId>
  </base:Identifier>
</wfd:inspireId>
<wfd:geometry>
<gml:MultiSurface srsName="EPSG:25833" srsDimension="2">
<gml:surfaceMember>
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<gml:PolygonPatch>
<gml:exterior>
<gml:LinearRing>
<gml:posList>
          397795.235358602 5651942.49224471 397770.189211432 5651892.49130369 397745.9
          397564.209980887 5651305.63272808 397522.99005293 5651153.24662681 397512.35
          .....
          395975.383786904 5652923.00555309 396170.131078072 5652841.0399106 396496.94
          397667.127037205 5651965.72029958 397795.235358602 5651942.49224471
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</wfd:WFDGroundwaterBody>
```



### Quo vadis INSPIRE?

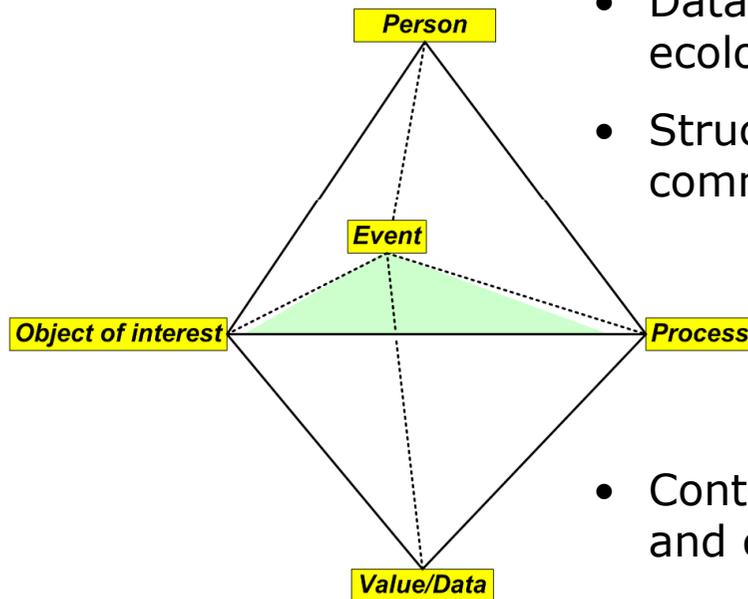
- INSPIRE does not support the actual work of the environmental offices.
- Not even the environmental reporting is supported.
- INSPIRE data models do not help to organize the Theme Crossed harmonization of the data management.
- The kind of modelling is contrary to the working method.
- The models are incomprehensible.
- INSPIRE is an additional duty – without practical working advantages ...

# Solution



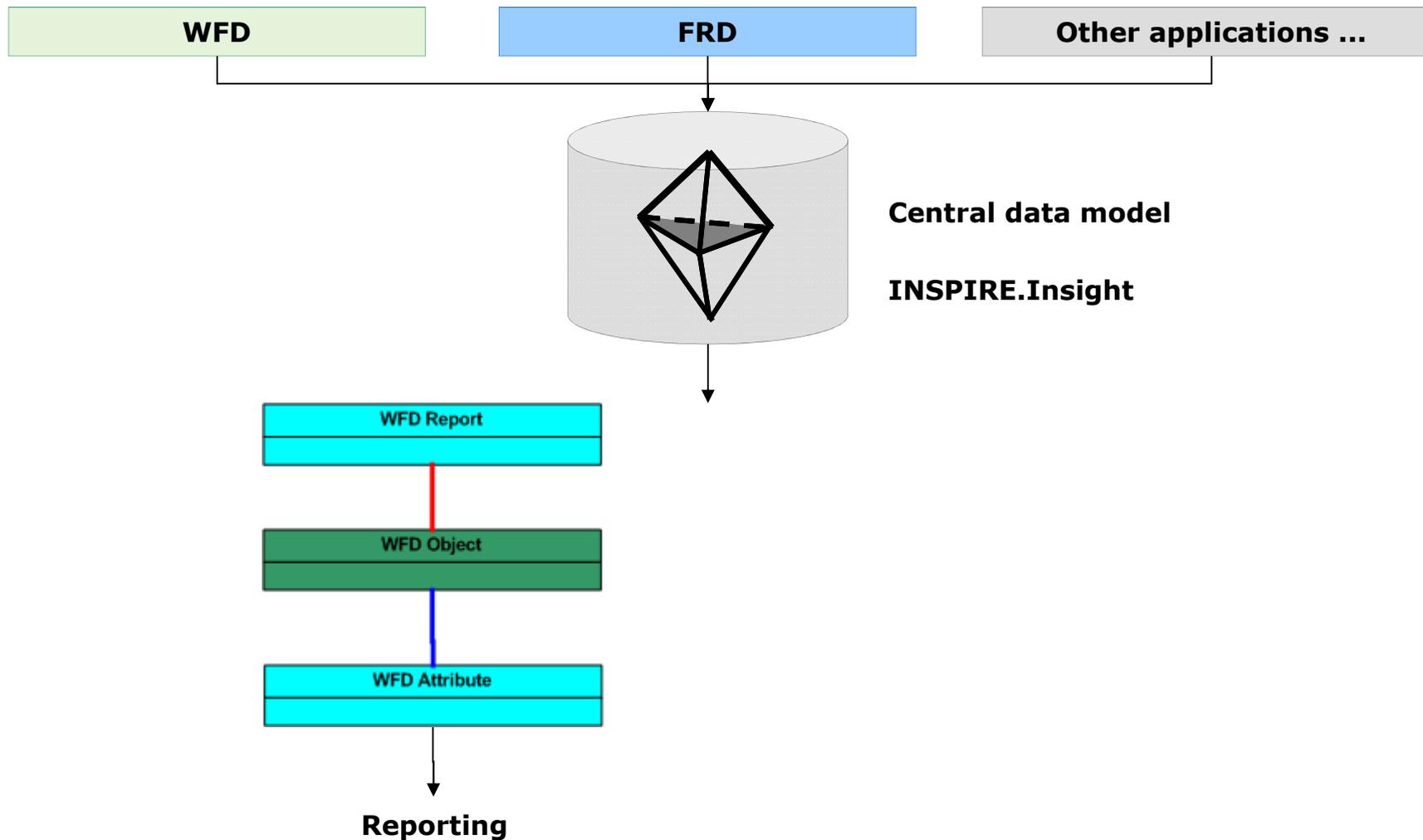
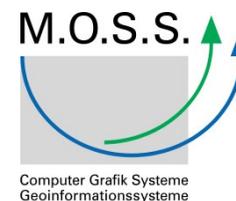
## Data management

- Thematical overlap of one consistent data model
- Data model mirrors the operating mode of the ecological system
- Structure is neither tailored to European reporting commitments nor to INSPIRE

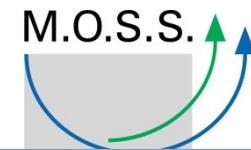


- Content of data model can be upgraded by objects and compounds at any time
- Modelling in two steps:
  - Description of the reality (data storage)
  - Creating the views of the users (interface)

# Solution



## Example WFD



WRRL powered by M.O.S.S.

Start WRRL Report

WRRL Report

Objektfunktionen \*

Dokumentname	Jahr Beginn	Autor	Objektart	URL	Fixiert J/N	Aktenzeichen
B10_rwseg_desl_2000	2010	Max Mustermann	WRRL		ja	A243_12_2010
B14_RWSEGGEOM_DES...	2014	Mustermann	WRRL		ja	A483_08_2014

WRRL powered by M.O.S.S.

Start WRRL Report

WRRL Report

Ausgewähltes Objekt

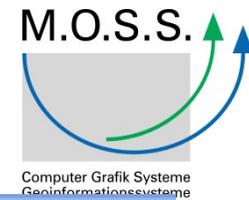
- WRRL Report
- Details
- WRRL Report Objekt (206)**

WRRL Report Objekt (206)

Objektfunktionen \*

Objektbezeichnung	Erfasser	Metadaten	Lieferung	Erfassungsdatum
DE_RS_DE_2	Walter Köppen	RWSEG_DESL_2000.XML	14.04.2010 00:00:00	31.12.2004
DE_RS_DE_177	Walter Köppen	RWSEG_DESL_2000.XML	14.04.2010 00:00:00	31.12.2004
DE_RS_DE_175	Walter Köppen	RWSEG_DESL_2000.XML	14.04.2010 00:00:00	31.12.2004
DE_RS_DE_114	Walter Köppen	RWSEG_DESL_2000.XML	14.04.2010 00:00:00	31.12.2004
DE_RS_DE_83	Walter Köppen	RWSEG_DESL_2000.XML	14.04.2010 00:00:00	31.12.2004
DE_RS_DE_94	Walter Köppen	RWSEG_DESL_2000.XML	14.04.2010 00:00:00	31.12.2004
DE_RS_DE_117	Walter Köppen	RWSEG_DESL_2000.XML	14.04.2010 00:00:00	31.12.2004
DE_RS_DE_96	Walter Köppen	RWSEG_DESL_2000.XML	14.04.2010 00:00:00	31.12.2004
DE_RS_DE_16	Walter Köppen	RWSEG_DESL_2000.XML	14.04.2010 00:00:00	31.12.2004
DE_RS_DE_130	Walter Köppen	RWSEG_DESL_2000.XML	14.04.2010 00:00:00	31.12.2004

# Example WFD



WRRL powered by M.O.S.S.

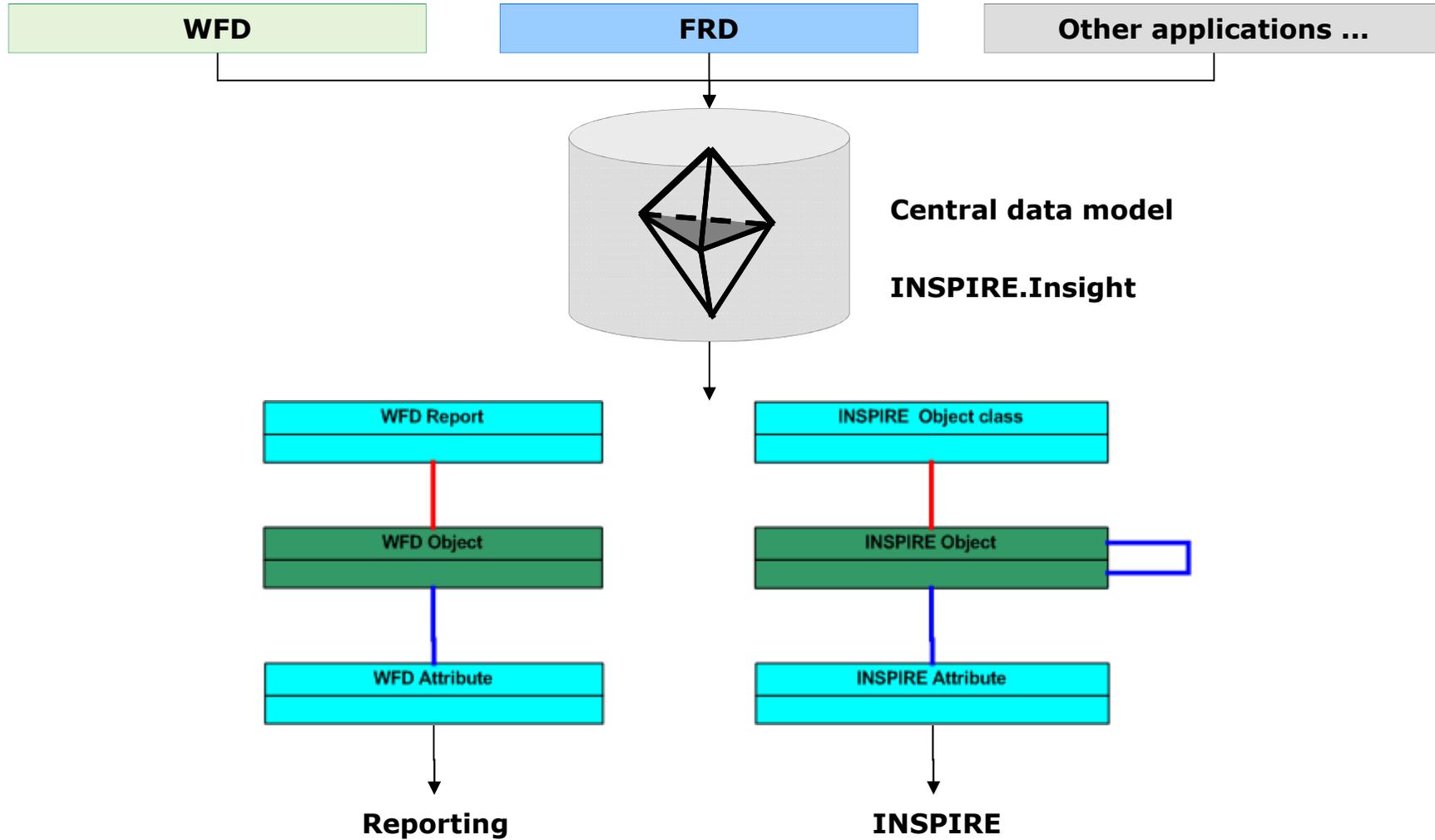
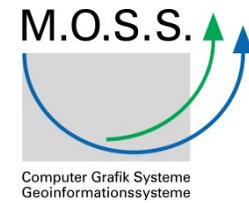
Start WRRL Report WRRL Report Objekt

WRRL Report Objekt << WRRL Report Objekt Eigenschaften (44)

Objektfunktionen \*

Parameter	Parameter Langtext	Wert	Fixiert J/N
CONTINUA	Das Segment ist ein tatsächlicher Gewässerabschnitt (Y). Das Seg...	Y	ja
RWB_NAME	Ortsüblicher Name des Wasserkörpers	VI-2.2.2	ja
PA_D_STAT	Status (bzw. Zustand) des nach Art. 7 geschützten Gebietes	U	ja
EQS_ONATPL	Einhaltung der Umweltqualitätsnormen für andere nationale Stoffe	U	ja
EQS_OTHPL	Einhaltung der Umweltqualitätsnormen für andere prioritäre Stoffe	U	ja
EQS_INDPOL	Einhaltung der Umweltqualitätsnormen für industrielle Stoffe	U	ja
EQS_PESTIC	Einhaltung der Umweltqualitätsnormen für Pestizide	U	ja
EQS_HM	Einhaltung der Umweltqualitätsnormen für Schwermetalle	U	ja
NON_COMP	Einhaltung Umweltqualitätsnormen für spezifisch synthetischen und...	U	ja
GEN_COND	Allgemeine Bedingungen	U	ja
OTH_SPEC	Ökologischer Status/Potenzial	U	ja
MAC_PHYTO	Makrophyten und Phytobenthos	U	ja
PHYTO	Phytoplankton	U	ja
SIZE_CAT	Größenkategorie, auf Grundlage des Einzugsgebietes	S	ja
TEMPLATE	Name der Schablone	RiverSegment	ja
IMPACT_SRC	Signifikante Belastungsquellen des Oberflächenwasserkörpers	p1,p2,p4	ja
IMPACT	Angaben zu den Auswirkungen der Wasserkörperbelastungen	Null	ja
PAD_WITHIN	Wasserkörper zur Trinkwassernutzung	N	ja
ARTIFICIAL	Angabe, ob der Wasserkörper künstlich ist	N	ja
MODIFIED	Angabe, ob der Wasserkörper erheblich verändert ist	N	ja
PLANU_CD	Kennung der Planungseinheit	MOS_SAA	ja
EU_RW_TYPE	Internationaler Code der Gewässertypen	M9	ja
ALT_CAT	Höhenlage	M	ja
CONFIDENCE	Bestimmungssicherheit des ökologischen Zustands/Potentials de...	H	ja
TY_NA_RW	Nationale Beschreibung der Gewässertypen -MemberStateTypeNa...	Grobmaterialreiche, karbon...	ja
RS_NAME	Ortsüblicher Name des Fließgewässerabschnitts	Dorfbach	ja
LAND_CD	CountryStateCode	DESL	ja
EU_CD_RB	Internationaler Code des RiverWaterBody	DE_RB_264882	ja

# Solution



## Solutions offered

0 **Solution for INSPIRE III**

1 **Included in a Theme Crossed approach**

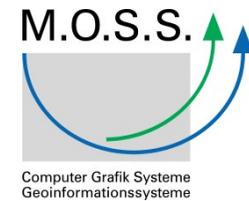
2 **Consulting for data management**

3 **Data transformation and qualifying**

4 **Applications and services**

5 **Unified data management system**

# „Additional benefits“



PATCHWORK (Unstructured data)

Interoperable data structures

standardised  
thematical data, geodata

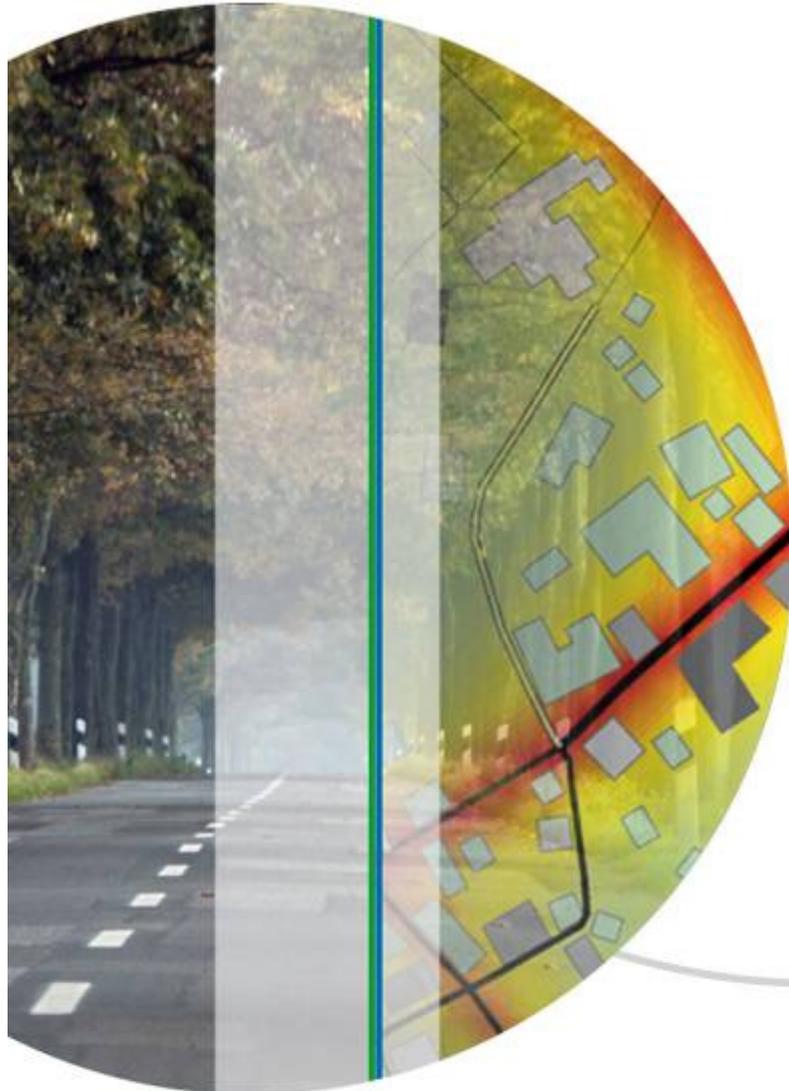
**INSPIRE.Insight**



**decision support**

**simulation prediction**

**management information**



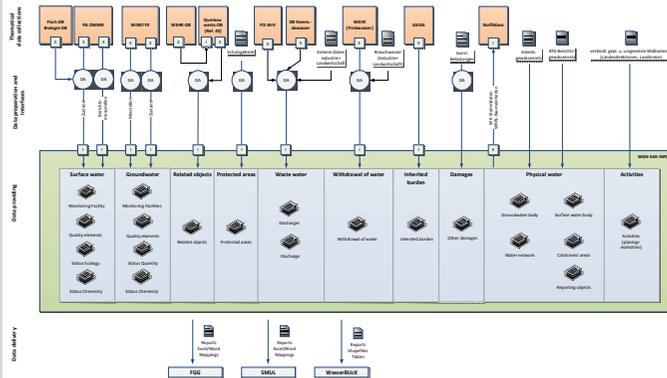
Thanks for your  
attention!

[www.inspire.moss.de](http://www.inspire.moss.de)

<https://owncloud.moss-de.com/public.php?service=files&t=941a2d71512cb4fa8b69d86f5baff5a1>

M.O.S.S. Computer  
Grafik Systeme GmbH  
Hohenbrunner Weg 13  
D-82024 Taufkirchen  
Telefon +49 89 66675-100  
Telefax +49 89 66675-180  
<http://www.moss.de>  
[info@moss.de](mailto:info@moss.de)

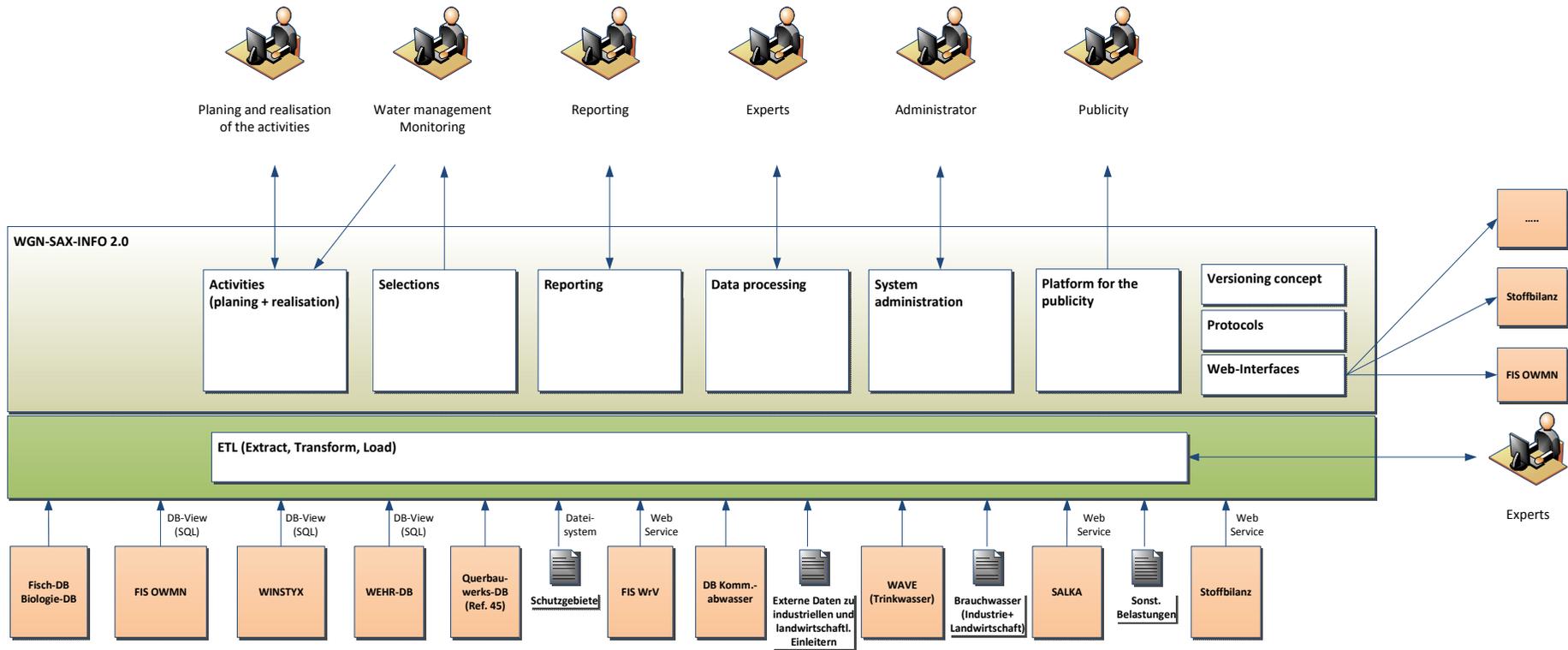
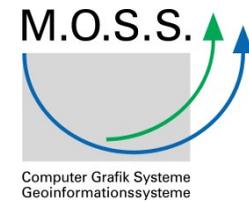
## Initial situation



- The data sets have been collected manually. Cross-border data flow has not been built up so this activity has to be repeated every 6 years.
- Data of WFD reportings have been allocated unstructured and incompatible. All data structures have been built up according to the reporting scheme.
- Often the existing water network is not usable, because sections have been composed on cartographical aspects but not on natural confluences, e.g. interrupt at bridges.
- Data sets of flood prevention concepts are available but heterogeneous.
- A common administration of activities (planned and realised) does not exist.

## → Former data model

# Architecture

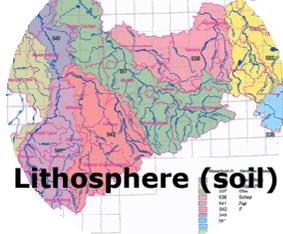


# Challenges

## Atmosphere (air)



## Nature/Landscape



## Hydrosphere (water)



## Technosphere (culture/technique)

## Environmental data management

- Complexity of tasks, all time varying requirements
- Charge and administration of environmental states at fixed points of time
- Compilation of obliging planning and processing of planning scenarios
- New given periods, requirements and special individual prospects

→ Data dynamics

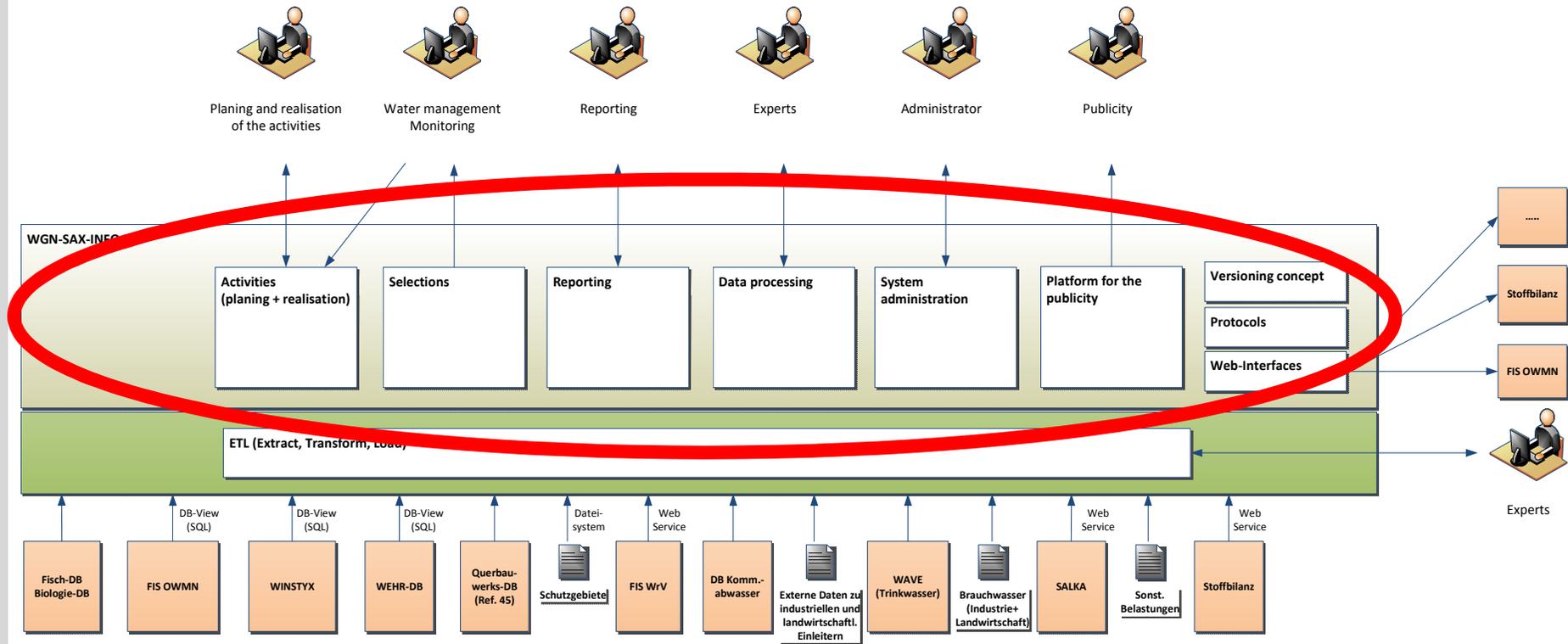
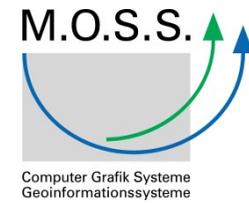
## Target



- FRD – Article 9
  - requires a close coordination of the assessment and management of the activities for both directives
- central information system for both directives
  - common data collection
  - common data processing
  - common data providing
  - common data delivery

Responsible party in Saxonia:  
Saxonian State Office of Environment, Agriculture and Geology

# Architecture



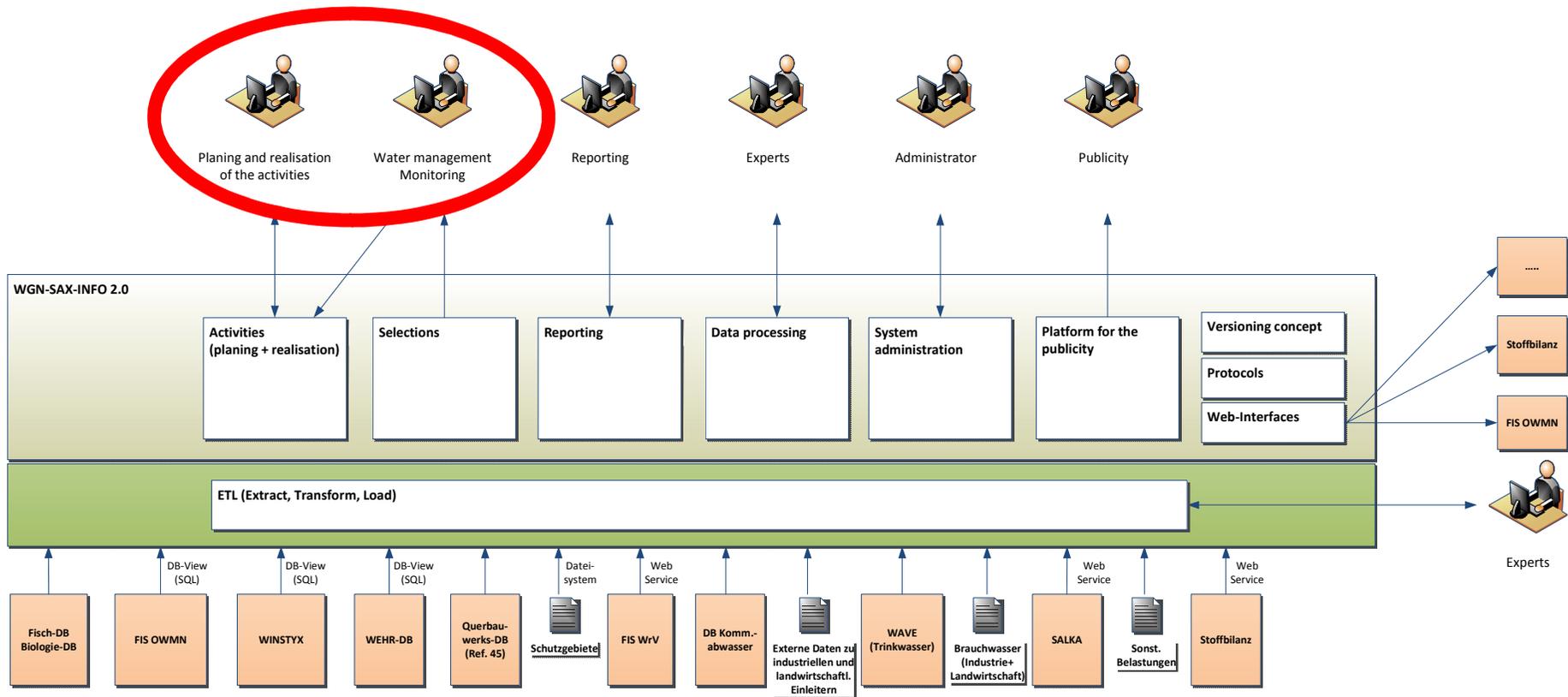
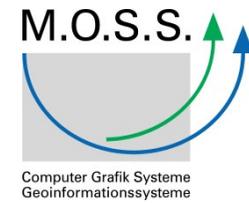
# INSPIRE Hydrography



# INSPIRE Hydrography



# Architecture



# Architecture

