



deegree - building blocks for INSPIRE SDIs



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Agenda

- Theory: Implementation of INSPIRE Data Themes
- Technical Challenges
- INSPIRE with deegree 3: deegree inspireNode
- Resume / Outlook



What is INSPIRE?

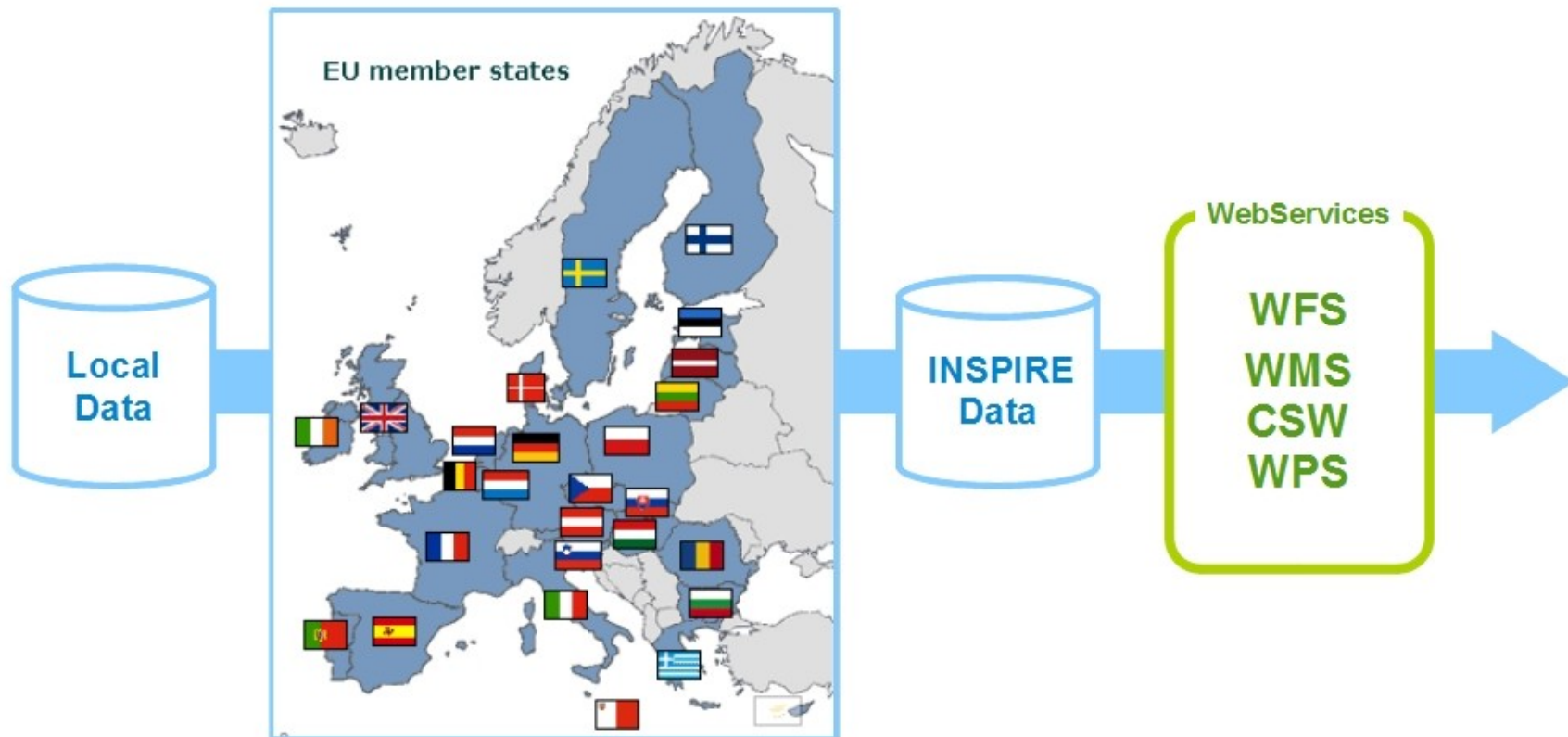
- **IN**frastructure for **SP**atial **InfoR**mation in **EU**rope
- Goal: Setup of a EU-wide spatial data infrastructure
- Integration of national SDIs
 - Data
 - Metadata
 - Services
- Based on Standards of OGC and ISO
- Step-by-step implementation until 15.05.2019
 - First Directive in force since 15.05.2007



INSPIRE Basic principles

- Data should be collected only once and kept where it can be maintained most effectively.
- It should be possible to combine seamless spatial information from different sources across Europe and share it with many users and applications.
- It should be possible for information collected at one level/scale to be shared with all levels/scales; detailed for thorough investigations, general for strategic purposes.
- Geographic information needed for good governance at all levels should be readily and transparently available.
- Easy to find what geographic information is available, how it can be used to meet a particular need, and under which conditions it can be acquired and used.

Basics: Provide INSPIRE data through services



Basics: INSPIRE Data Themes

- European, semantically harmonized model
- Divided in Annex I – III
- Annex I comprises for example specificationn of
 - Administrative units
 - Cadastral parcels
 - Addresses
- Defined through **complex GML-Application schemas**

Requirements towards Implementers

- INSPIRE-corresponding processing of spatial data
- Offer data through **INSPIRE Download Service**
 - OGC WFS 2.0 + X
- Offer maps through **INSPIRE View Service**
 - OGC WMS 1.3.0 + X

Technical Challenges

- **Complex data model**
 - Correct and complete support in the software kernel
 - Import / Export (Download-Service)
 - Rendering (View Service)
- **Extensive support for standards**
 - OGC GML 3.2.1 (ISO 19136)
 - OGC WFS 2.0 (ISO 19142)
 - OGC WMS 1.3.0 (ISO 19128)
- **Performance (INSPIRE QoS-Requirements)**

Complex spatial data domain models

- Usually given as GML-Application schema
- Examples:
 - **INSPIRE Data Themes**
 - ATKIS/ ALKIS/ AFIS
 - XPlanung
 - GeoSciML
 - CityGML
- Exploit many possibilities of GML

Implementing with deegree 3: deegree inspireNode

- OpenSource, no license fees
- Ready to go INSPIRE-Services
- Download: <http://www.deegree.org>
- View-/Download-Services for all Annex I Themes
- Based on deegree 3 components

What is the deegree project?





- Provides geospatial components (Java)
- OpenSource: LGPL (free to use)
- Started in 2000 as joint project between:
 - University of Bonn
 - lat/lon GmbH
- Base technology for many geoportals, e.g.
 - <http://www.ruimtelijkeplannen.nl/>
 - European INSPIRE Geoportal



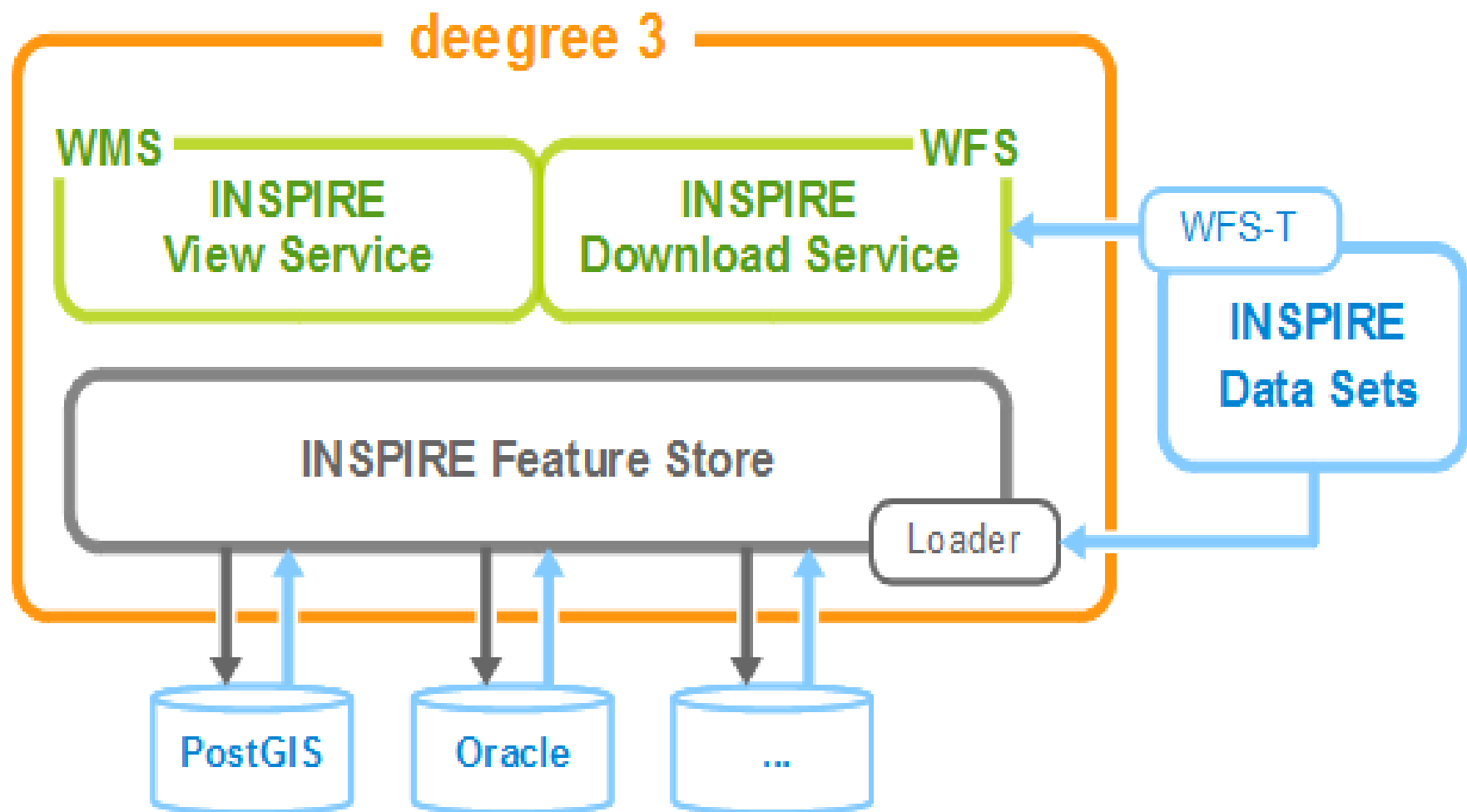
Characteristics of deegree 3

- Designed from start for complex data models
 - State-of-the art Application schema support
 - Extensive, native GML 3.2.1 support
 - ISO 19107: complex geometric features
- Extensive OGC Web Service Implementations
 - **WFS, WMS**, CSW, WPS, WCS, ...
- Scalability through Streaming-Architecture

deegree 3: Application Schema Support

- Complex GML Schemas are supported out-of-the-box
 - **INSPIRE Data Themes** 
 - AFIS, ALKIS, ATKIS 
 - XPlanung 
 - GeoSciML 
 - ...
- Configuration through unmodified Schemas
 - Data model extraction
 - Automatic DB schema generation

deegree inspireNode Architecture



deegree 3 WFS

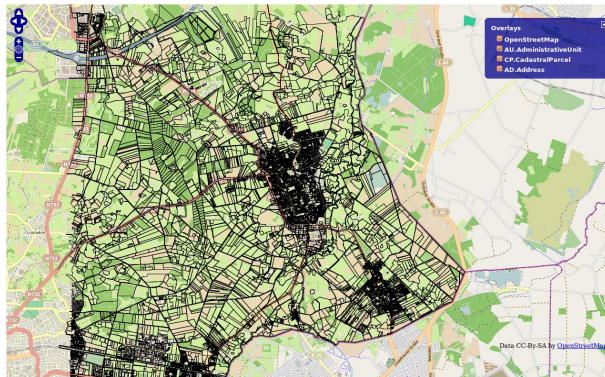
- WFS 1.0.0 / 1.1.0 (OGC-Compliance tested)
- WFS-T + XLink Profile
- Streaming Architecture
- Valid GML 2 / 3.0 / 3.1 / 3.2 Input / Output
- Complete XPath 1.0 support
 - Allows for Complex Filter Expressions

deegree 3 WMS

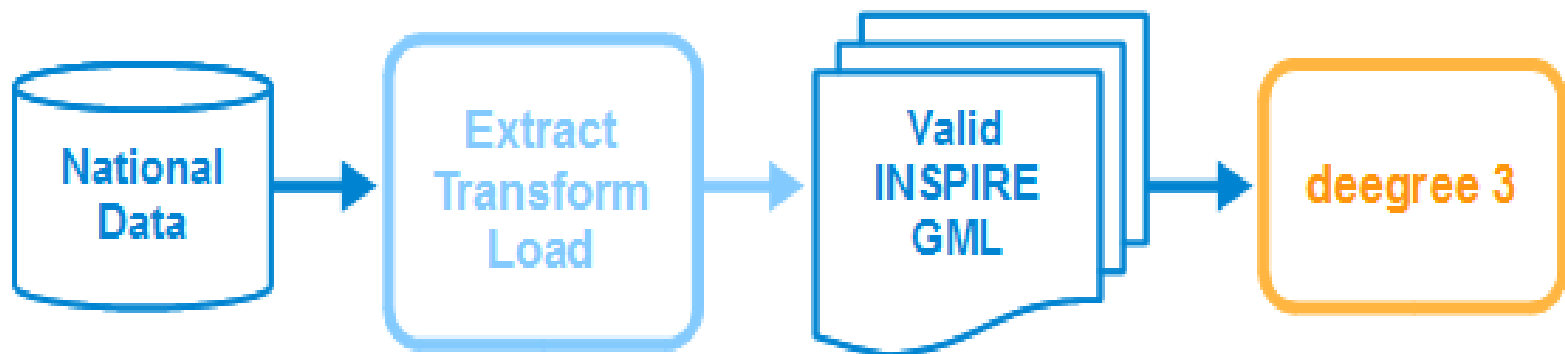
- WMS 1.1.1 / 1.3.0 (OGC-Compliant)
- Direct Rendering of complex data
- Styling through SLD und SE 1.0 (as in INSPIRE)
- UOM-Support
- Scalability



INSPIRE data processing for deegree 3



- Only requirement: Transform data to INSPIRE GML
- Use whatever tool you like: FME, XSL, Java, ...
- deegree 3 does the rest: Storage, WFS (-T), WMS



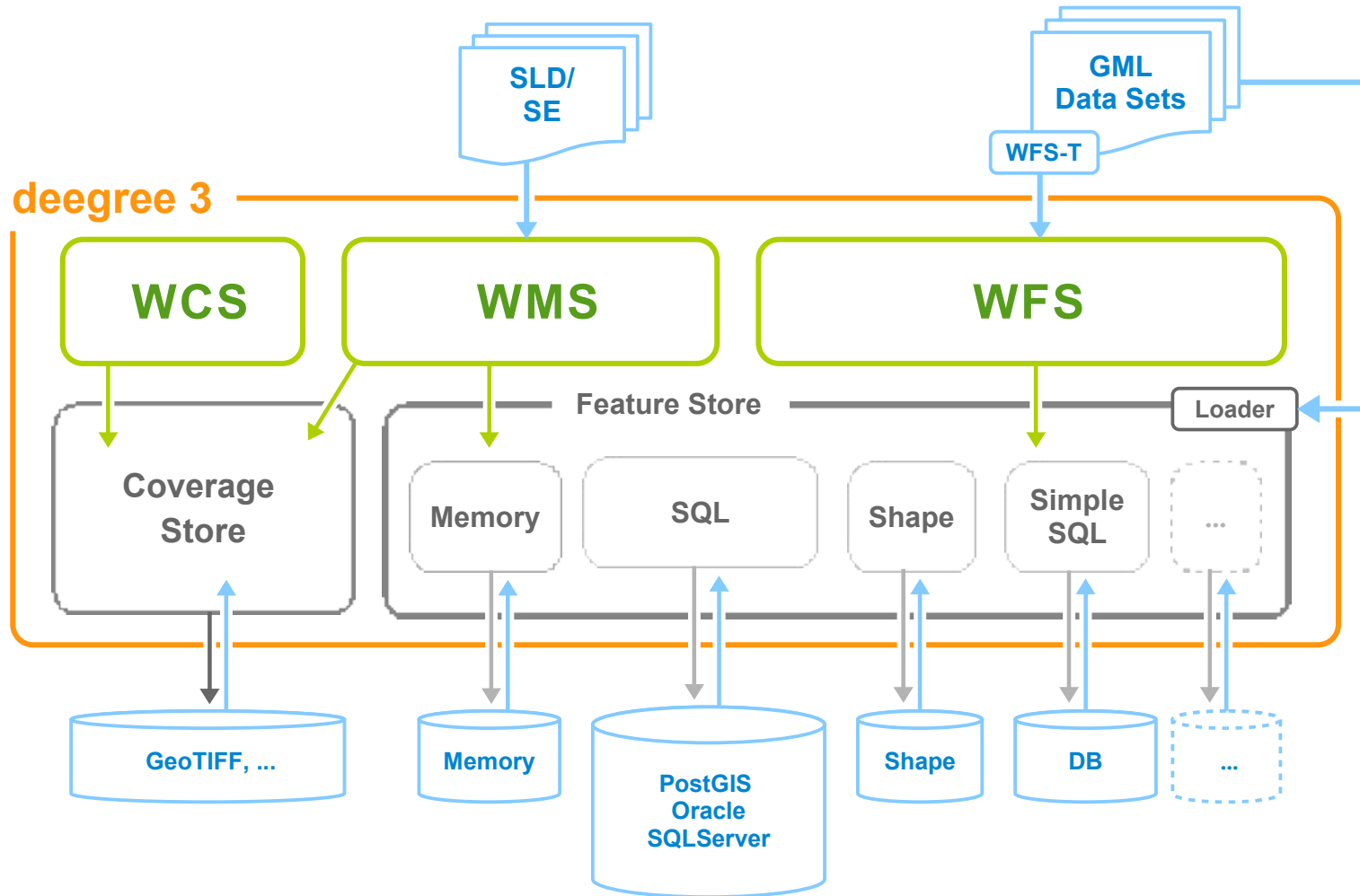
Resume

- INSPIRE has specific requirements
 - Complex data models
 - Many used standards
 - Performance
- deegree 3-core technology solves many problems
- **deegree inspireNode** as Plug'n Play solution
 - Already in use (Kataster NL)
 - OpenSource, no license fee
 - Users can concentrate on data workflow

Outlook

- Support of Oracle / MS SQL Server
- Support of extended persistence
- Complete WFS 2.0 Support
- Integration of deegree catalogueService (CSW)
- Integration of CSW and WMS caching (as currently under development for the INSPIRE Geoportal)

Pluggable Feature Storage



Pluggable services access (INSPIRE Geoportal)

