

## ELF Basemap – Offering a European Reference Map Service

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### Extended Abstract

The European Location Framework (ELF) project [1] is working to create the first implementation of a geospatial reference data infrastructure based on national information assets (Jakobsson 2012). The ELF project is supported by a consortium of 30 partners across Europe, including National Mapping and Cadastral Authorities (NMCAs), industry and research. The project started in 2013 and launched first services in 2014 at the ELF Platform [2], the core of the technical infrastructure. The ELF Platform connects the data services provided by the NMCAs and, in the future, other data providers. Using the ELF geo-tools, the national datasets are transformed by the NMCAs to conform to the applicable ELF/INSPIRE data and product specifications. The ELF Platform further comprises the view and download services that provide users access to these datasets (Jakobsson and Ostensen 2015).

The project is currently working with 14 countries to start provision of ELF/INSPIRE based services for utilization at European, cross-border and national use level. ELF Basemap is a specific view service and one of the key outputs of the project as it offers a visual access point and thus an interface between the reference data infrastructure and the users. ELF Basemap aims to be used both as background map and in combination with other types of information, composed of many themes and available in different visualisations. Table 1 summarizes the basic map concept of the ELF Basemap.

<b>Map type</b>	European Reference Map
<b>Aim of map use</b>	A reference background map to enable professional users to display their data in client applications such as websites, GIS and increasingly mobile devices; background data for other types of applications
<b>Map content</b>	General description of the man-made and natural landscape with specific interest for transport infrastructure, administrative boundaries, hydrography, location of settlements, relief and land cover information
<b>User</b>	Professionals and general public
<b>Map function</b>	Discovery, information, cognition, communication, and social function
<b>Map use situation</b>	Indoor (outdoor)
<b>Area of interest</b>	geographic Europe
<b>Scale</b>	pyramid of digital maps at different zoom levels - 1:1000000 - 1:2300
<b>Output medium</b>	ELF BaseMap Service (WMTS)
<b>Source Data</b>	Digital vector data from pan-European and national contributions within the European Location Framework (ELF): EuroGeographics existing data at Global and Regional level as well as National basemap data Digital Terrain Model Over Europe (EU-DEM)

**Table 1.** Basic concept of the ELF Basemap

Currently, the project team is developing the ELF Basemap specification and technical guidance documents for the production of the view service. The specification document details the map concept and describes the map content and design following the approach described by Hopfstock (2010). It is accompanied by a ScaleMaster document and Styled Layer Descriptor (SLD) file. The ScaleMaster [3] is a structured diagram organizing multiscale mapping from multiple sources and registers the selection and generalization decisions for the each level of zoom. The SLD file documents the portrayal rules. Finally, the ELF Basemap service consists of a pyramid of digital cartographic images at different zoom levels delivered through a Web Map Tile Service (WMTS).

Major challenges in the development and production of the ELF Basemap specification and service are the data content and its visualization in a multinational production effort. Hopfstock and Laurent (2015) question the fitness-for-purpose of INSPIRE data for cartographic applications due to the complexity of the INSPIRE data model, missing information and heterogeneous data content allowed to offer in INSPIRE. The project also inves-

tingated several approaches to produce the ELF Basemap from national offerings.

In order to test and evaluate the map concept and envisaged production process a pilot ELF Basemap service has been set up in spring 2015 for the Nordic cluster and the Netherlands. Meanwhile more countries have started the production of national ELF Basemap contributions (Denmark, Poland, Czech Republic and Belgium). Table 2 provides an example of the current look and feel of the pilot ELF Basemap at different zoom levels. Given the feedback from the project partners the recommended production process seems to be feasible but the map concept and especially the portrayal needs further revision.



**Table 2.** Pilot ELF Basemap at different zoom levels

In conclusion, the main objective of the ELF Basemap service is to support the efficient use of the European reference data collection by connecting and integrating multiple datasets. It is an integral part of the ELF platform giving access to the European reference data in a user-friendly and understandable way. However, the multinational production effort based on ELF/INSPIRE data poses some challenges.

## References

- Hopfstock A (2010) A User-Oriented Map Design in the SDI environment. Mitteilungen des Bundesamtes für Kartographie und Geodäsie, Bd. 46, Frankfurt am Main. <http://nbn-resolving.de/urn:nbn:de:bsz:14-qucosa-71981>
- Hopfstock and Laurent (2015) Using INSPIRE Data for cartographic Purpose. In Proceedings of Geospatial World Forum 2015, Lisbon. <http://www.geospatialworldforum.org/speaker/bio-abstratct.asp?id=gwf2015A138>. Accessed 5 October 2015
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## Web Links

- [1] [www.elfproject.eu](http://www.elfproject.eu)
- [2] [www.locationframework.eu](http://www.locationframework.eu)
- [3] [scalemaster.org](http://scalemaster.org)