The Provision of Functionalities Related to Place Names as a Web Service in a Multi-Provider Environment

Presentation to: **INSPIRE 2015 Conference, Lisbon, Portugal**

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Date: **25 May, 2015**

Outline

★ ELF project

★ ELF GeoLocator service

   ★ Architecture

   ★ Service operations

★ Web Client

ELF project

- "The European Location Framework is a technical infrastructure which delivers **authoritative**, **interoperable**, **cross-border** geospatial reference data for analysing and understanding information connected to places and features."
- Many delivarables…
  - ELF Data specifications
  - ELF National services
  - **ELF GeoLocator Service**
  - ELF Cascaded Services
  - Tools
    - Transformation, edge-matching, generalization, etc…

EUROPEAN LOCATION FRAMEWORK

ELF Countries
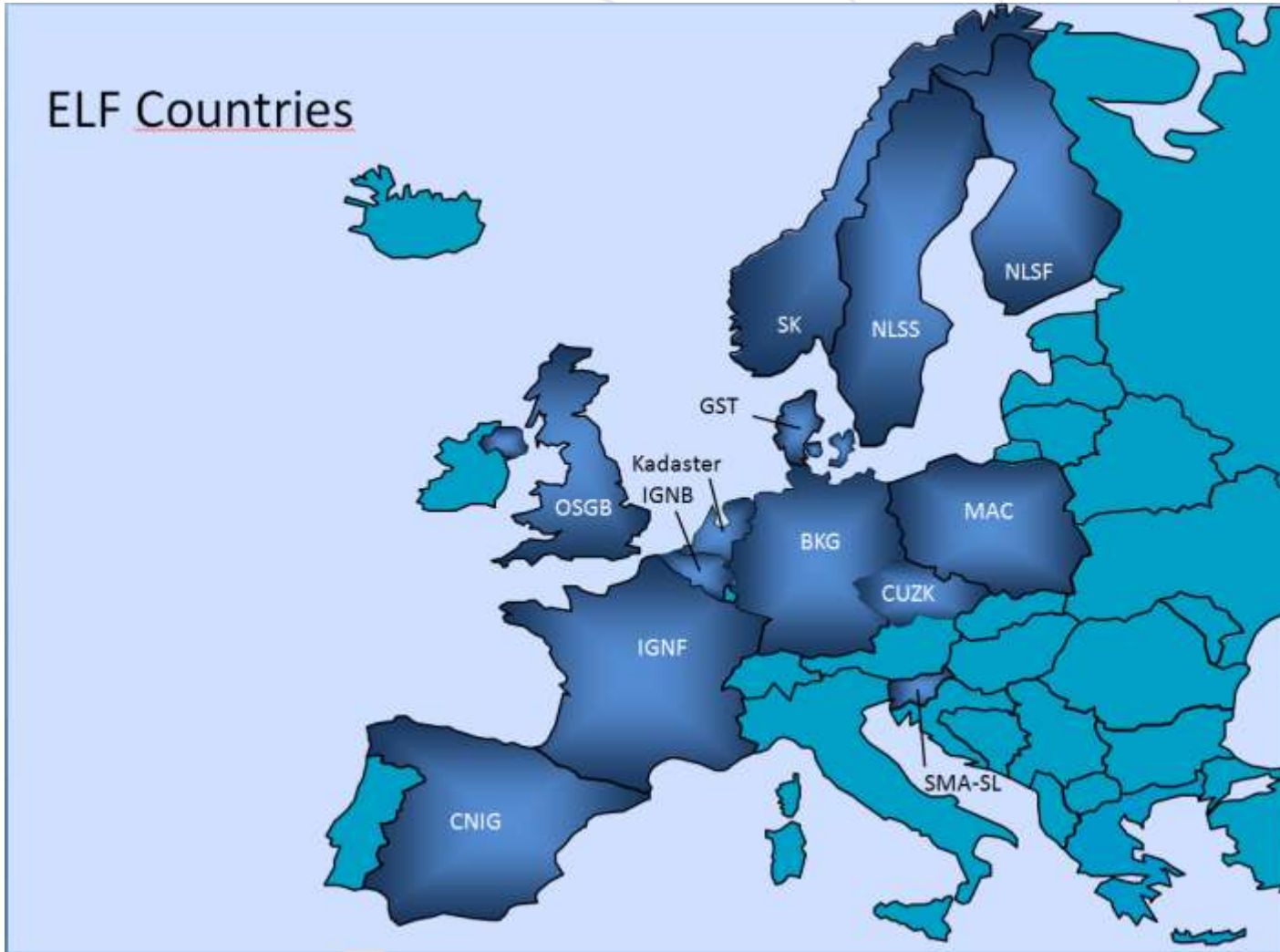
ELF GeoLocator Service

★ The ELF GeoLocator is a **gazetteer service** that provides functionalities related to place names
  - ★ Geocoding
  - ★ Reverse geocoding

★ The ELF GeoLocator is based on earlier EuroGeoNames (EGN) gazetteer service
  - ★ Developed in 2012
  - ★ Service interface conformant with the OGC Gazetteer Service AP (WFS-G) for the WFS
  - ★ Contains multilingual data and support for exonyms (exonymdatabase content)

★ Based on **authoritative** spatial data

★ ELF GeoLocator adds **new data** and **new functionalities** to the earlier EGN service

★ New data from themes
  - ★ **Addresses** (AD), **Administrative Units** (AU), **Geographical Names** (GN)

★ Adds INSPIRE / ELF GN output format

EGN data coverage

Country
Austria
Belgium
Croatia
Cypros
Czech Republic
Estonia
Finland
France
Germany
Greece
Italy
Latvia
Lithuania
Slovenia
Spain
Switzerland
The Netherlands
United Kingdom
Exonymdatabase

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GeoLocator service operations

★ WFS operations

  ★ GetCapabilities   -   Returns service metadata

  ★ DescribeFeatureType   -   Returns feature type metadata

  ★ GetFeature (ordinary geocoding through WFS filtering) -   Returns features
      Supports additional LANGUAGE-parameter

★ Custom operations

  ★ GetFeatureInAU   -   AU-limited geocoding that focuses the search on a specific administrative unit
  ★ FuzzyNameSearch   -   Geocoding funcionality that searches close matches for names
  ★ ReverseGeocode   -   Finds nearest name from the given point or the administrative unit of that point

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ELF GeoLocator service - Architecture
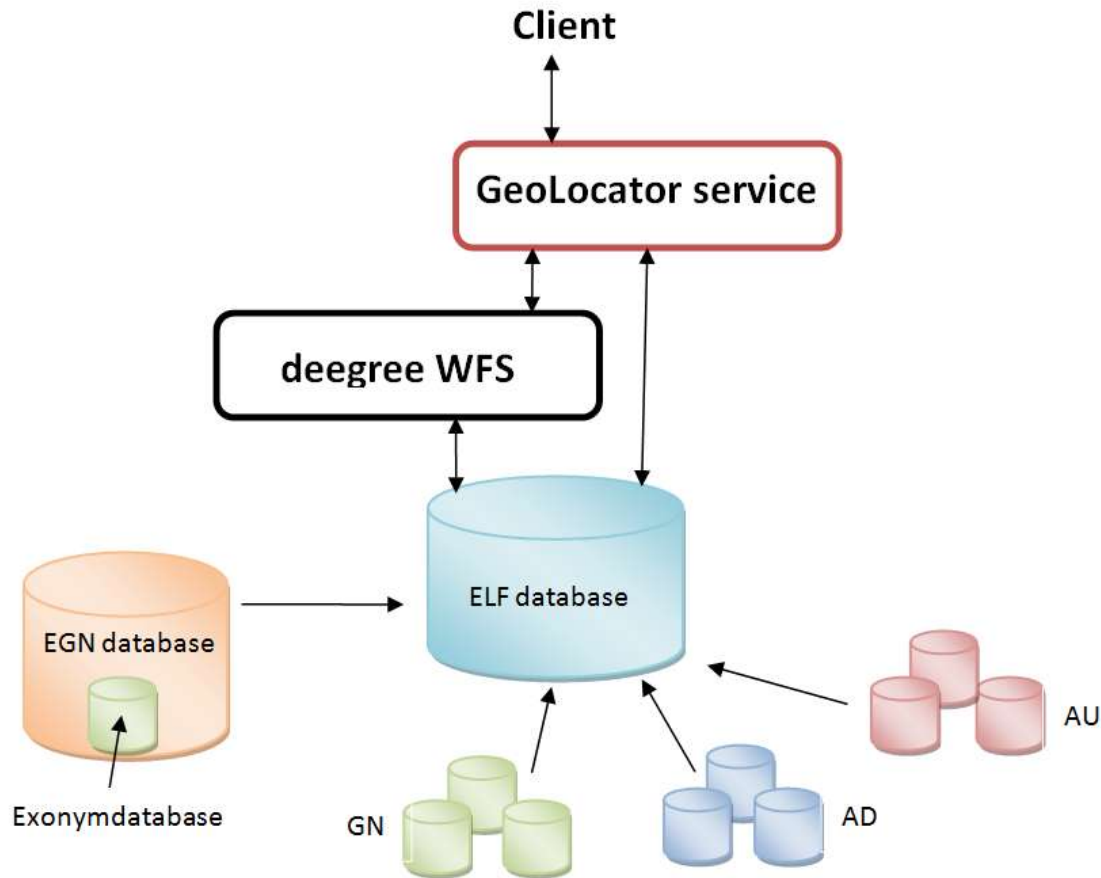
Data import process

★ AD, AU and GN data were imported into database with a custom Java application

★ The AU data were imported one level at a time, starting from the highest level.

  ★ Center points were calculated with a PostGIS function for each AU-unit for indicating the name label location

★ The data were linked together to form a hierachy

  ★ AD and GN data are linked to the AU elements

  ★ AU elements are linked together so that the imported data forms a hierarchy

AD and GN data   4thOrder   3rdOrder   2ndOrder

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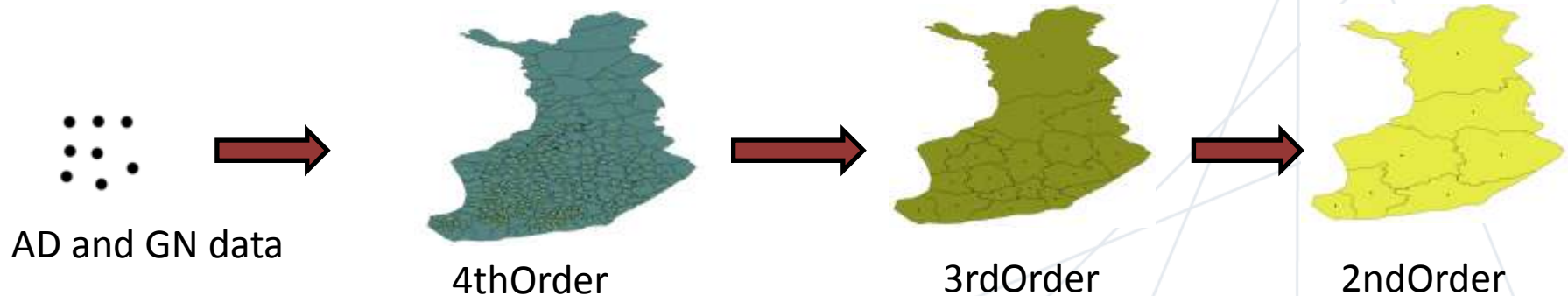
Main output - OGC Gazetteer Service AP…

```xml
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  <gml:boundedBy>
    <gml:Envelope srsName="EPSG:4258">
      <gml:lowerCorner>24.539093 60.158482</gml:lowerCorner>
      <gml:upperCorner>24.539093 60.158482</gml:upperCorner>
    </gml:Envelope>
  </gml:boundedBy>
  <iso19112:geographicIdentifier>FI.NLS.GNR.10071537</iso19112:geographicIdentifier>
  <iso19112:alternativeGeographicIdentifiers>
    <iso19112:alternativeGeographicIdentifier>
      <iso19112:name xml:lang="swe">Masaby</iso19112:name>
      <iso19112:nameID>Masaby;FI.40071536</iso19112:nameID>
      <iso19112:type>official</iso19112:type>
      <iso19112:primary>false</iso19112:primary>
    </iso19112:alternativeGeographicIdentifier>
    <iso19112:alternativeGeographicIdentifier>
      <iso19112:name xml:lang="fin">Masala</iso19112:name>
      <iso19112:nameID>Masala;FI.40071537</iso19112:nameID>
      <iso19112:type>official</iso19112:type>
      <iso19112:primary>false</iso19112:primary>
    </iso19112:alternativeGeographicIdentifier>
  </iso19112:alternativeGeographicIdentifiers>
  <iso19112:position>
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      <gml:pos>24.539093 60.158482</gml:pos>
    </gml:Point>
  </iso19112:position>
  <iso19112:geographicExtent>
    <gml:Polygon gml:id="SI_LocationInstance.1014919_ISO19112_GEOGRAPHICEXTENT" srsName="EPSG:4258">
      <gml:exterior>
        <gml:LinearRing srsName="EPSG:4258">
          <gml:posList>
            24.539093 60.158482 24.539093 60.158482 24.539093 60.158482 24.539093 60.158482 24.539093 60.158482
          </gml:posList>
        </gml:LinearRing>
      </gml:exterior>
    </gml:Polygon>
```

…OGC Gazetteer Service AP output

Link to parent element in the administrative unit hierarchy

Link to location type information

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Custom operations - GetFeatureInAU

• The GetFeatureInAU operation performs **administrative unit-limited geocoding** where name search queries can be focused to a specific administrative unit

• Created with PostGIS's spatial operations

Parameters:

NAME	(Mandatory)	name to be searched
AU	(Mandatory)	name of the administrative unit
LANGUAGE	(Optional)	Language for displaying the location type information

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Custom operations - FuzzyNameSearch

- The FuzzyNameSearch operation returns features whose names are near matches for the queried name.
  - Can find features from slightly misspelled input
  - Can be used to request features whose names contain diacritics or other special characters that are not available on the user's keyboard.
- Returns the maximum amount of 10 features whose names are best matches for the queried name.
- Created with PostgreSQL's pg_trgm() function

Parameters

NAME   (Mandatory)   Name to be searched
LANGUAGE (Optional)   Language for displaying the location type information

Custom operations - ReverseGeocode
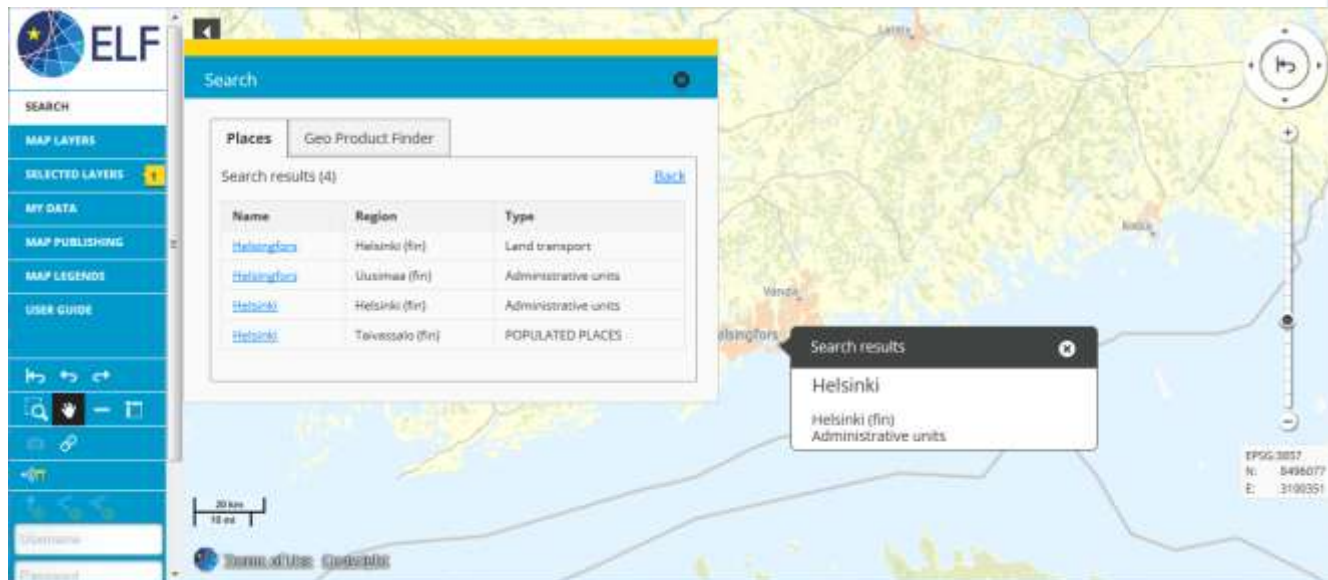
The operation has two modes

    1. Ordinary reverse geocoding   (finds the nearest name)

    2. Administrative unit-based reverse geocoding   (finds the Administrative unit)

Parameters

LAT	(Mandatory)	latitude (in EPSG:4258)
LON	(Mandatory)	longitude (in EPSG:4258)
MODE	(Optional)	Fixed value 'AU' indicates AU-based reverse geocoding
LANGUAGE	(Optional)	Language for displaying the location type information

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Web client

- Demonstrative client application has been developed with OSKARI javascript library
- Oskari library can be found at http://www.oskari.org
- http://54.75.147.57/

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Thank you