Expected contribution from Data providers

Presentation to: **PolKEN meeting in Tbilisi**

By: **Saulius Urbanas**

Date: **21 October 2015**

Types of ELF services

- **The ELF BaseMap – administrative and topographic**
  - ★ **National basemap view (wms) services**
- **The ELF Cadastral index map**
  - ★ **including parcels, addresses and buildings (national wms services)**
- **ELF download services**
- **ELF cascading services**
- **ELF Regional and Global download services**
- **ELF GeoLocator**
- **ELF Geo Product Finder**
- **ELF Open source cloud platform/ Showcase application**
- **ELF Platform technical infrastructure including ELF Security and monitoring**

Level of Details

★ ELF Global: 1:500 000 and smaller

★ ELF Regional: 1:100 000 - >1:500 000

★ ELF Master

   ★ Level 2 (LoD2): 1:25 000 - >1:100 000

   ★ Level 1 (LoD1): 1:5 000 - >1:25 000

   ★ Level 0 (LoD0): 1:5 000 and larger

The ELF thematic domains

- **Cadastral Parcels**
- **Addresses**
- **Administrative Units**
- **Hydrography**
- **Sea regions**
- **Transport Networks**
- **Geographical Names**
- **Elevation**
- **Land Cover**
- **Buildings**
- **Protected Sites**

- **CP**
- **AD**
- **AU**
- **HY – phys & network**
- **SR**
- **TN – road, rail, air, cable**
- **GN**
- **EL – grid & vector**
- **LC**
- **BU – 2D & 2D extended**
- **PS**
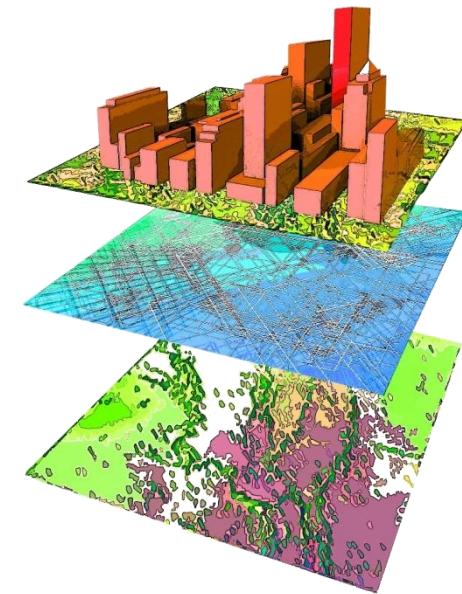
**Currently Centralized
EBM/ERM and EGM work**

MASTER LoD0	Master LoD1/2	REGIONAL	GLOBAL
Cadastral Parcels (CP)	Administrative Units (AU)	Administrative Units (AU): AU & NUTS	Administrative Units (AU)
Addresses (AD)	Hydrography (HY)	Hydrography (HY): HY & SR	Hydrography (HY): HY & SR
	Sea Regions (SR)		
	Transport Networks (TN)	Transport Networks (TN)	Transport Networks (TN)
Geographical Names (GN)	Geographical Names (GN)	Geographical Names (GN): GN & POP	Geographical Names (GN): GN & POP
Elevation (EL)	Elevation (EL)	Elevation (EL)	Elevation (EL)
	Land Cover (LC)	Land Cover (LC): POP & VEG	Land Cover (LC): POP
Buildings (BU)	Buildings (BU)	Buildings (BU)	
	Protected Sites (PS)	Protected Sites (PS)	
		Miscellaneous (MISC)	

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ELF Technical Architecture

ELF Geo-Tools for Reference Data:
edge matching, generalisation, transformation, change detection visualization, data quality analysis and improvement service testing

National Mapping & Cadastral Authorities

NSDIs

Other Data Providers

ELF Platform: Reference Data & Services

NMCA data

NMCA data

NMCA data

European data

Other Reference Data

ELF Oskari

Geo Product Finder

Geo Locator

INSPIRE/ELF data

locationframework.eu

Applications:
Use Reference Data and other data in any application environment

Map applications
Value-added Web Services

elf.maps.arcgis.com

GIS Platforms:
Data and Application Hubs of the ELF Infrastructure

feature data, gridded data, map tiles

Web Services
JavaScript APIs
Mobile SDKs
Map Applications

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Scope of NMCAs contribution

★ Let us to know what data/web services you have

   ★ Fill Questionnaire: Available reference data / thematic data

★ Contribute to ELF Regional/Global

   ★ EuroRegionalMap, EuroGlobalMap, EuroDEM…

★ Contribute to ELF geo-tools

   ★ Boundaries for Edge-matching

   ★ Geographical Names for GeoLocator

★ Contribute to ELF BaseMap, ELF Cadastre Map, ELF Aministrative Map, ELF Imagery view service

★ Setup national download web services of Master lvl

Questionnaire

- **Issued to Permanent Correspondents in June 2014**

- **Aim:**
  - ★ **Collect information about the national datasets and services**
  - ★ **Evaluate possibilities extending coverage of ELF products**

- **Template to fill**

- **Summary**

Inventory: major themes
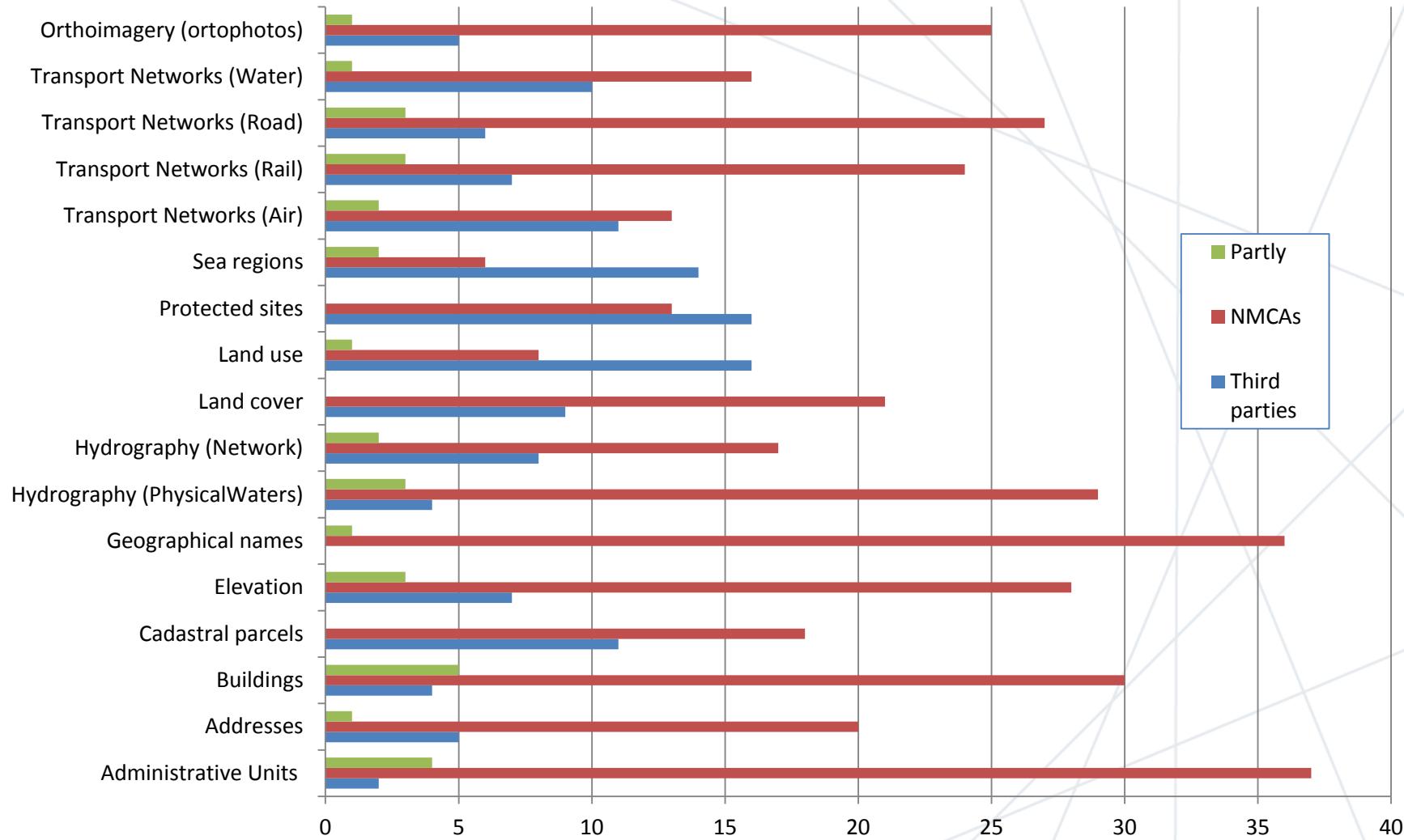
Coverage of ELF data contributions

ELF EUROPEAN LOCATION FRAMEWORK

Project partner countries (13)

Joining to the project in 2015 (7)

Data provider(4)

Contributors to ELF Global/Regional through EuroGeographics products ERM, EGM, EBM

Malta

European Commission

EUROPEAN LOCATION FRAMEWORK
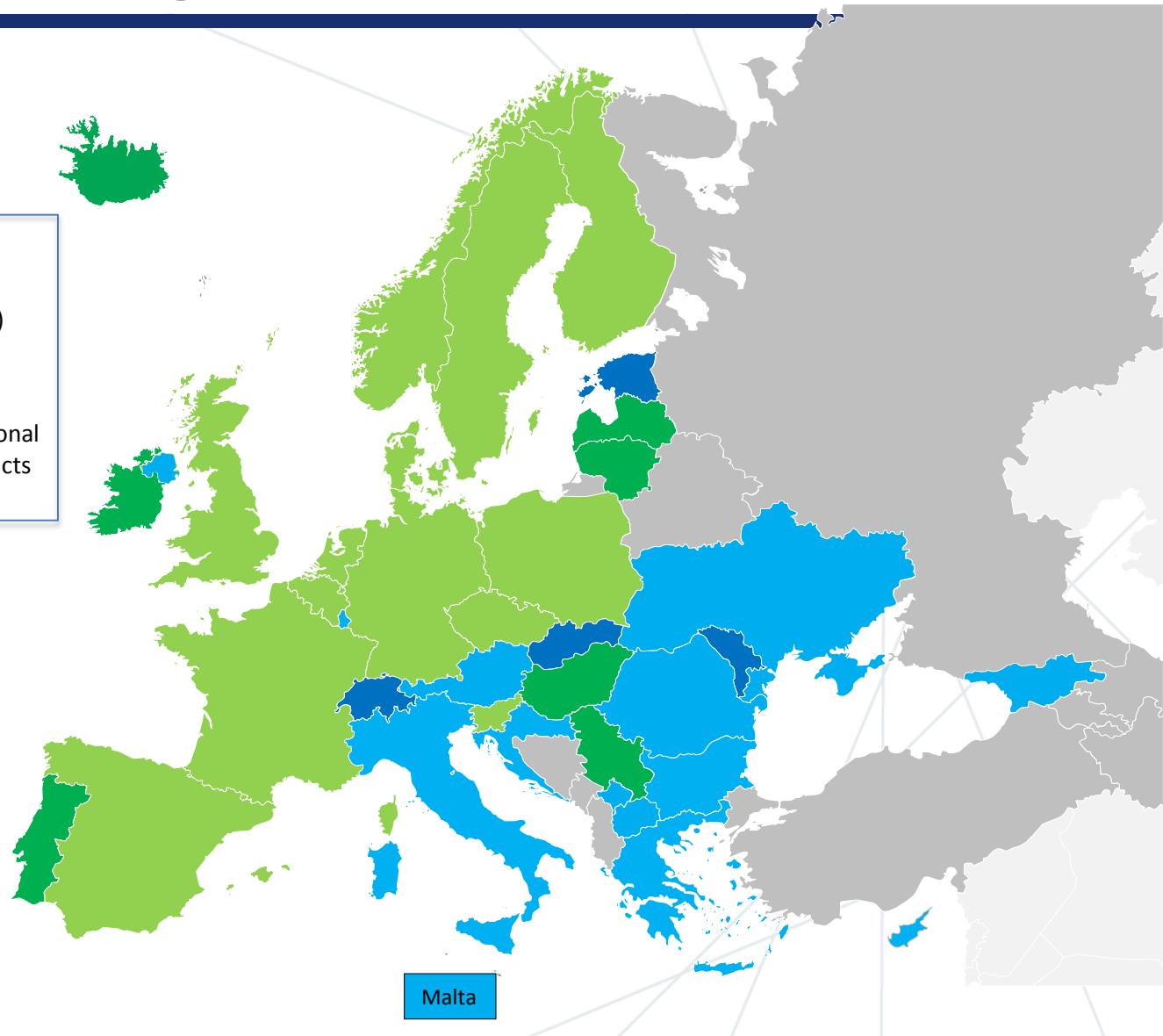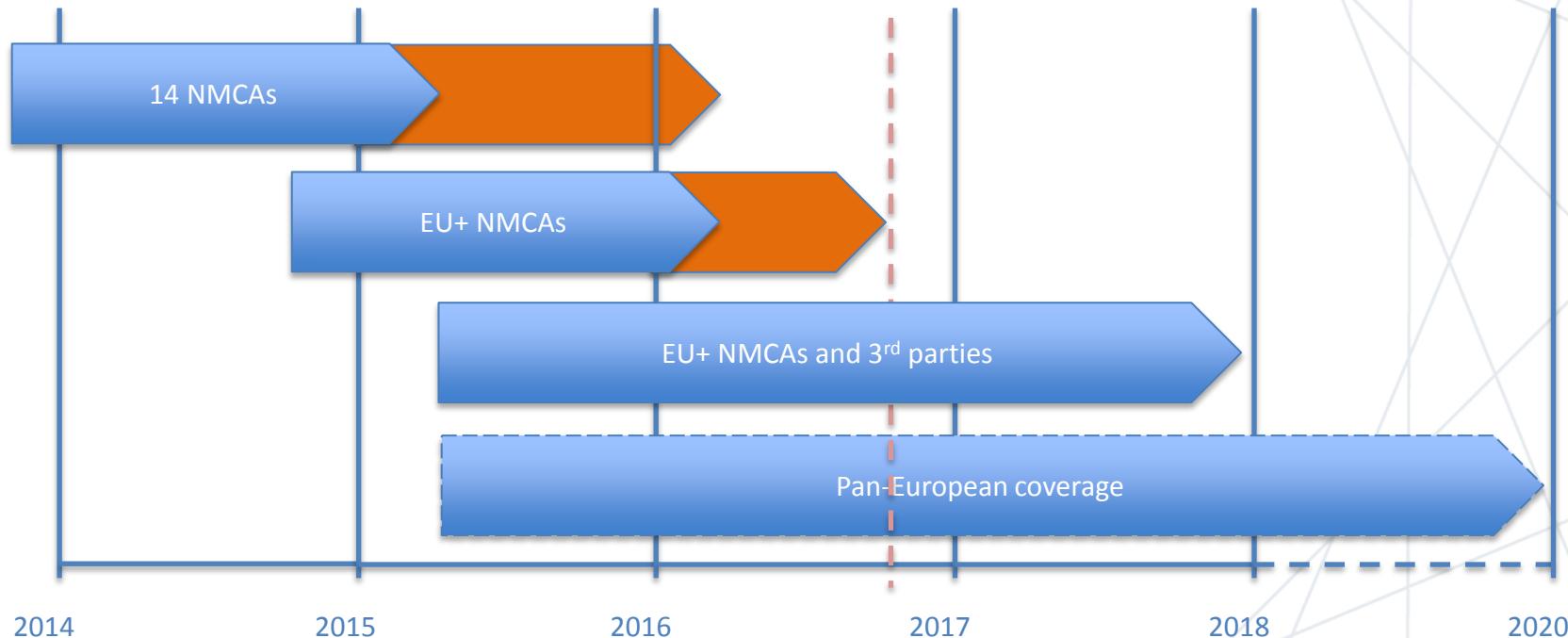
Update consistency between the 3 datasets for a same delivery package

EBM (100k)	ERM (250k)	EGM (1000k)
Administrative Regions	*Boundaries (BND) derived from EBM*	*Boundaries (BND) derived from EBM*
	Hydrography (HYDRO)	*Hydrography (HYDRO) generalised from ERM*
	Transport (TRANS)	*Transport (TRANS) generalised from ERM*
	Settlements (POP)	*Settlements(POP) generalised from ERM*
	Miscellaneous (MISC)	
	Named Location (NAME)	Named Location (NAME)
	Soil-Vegetation (VEG)	
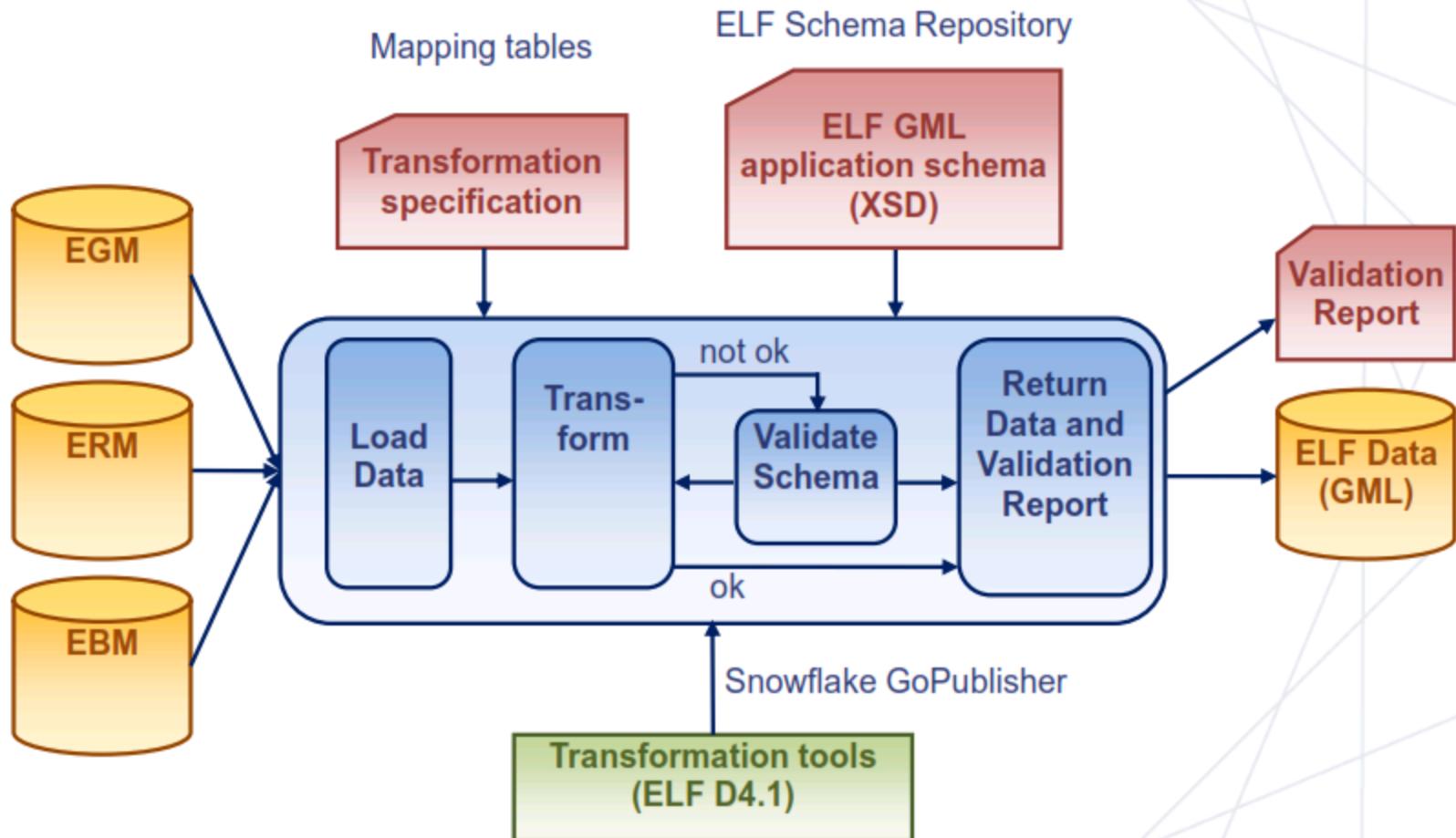
- **Geocoding and reverse geocoding**

- **WFS-G, INSPIRE/ELF GN (GML), CLV, JSON and KML output**

- **Multilingual, exonyms**

- **Content**
  - ★ **GN from EuroGeonames and ELF National services**
  - ★ **AD from Elf National services**
  - ★ **AU from ELF National services**

- **Custom operators**
  - ★ **GetFeatureinAU, FuzzyNameSearch, ReverseGeocode**

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Contribution: GeoLocator/EuroGeoNames

- **Provide geographical names (gazeteer):**
  - ★ **webservice, or**
  - ★ **data to be hosted**
- **Sign the Annex of EuroGeographics Framework License Agreement**
- **Contact and Delivery:**
  - ★ **Saulius Urbanas**
- **Follow up:**
  - ★ **Endonyms and variant names,**
 - ★ **Addresses,**
  - ★ **Postal Code polygons,**
  - ★ **Cadastral Parcels**
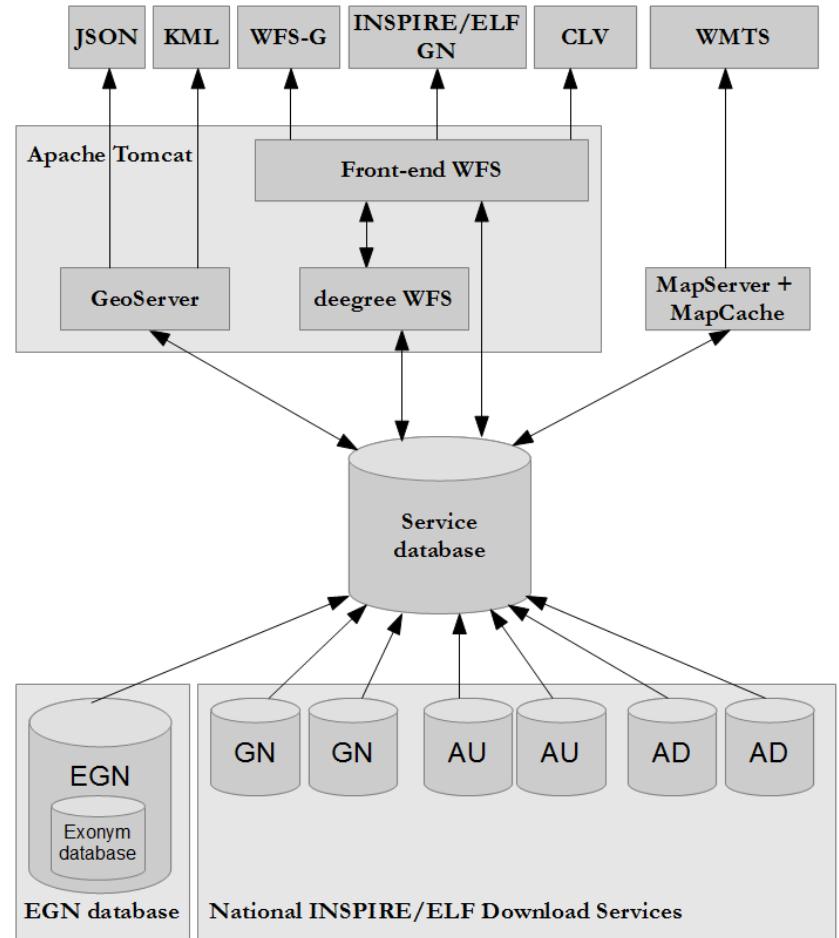
- **Provide geographical names (gazeteer):**
  - ★ **webservice, or**
  - ★ **data to be hosted**

- **Sign the Annex of EuroGeographics Framework License Agreement**

- **Contact and Delivery:**
  - ★ **Saulius Urbanas**

- **Follow up:**
  - ★ **Endonyms and variant names,**
  - ★ **Addresses,**
  - ★ **Postal Code polygons,**
  - ★ **Cadastral Parcels**
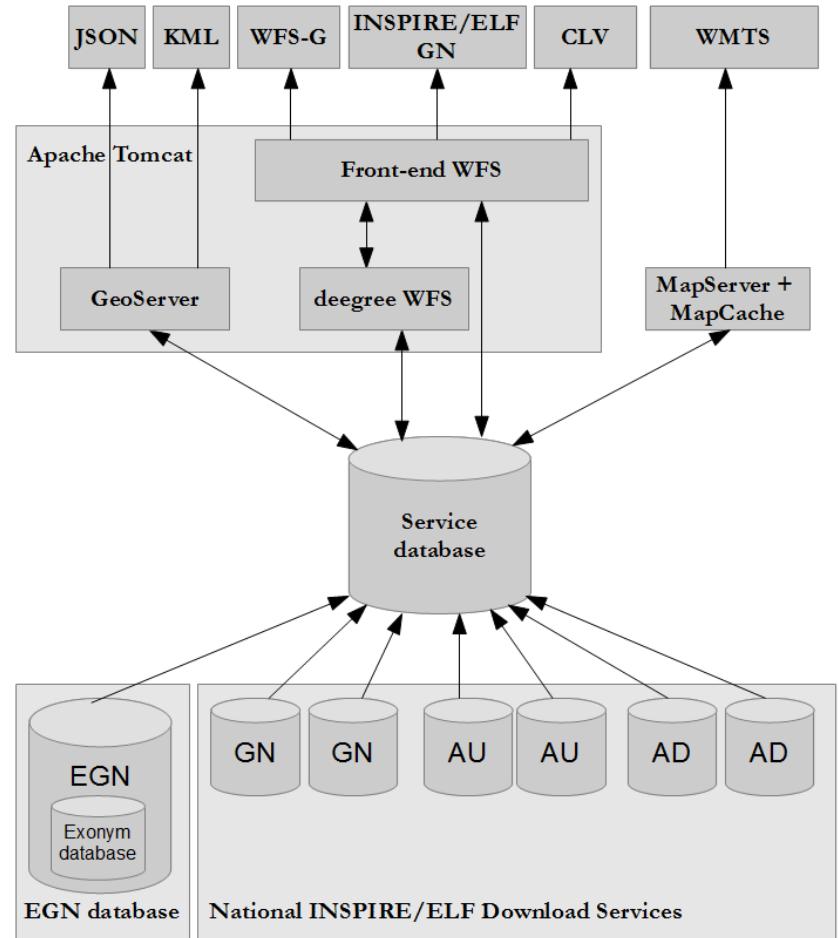
ELF ~~International Boundaries~~ lines of connecting features

- ★ Agreed lines/points of connecting features
- ★ Connecting features
  - ★ Locations on the lines where edge matched geographic entities from neighbouring countries connect
  - ★ Serve as anchor for repeatable edge matching
- ★ Defined for all LoD

Legend:
- springs
- watercourses
- point connecting features
- line connecting features
- agreed state boundaries
- Lake/Pond

EUROPEAN LOCATION FRAMEWORK
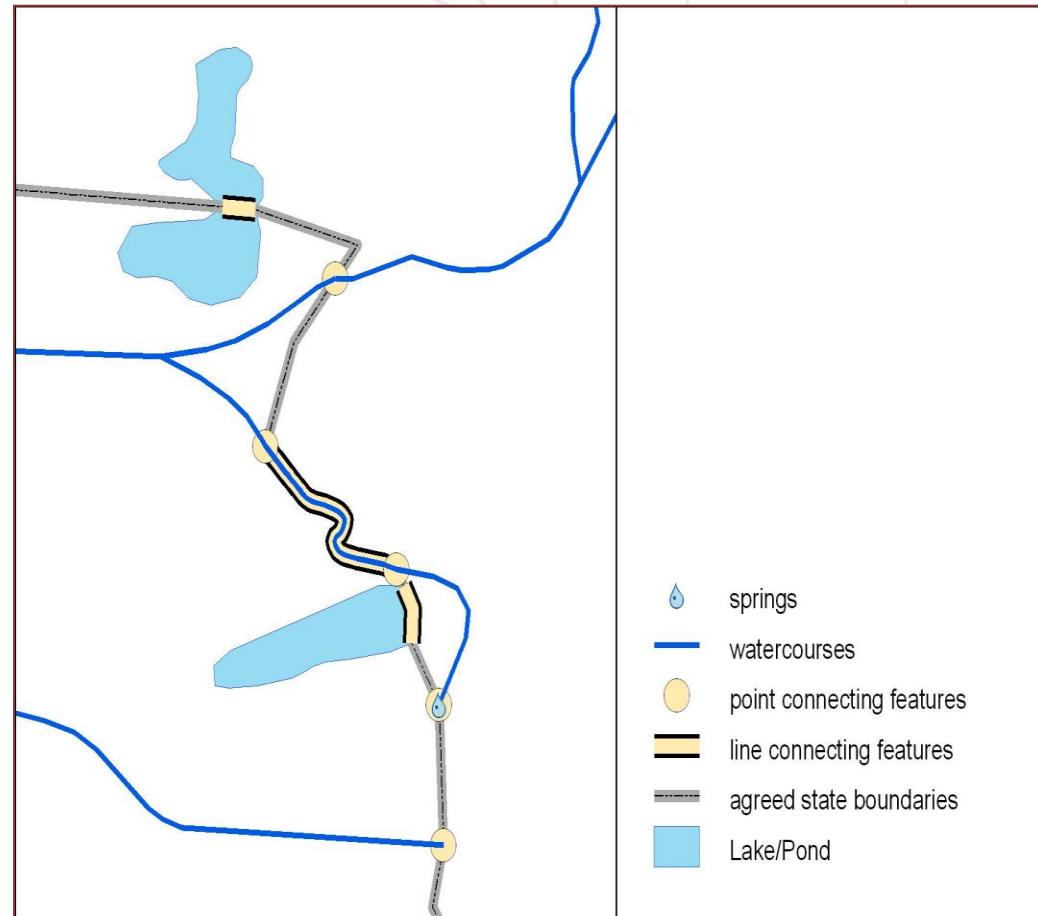
Edge Matching tools

★ Based on ELF specifications delivered by WP 2

★ Delft University has developed Pprepair for edge matching functionality on polygons

★ 1spatial has developed the tool 1Integrate.

★ Esri has configured their ArcGIS Datareviewer edge matching functionalities
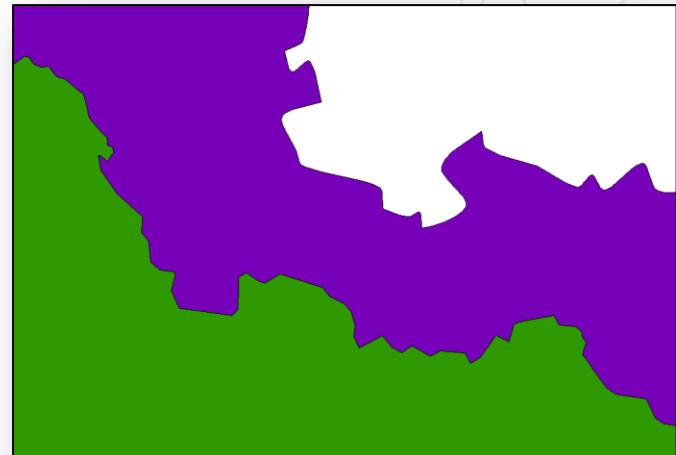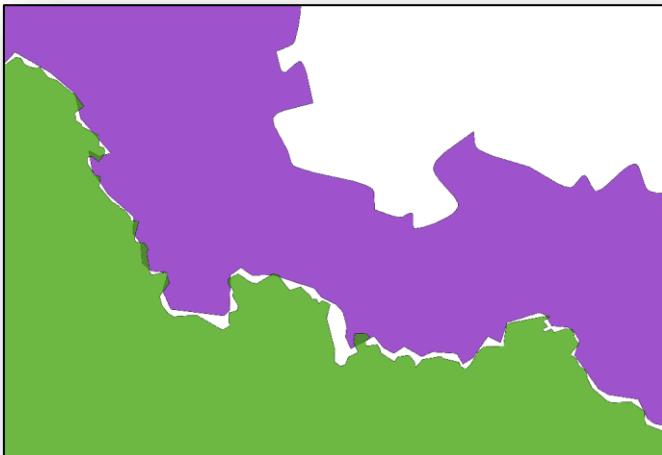
- **Compliance to ELF (INSPIRE) specification**
  - ★ **Data Specification document**
  - ★ **UML Data Model**
  - ★ **GML Application Schema files**
- **Sign the Annex of EuroGeographics Framework License Agreement**
- **Delivery:**
  - ★ **marcus.bruehl@bkg.bund.de**
- **Contact:**
  - ★ **Saulius Urbanas**
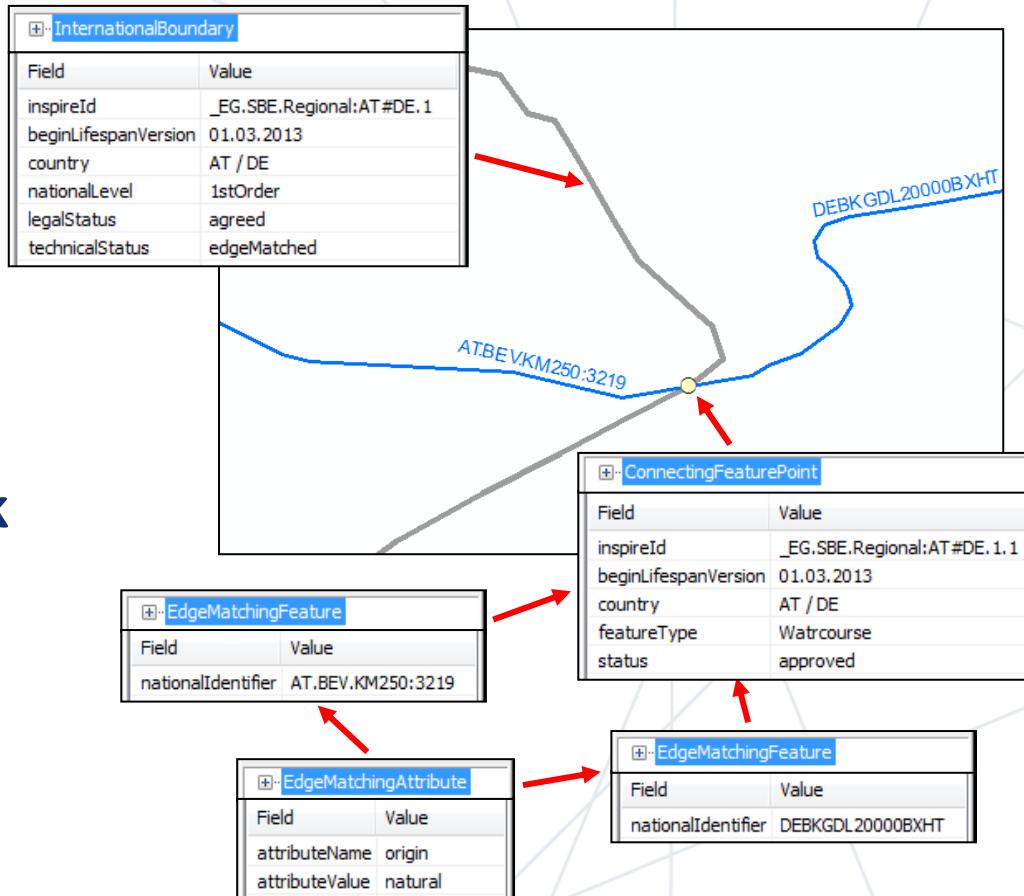
ELF BaseMap

★ **BaseMap is a pyramid of digital maps displaying ELF base data, at different levels of zoom**

★ **WMTS service**

    ★ **Content : themes AU, BU, LC, HY, TN and GN (EL to be added later)**

    ★ **Themes AD and CP to be dealt by ELF Cadastre**

★ **Geographic extend : geographic Europe (oversea territories excluded)**

★ **Main use cases**

    ★ **Consultation**

    ★ **Background map for applications**

★ **CRS: pseudo Mercator (3857) and LAEA (3035)**

★ **Levels of zoom : from a standardized list**

    ★ **From 2d to 40M**

Methodology
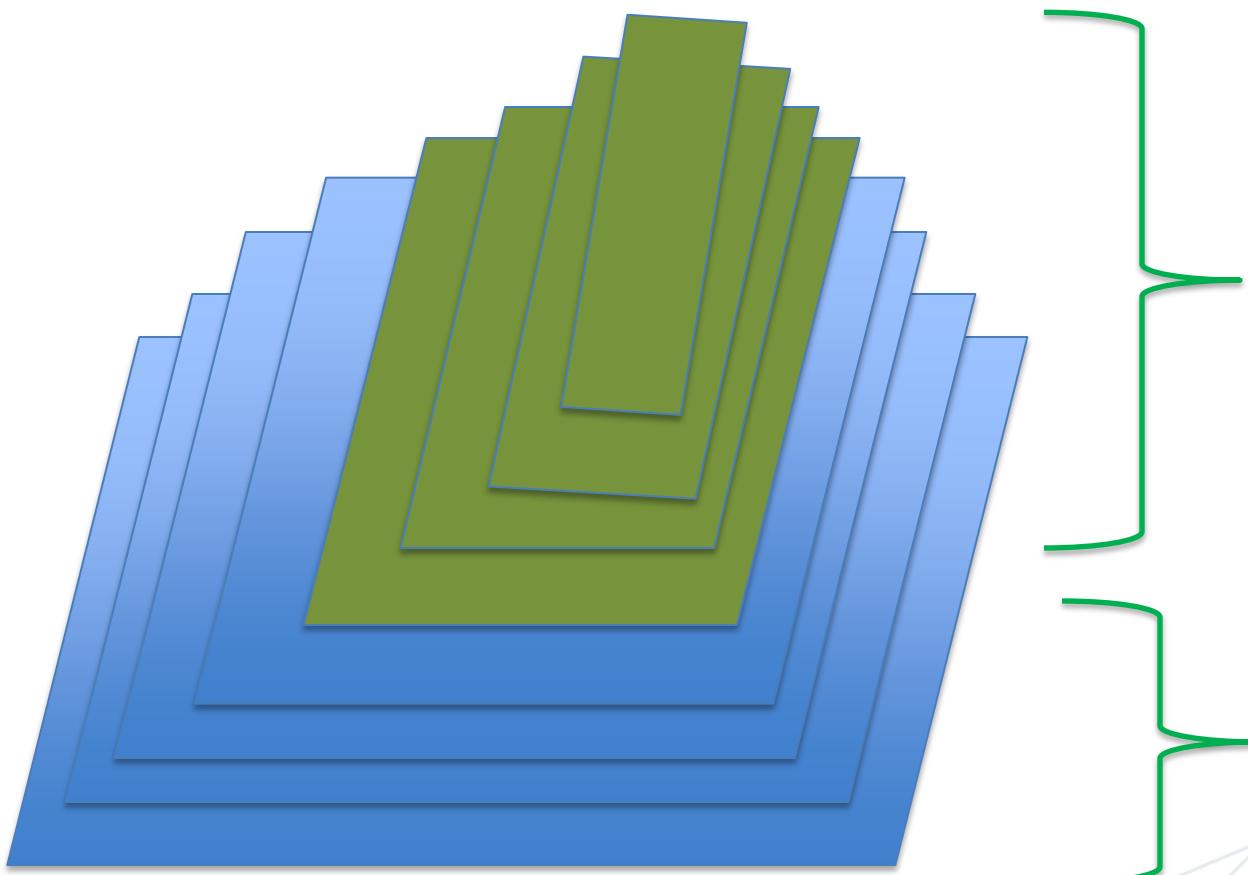
Zoom levels 144K to 40 M : EG products

Zoom levels 2k to 72 k : (mainly) national data

BaseMap data model

- **Provides**
  - ★ **BaseMap simple data model itself**
  - ★ **Matching guidelines from ELF data model to BaseMap**

- **Makes NMCAs aware of the expected content of BaseMap**
  - ★ **Feature types**
  - ★ **Attributes to be used for**
    - − **Selection criteria (generalisation)**
   - − **Different symbols**

ELF WP 2 – BaseMap model

Author: Dominique Laurent
Date: 04.03.2015
Version: 1.1
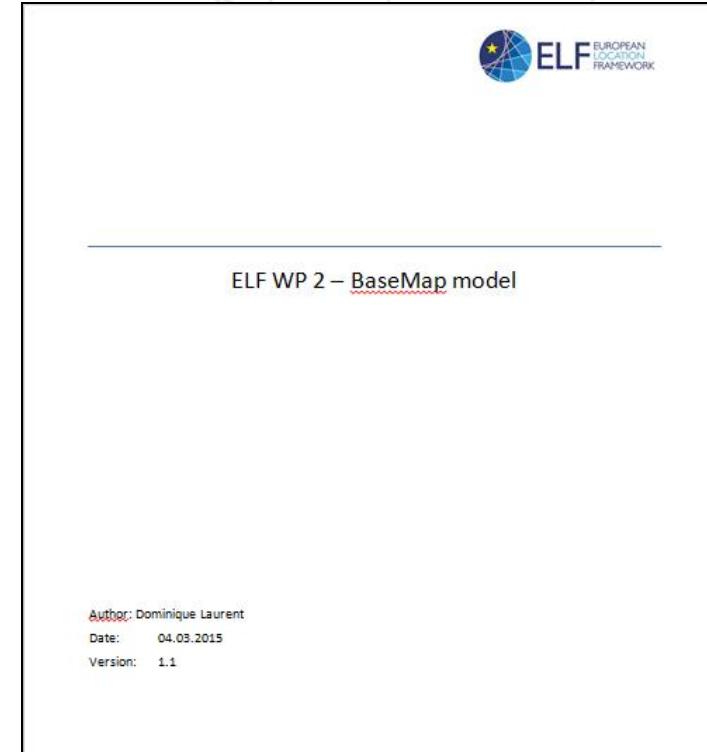
SLD (Style Layer Descripton)

- **Standardised way to document portrayal rules**

- **Provides**

  - ★ **Layer name**
  - ★ **Layer source : feature type + OGC filter if relevant**
  - ★ **Scale range**
  - ★ **Symbol to be applied**

```
<se:Name>HY.PhysicalWaters.StandingWater</se:Name>
<UserStyle>
    <se:FeatureTypeStyle>
        <se:Rule>
            <se:Name>StandingWater</se:Name>
            <se:MaxScaleDenominator>72200.000000</se:MaxScaleDenominator>
            <se:PolygonSymbolizer>
                <se:Fill>
                    <se:SvgParameter name="fill">#c2e9fc</se:SvgParameter>
                </se:Fill>
            </se:PolygonSymbolizer>
        </se:Rule>
    </se:FeatureTypeStyle>
</UserStyle>
```

EUROPEAN LOCATION FRAMEWORK

National Download Services

Source data for ELF download services: transform existing data to ELF/INSPIRE data model (recommended option)

NMCA data

NMCA data

NMCA data

Transformation process

Harmonised (format xxx)

ELF ATOM feeds

OSKARI

ELF WFS

Cascading WFS

EUROPEAN LOCATION FRAMEWORK
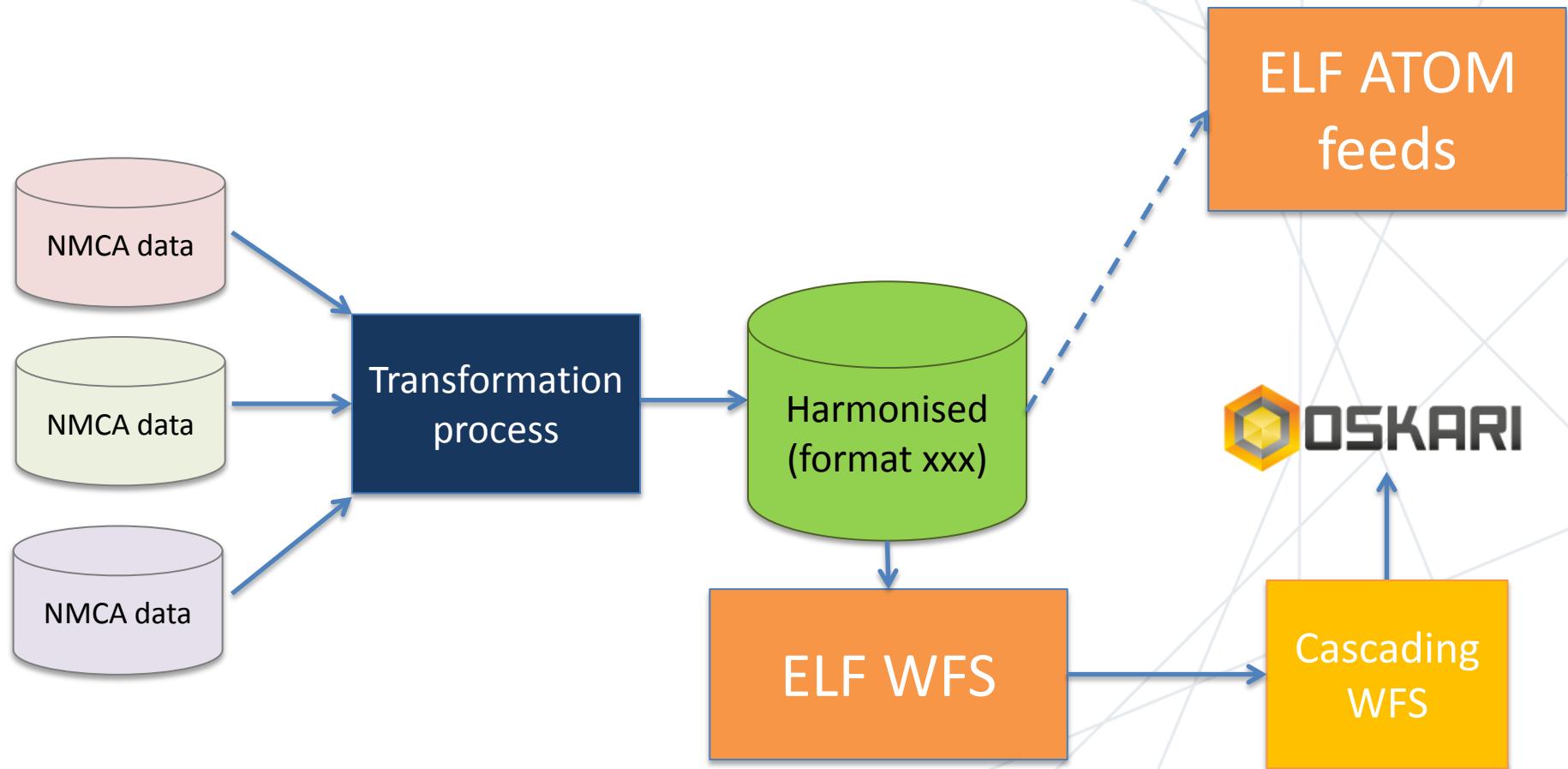
★ **Should be conformant to INSPIRE network services, follow Technical guidelines**

  ★ **Download services**

  ★ **View services – not required but, relatively easy to setup**

★ **Must support the two projections**

  ★ **EPSG 3857(Web Mercator) and EPSG 3035(ETRS-LAEA)**

★ **ELF National services must be well documented:**

  ★ **Metadata according to INSPIRE. Discovery service and Metadata IR**

  ★ **Capabilities file. INSPIRE Technical Guidance**

★ **WFS direct access strongly recommended**

  ★ **WFS 2.0.0, GML 3.2.1**

  ★ **Optional Atom feeds as supplement to WFSs**

★ **Data should be harmonized. Edge matched, quality controlled Use/validate vs. the ELF application schemas www.locationframework.eu/schemas**

Production process

- **Design phase :**
  - ⭐ Work Package 2
    - ▪ *Data model*
    - ▪ *Application schemas*

- *Production phase*
  - ★ *Harmonisation of national data to ELF/INSPIRE data models*
    - ▪ *Matching tables : NMCAs*
    - ▪ *Master data : NMCAs*
  - ★ *Set up WFS and/or ATOM national services using ELF application schemas*
    - ▪ *Master data : NMCAs*
    - ▪ *Documentation of services : NMCAs*
  - ★ *Connection to Oscari: NLS – Finland (FGI)*

Extraction
Transformation
Loading

National data

ETL Tools

ELF/INSPIRE data

INSPIRE data specifications

- Link: **http://inspire.ec.europa.eu/index.cfm/pageid/2**

Technical Guidelines Annex I

- INSPIRE Data Specification on Addresses – Technical Guidelines 3.1 17.04.2014
- INSPIRE Data Specification on Administrative Units – Technical Guidelines 3.1 17.04.2014
- INSPIRE Data Specification on Cadastral Parcels – Technical Guidelines 3.1 17.04.2014
- INSPIRE Data Specification on Coordinate Reference Systems – Technical Guidelines 3.2 17.04.2014
- INSPIRE Data Specification on Geographical Grid Systems – Technical Guidelines 3.1 17.04.2014
- INSPIRE Data Specification on Geographical Names – Technical Guidelines 3.1 17.04.2014
- INSPIRE Data Specification on Hydrography – Technical Guidelines 3.1 17.04.2014
- INSPIRE Data Specification on Protected Sites – Technical Guidelines 3.2 17.04.2014
- INSPIRE Data Specification on Transport Networks – Technical Guidelines 3.2 17.04.2014

Technical Guidelines Annex II & III

- INSPIRE Data Specifications – All v3.0 Technical Guidelines for Annexes II & III 13.12.2013
- INSPIRE Data Specification on Agricultural and Aquaculture Facilities – Technical Guidelines 10.12.2013
- INSPIRE Data Specification on Area Management/Restriction/Regulation Zones and Reporting Units – Technical Guidelines 10.12.2013
- INSPIRE Data Specification on Atmospheric Conditions and Meteorological Geographical Features – Technical Guidelines 10.12.2013
- INSPIRE Data Specification on Bio-geographical Regions – Technical Guidelines 10.12.2013
- INSPIRE Data Specification on Buildings – Technical Guidelines 10.12.2013

+++

ELF data documentation

- **http://locationframework.eu/**

Documentation page

- **Data specifications – and all other documentation**

Documentation

The components of the ELF infrastructure will be documented incrementally on the following subpages as more specifications, datasets, tools, services and applications become available.

Terminology	Specifications	Datasets	Geo-tools
ELF Platform services	ArcGIS Online services	Applications	Application Developers

The ELF Platform (http://locationframework.eu/) is at the core of the technical architecture of ELF. It comprises the datasets provided by National Mapping and Cadastral Authorities (NMCAs) and – in the future – other data providers. Using ELF geo-tools, the datasets are prepared by the NMCAs to conform to the applicable ELF data and product specifications.

ELF Data Specifications

- **Provides**
  - ★ **Extensions to the INSPIRE data mo**

- **Contains**
  - ★ **Dependencies between theme packages**
  - ★ **Overviews of UML models**
  - ★ **Feature types**
  - ★ **Data types**
  - ★ **Code lists**
  - ★ **Attributes**
  - ★ **Associations**
  - ★ **Code lists values**
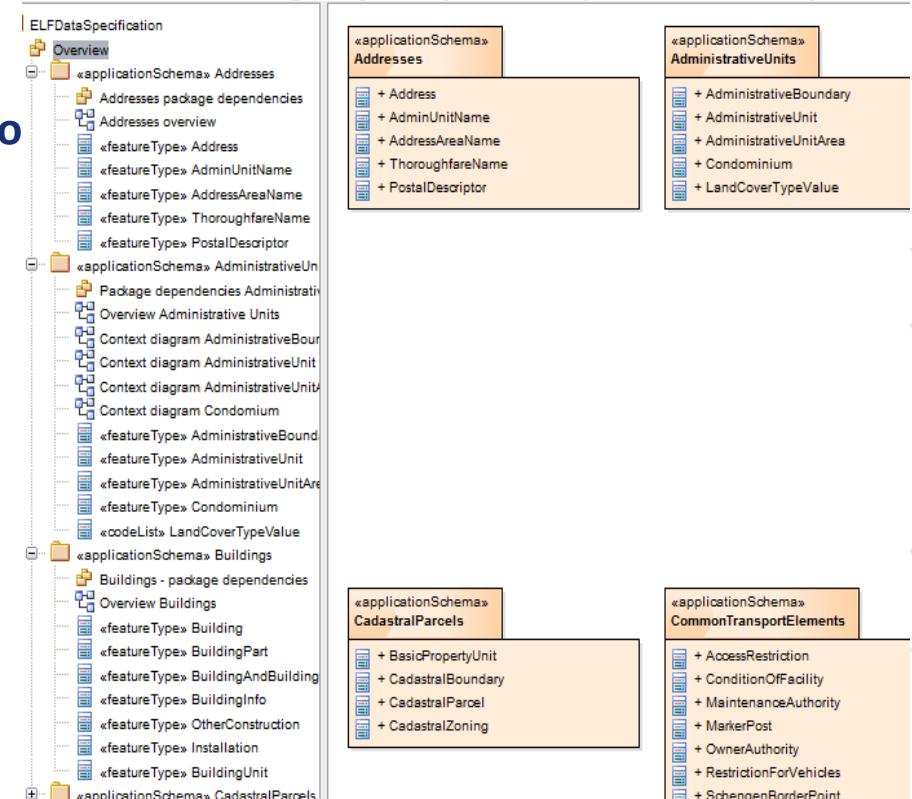
Only specific to ELF

ELF Application Schemas

- ## http://www.locationframework.eu/schemas/
  - ★ **In general use last available version**

```xml
<?xml version="1.0" encoding="UTF-8"?>
<schema xmlns="http://www.w3.org/2001/XMLSchema" xmlns:au="urn:x-inspire:specification:gmlas:AdministrativeUnits:3.0" xmlns:base="
http://inspire.ec.europa.eu/schemas/base/3.3" xmlns:base2="http://inspire.ec.europa.eu/schemas/base2/1.0" xmlns:elf-au="
http://www.locationframework.eu/schemas/AdministrativeUnits/0.2" xmlns:elf-gn="http://www.locationframework.eu/schemas/GeographicalNames/0.2" xmlns:gml="
http://www.opengis.net/gml/3.2" xmlns:gmlexr="http://www.opengis.net/gml/3.3/exr" xmlns:gn="urn:x-inspire:specification:gmlas:GeographicalNames:3.0" targetNamespace="
http://www.locationframework.eu/schemas/AdministrativeUnits/0.2" elementFormDefault="qualified" version="0.2">
    <import namespace="http://inspire.ec.europa.eu/schemas/base/3.3" schemaLocation="http://inspire.ec.europa.eu/schemas/base/3.3/BaseTypes.xsd"/>
    <import namespace="http://inspire.ec.europa.eu/schemas/base2/1.0" schemaLocation="http://inspire.ec.europa.eu/schemas/base2/1.0/BaseTypes2.xsd"/>
    <import namespace="http://www.locationframework.eu/schemas/GeographicalNames/0.2" schemaLocation="
http://www.locationframework.eu/schemas/GeographicalNames/0.2/GeographicalNames.xsd"/>
    <import namespace="http://www.opengis.net/gml/3.2" schemaLocation="http://schemas.opengis.net/gml/3.2.1/gml.xsd"/>
    <import namespace="http://www.opengis.net/gml/3.3/exr" schemaLocation="http://schemas.opengis.net/gml/3.3/extdEncRule.xsd"/>
    <import namespace="urn:x-inspire:specification:gmlas:AdministrativeUnits:3.0" schemaLocation="http://inspire.ec.europa.eu/schemas/au/3.0/AdministrativeUnits.xsd"/>
    <import namespace="urn:x-inspire:specification:gmlas:GeographicalNames:3.0" schemaLocation="http://inspire.ec.europa.eu/schemas/gn/3.0/GeographicalNames.xsd"/>
    <!--XML Schema document created by ShapeChange - http://shapechange.net/-->
    <element name="AdministrativeUnit" type="elf-au:AdministrativeUnitType" substitutionGroup="au:AdministrativeUnit"/>
    <complexType name="AdministrativeUnitType">
        <complexContent>
            <extension base="au:AdministrativeUnitType">
                <sequence>
                    <element name="SHNCode" type="base2:ThematicIdentifierPropertyType" minOccurs="0"/>
                    <element name="validFrom" nillable="true" minOccurs="0">
                        <complexType>
                            <simpleContent>
                                <extension base="dateTime">
```

www.locationframework.eu
www.elfproject.eu