DELIVERABLE

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D 2.9: E.L.F. Data Specifications Regional/Global

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Authors:

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P	Public	x
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Revision History and Statement of Originality

Revision	Date	Author/Editor	Organisation	Description
0.1	23.02.2016	Anja Hopfstock	BKG	Baseline
0.2	07.03.2016		PMG	PMG comments
0.3	11.03.2016	Anja Hopfstock	BKG	Changes according to PMG
1.0	15.03.2016	Anja Hopfstock	BKG	Editorial changes

Statement of originality:

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

D2.9 E.L.F. Data Specification Regional/Global

References

Ref.	Title/Version/Publication Date/Author
[1]	E.L.F. Description of Work (DoW)
[2]	EN ISO 19131:2007, Geographic Information – Data product specification
[3]	INSPIRE Data Specifications Template / v3.0rc3 / 04.02.2013 / INSPIRE Drafting Team "Data Specifications" http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_Template_v3.0rc3.pdf
[4]	INSPIRE data specifications for Annex I-III http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2
[5]	INSPIRE Consolidated data model (r4711) https://inspire-twg.jrc.ec.europa.eu/svn/inspire-model/branches/public/approved/r4711/
[6]	INSPIRE Generic Conceptual Model (GCM) D2.5_v3.4 http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/D2.5_v3.4.pdf
[7]	D2.1 Draft E.L.F Data Specification Regional/Global
[8]	EBM v9.1 http://www.eurogeographics.org/products-and-services/euroboundarymap
[9]	ERM v8.0 http://www.eurogeographics.org/products-and-services/euroregionalmap
[10]	EGM v7.0 http://www.eurogeographics.org/products-and-services/euroglobalmap
[11]	EuroDEM v1.1 http://www.eurogeographics.org/content/products-services-eurodem
[12]	ShapeChange http://shapechange.net/

Figures

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1 Scope

The ELF data specification aims at facilitating the interoperability of topographic and administrative reference data according to the requirements set in the INSPIRE directive with all its regulations and to other user requirements at the European and global levels. It is, therefore, understood as the conceptual data model for creating harmonised cross-border, cross-theme and cross-resolution pan-European reference data from national contributions at different levels of detail (LoD). By specifying the information that is in the remit of the NMCAs and for which a European coverage is of interest, the ELF data specification puts the INSPIRE obligations at cross-border and European level into practice, and accommodates an “NMCA profile for INSPIRE”.

The ELF data specification Regional/Global is an integral part of the ELF Data Specification which constitutes an important cornerstone of the European Location Framework to ensure a coordinated approach regarding harmonisation of the NMCA’s data and services in matters of content, resolution and quality. When adopted by data providers, the ELF provides INSPIRE compliant data for Europe.

The ELF data specification forms the base for the definition of user-oriented cross-border and pan-European data services and products, e.g. ELF GeoLocator and ELF Topographic Basemap and ELF Administrative Basemap. Conformance to this specification will ensure the aggregation of data at Regional/Global LoD in a more cost effective and efficient way within a co-ordinated production and maintenance program for the EuroGeographics product range.

The constitutive parts of the ELF data specification are described in this document.

2 The structure of the deliverable

This document provides an overview of the several components that form the ELF Data Specifications with focus on Regional/Global level of detail:

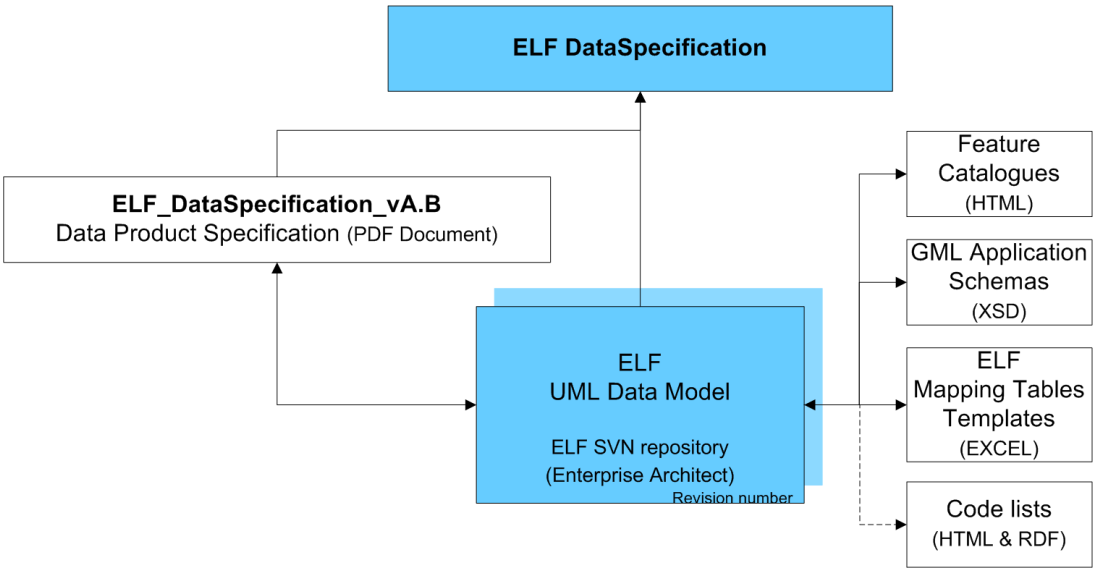


Figure 1. Main ELF Data Specification components

ELF data specification has been developed by WP2 as a profile of the INSPIRE data specifications for different levels of detail. The following developments and requirements have been taken into account for the Regional/Global level of detail:

- changes of the INSPIRE GCM [6],
- changes of the INSPIRE data specification for Annex I [5],
- the new INSPIRE data specifications for Annex II and III [4] as well as
- new user requirements as from the EuroGeographics contract with Eurostat [8],[9],[10],[11]
- development of ELF services and products, e.g. ELF Topographic Basemap, ELF Administrative Basemap, ELF GeoLocator

2.1 Data Specification Document

Reference: The up-to-date version of the ELF Data Specification document is available from the ELF documentation ELF Data Specification v1.0

The data specification document is a specification for production of ELF data providing a detailed description of spatial datasets provided by ELF Data Providers as harmonized geospatial reference data for Europe at different levels of detail together with additional information that will enable the data to be created. The document follows the ISO19131 standard for Data product specifications [2] and the INSPIRE data specification template [3]:

- Overview – includes an informal description of the data specification, normative references, the terms and definitions, symbols and abbreviations, and brief insight into the ELF approach towards INSPIRE compliance.
- Specification scopes – The ELF data specification has only one scope, the general scope, and follows the methodology of INSPIRE.
- Data specification identification
- Data content and structure – description of the content in the form of UML diagrams and the link to the corresponding feature catalogues.
- Reference systems, units of measure and grids – definition of the reference systems to be used for the data and services, in the form of a spatial and a temporal reference system
- Data quality – description of data quality elements and requirements in accordance with the data model defined in ISO 19157. The focus of this section is to describe the ELF core content, the quality requirements and set the conformance quality levels for ELF datasets.
- Dataset-level metadata – identification of metadata elements that need to be supplied with the dataset for discovery, evaluation and use of ELF datasets
- Delivery – information about updates, delivery medium and encoding
- Data capture – The national data contributions for ELF may vary concerning the density of information. In order to harmonise the density of data between different countries, there is a need for rules describing selection criteria, geometry type, data density and positional accuracy for specific levels of details. These data capture rules specify data density by setting certain thresholds for the spatial objects.
- Data maintenance – general statement regarding the data maintenance and update frequency for ELF data.
- Portrayal – information on how ELF data is to be presented as graphic output in view services.
- ATS – abstract test suite attached as an annex.

2.2 UML Data Model

The up-to-date version of the ELF UML Data Model is available from the ELF documentation ELF UML Data Model

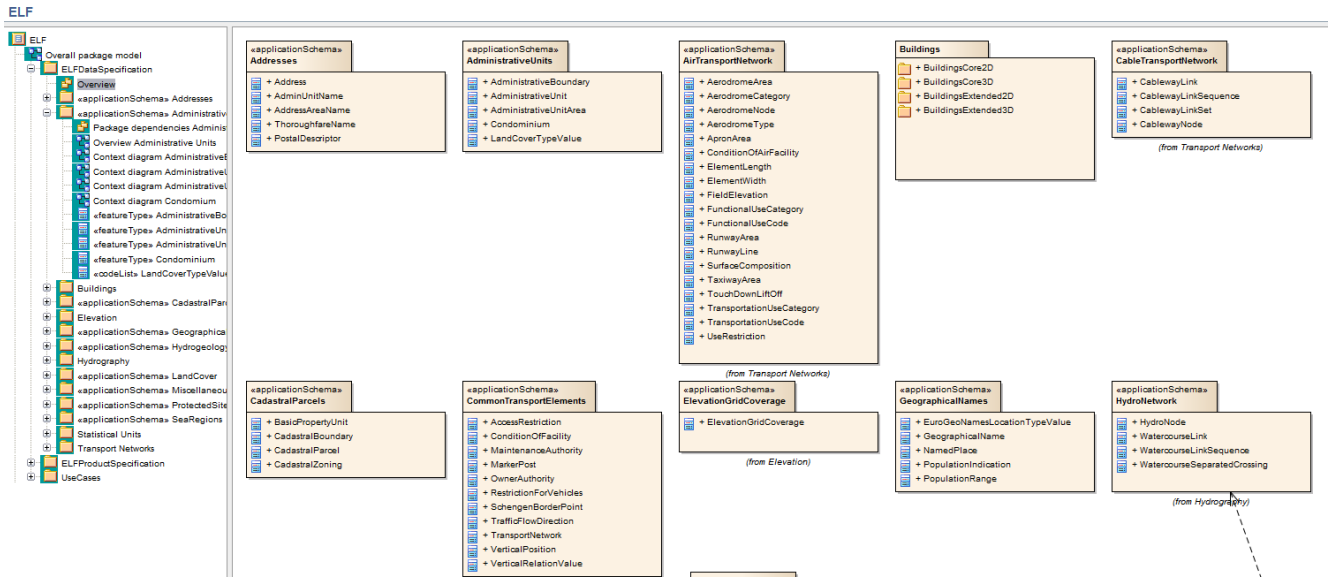


Figure 2. View on the ELF Data Model

The complete ELF UML Data Model is defined as an Enterprise Architect (EA) project. This EA model is maintained centrally using an SVN repository. The EA model can be accessed either directly following the instructions or are provided on demand.

The ELF UML data model strictly utilises the INSPIRE data model as foundation and constitutes a scale-independent data model. The differences between the different levels of detail are realized by maintaining additional tagged values for ELF (profile) which allow to derive feature catalogues from the ELF UML data model for each level of detail. The feature catalogues are made available through the project documentation:

- Feature Catalogue Regional
- Feature Catalogue Global

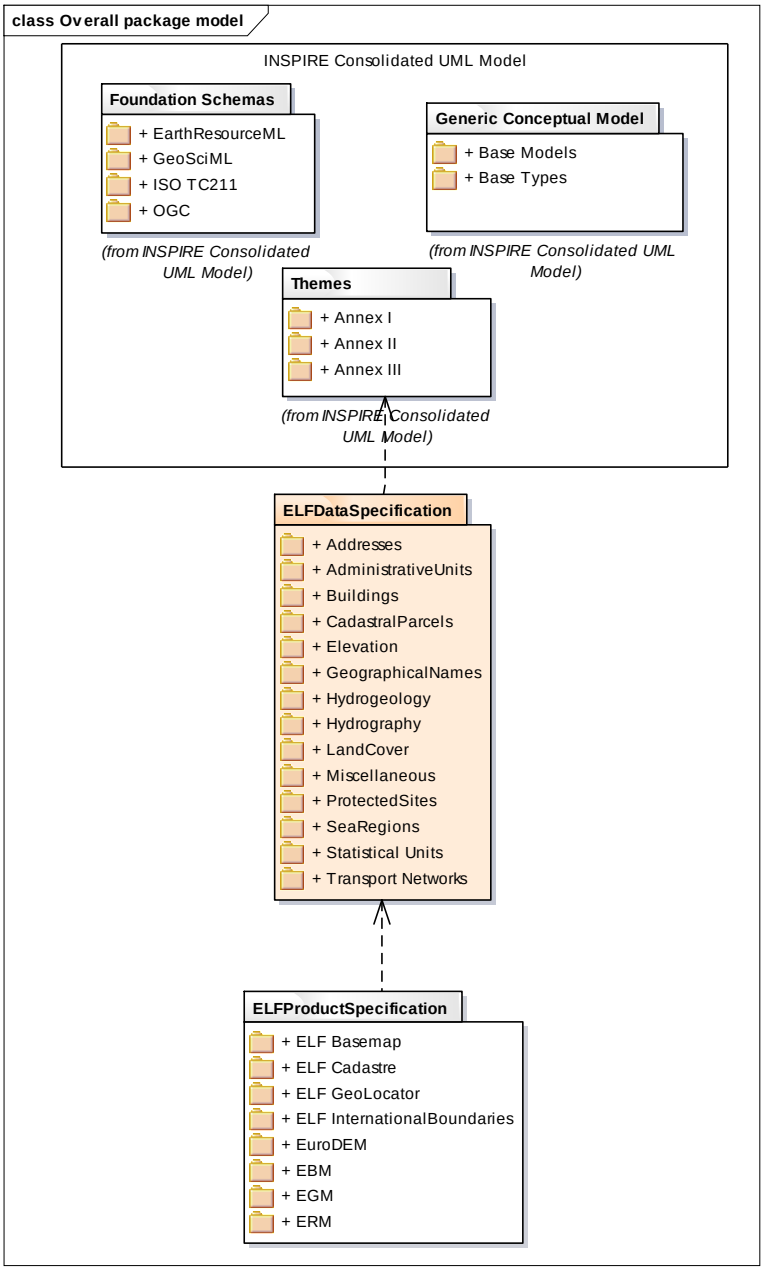


Figure 3. ELF Data Model building on INSPIRE

The ELF UML data model has been quality checked with respect to

- ELF data model guidelines
- compliance with ELF modelling principles and/or correct usage of EA

The ELF UML data model has been introduced and discussed with project partners, EuroGeographics members, 3rd party data providers and application developers at

- ELF Web training webinars were performed in Nov and Dec 2014
- Joint EUROSDR/AGILE/OGC/JRC/ELF Workshop 'Data Modelling and model driven Implementation of Data Distribution, Jan 2015
- EuroGeographics Technical Producer Meeting, March 2015
- INSPIRE KEN workshop on transformation, April 2015

2.3 GML Application Schema Files

The final ELF GML application schema files have been published at the ELF Schema Repository.

About the GML application schemas of the European Location Framework

All the final ELF GML application schemas have a common version number: 1.0.

The GML application schemas of the European Location Framework

Name	Last modified	Size	Description
Parent Directory		-	
Addresses/	17-Sep-2015 17:18	-	
AdministrativeUnits/	05-Oct-2015 15:31	-	
AirTransportNetwork/	17-Sep-2015 17:26	-	
BuildingsCore2D/	17-Sep-2015 17:36	-	
BuildingsCore3D/	17-Sep-2015 17:43	-	
CableTransportNetwork/	15-Sep-2015 10:12	-	
CadastralParcels/	15-Sep-2015 12:34	-	
CommonTransportElements/	17-Sep-2015 17:48	-	
ElevationGridCoverage/	15-Sep-2015 12:36	-	
ElevationVectorElements/	15-Sep-2015 12:37	-	
GeographicalNames/	17-Sep-2015 17:50	-	
HydroNetwork/	17-Sep-2015 18:03	-	
Hydrogeology/	15-Sep-2015 12:38	-	
LandCover/	15-Sep-2015 12:40	-	
Miscellaneous/	17-Sep-2015 18:04	-	
NUTS/	05-Oct-2015 15:31	-	
PhysicalWaters/	17-Sep-2015 18:05	-	
ProtectedSites/	15-Sep-2015 12:41	-	
RailwayTransportNetwork/	17-Sep-2015 18:09	-	
RoadTransportNetwork/	17-Sep-2015 18:09	-	
SeaRegions/	15-Sep-2015 12:42	-	
WaterTransportNetwork/	17-Sep-2015 18:17	-	
readme.txt	17-Aug-2015 12:56	1.5K	

Figure 4. ELF Schema Repository

The GML application schema files were exported from the ELF Data Model in Enterprise Architect by means of ShapeChange version 2.0 [12]. Several partners performed a testing of the ELF GML application schemas (MAC, KADNL, BKG, KARTV) before publication.

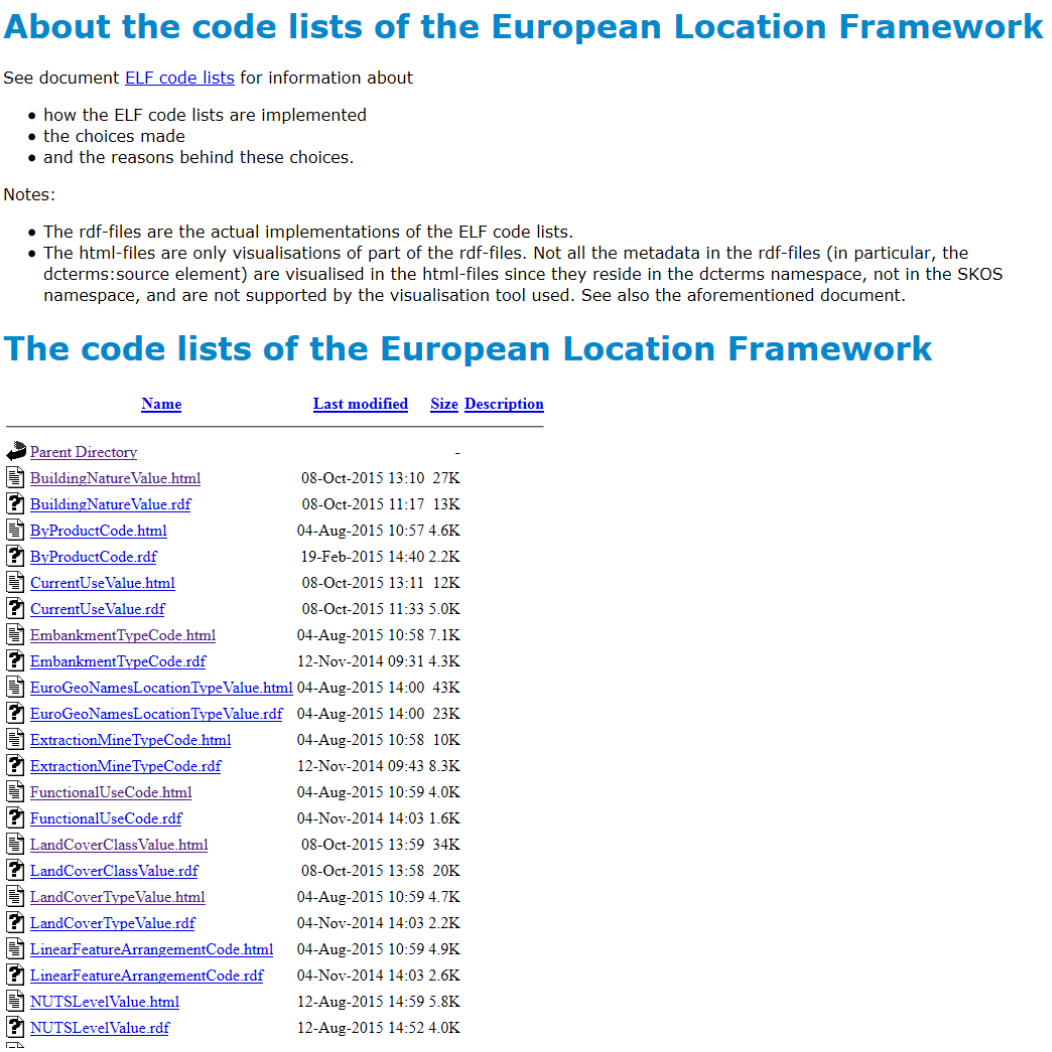
The output consists of XSD schema files in XML-format and made available at the ELF Schema repository.

2.4 ELF Code lists

There are three categories of ELF code lists

- Extensions of INSPIRE code lists
- Codelists from DGIWG Feature and Attribute Data Registry , the ERM specifications or EuroGeoNames
- New codelists

ELF governed code lists are published and maintained at the ELF Code lists. The ELF code lists discussion paper describes how the ELF code lists have been implemented.



About the code lists of the European Location Framework

See document ELF code lists for information about

- how the ELF code lists are implemented
- the choices made
- and the reasons behind these choices.

Notes:

- The rdf-files are the actual implementations of the ELF code lists.
- The html-files are only visualisations of part of the rdf-files. Not all the metadata in the rdf-files (in particular, the dcterms:source element) are visualised in the html-files since they reside in the dcterms namespace, not in the SKOS namespace, and are not supported by the visualisation tool used. See also the aforementioned document.

The code lists of the European Location Framework

Name	Last modified	Size	Description
Parent Directory		-	
BuildingNatureValue.html	08-Oct-2015 13:10	27K	
BuildingNatureValue.rdf	08-Oct-2015 11:17	13K	
ByProductCode.html	04-Aug-2015 10:57	4.6K	
ByProductCode.rdf	19-Feb-2015 14:40	2.2K	
CurrentUseValue.html	08-Oct-2015 13:11	12K	
CurrentUseValue.rdf	08-Oct-2015 11:33	5.0K	
EmbankmentTypeCode.html	04-Aug-2015 10:58	7.1K	
EmbankmentTypeCode.rdf	12-Nov-2014 09:31	4.3K	
EuroGeoNamesLocationTypeValue.html	04-Aug-2015 14:00	43K	
EuroGeoNamesLocationTypeValue.rdf	04-Aug-2015 14:00	23K	
ExtractionMineTypeCode.html	04-Aug-2015 10:58	10K	
ExtractionMineTypeCode.rdf	12-Nov-2014 09:43	8.3K	
FunctionalUseCode.html	04-Aug-2015 10:59	4.0K	
FunctionalUseCode.rdf	04-Nov-2014 14:03	1.6K	
LandCoverClassValue.html	08-Oct-2015 13:59	34K	
LandCoverClassValue.rdf	08-Oct-2015 13:58	20K	
LandCoverTypeValue.html	04-Aug-2015 10:59	4.7K	
LandCoverTypeValue.rdf	04-Nov-2014 14:03	2.2K	
LinearFeatureArrangementCode.html	04-Aug-2015 10:59	4.9K	
LinearFeatureArrangementCode.rdf	04-Nov-2014 14:03	2.6K	
NUTSLevelValue.html	12-Aug-2015 14:59	5.8K	
NUTSLevelValue.rdf	12-Aug-2015 14:52	4.0K	

Figure 5. ELF Code lists

2.5 ELF Mapping Table

EXCEL mapping tables provided in XML-format can be used to set up matching tables as well as transformation tables (e.g. for transformation from national data sources) between any input and the ELF data schema.

The ELF Mapping Table templates are made available from the ELF documentation together with guidelines how to perform the matching.

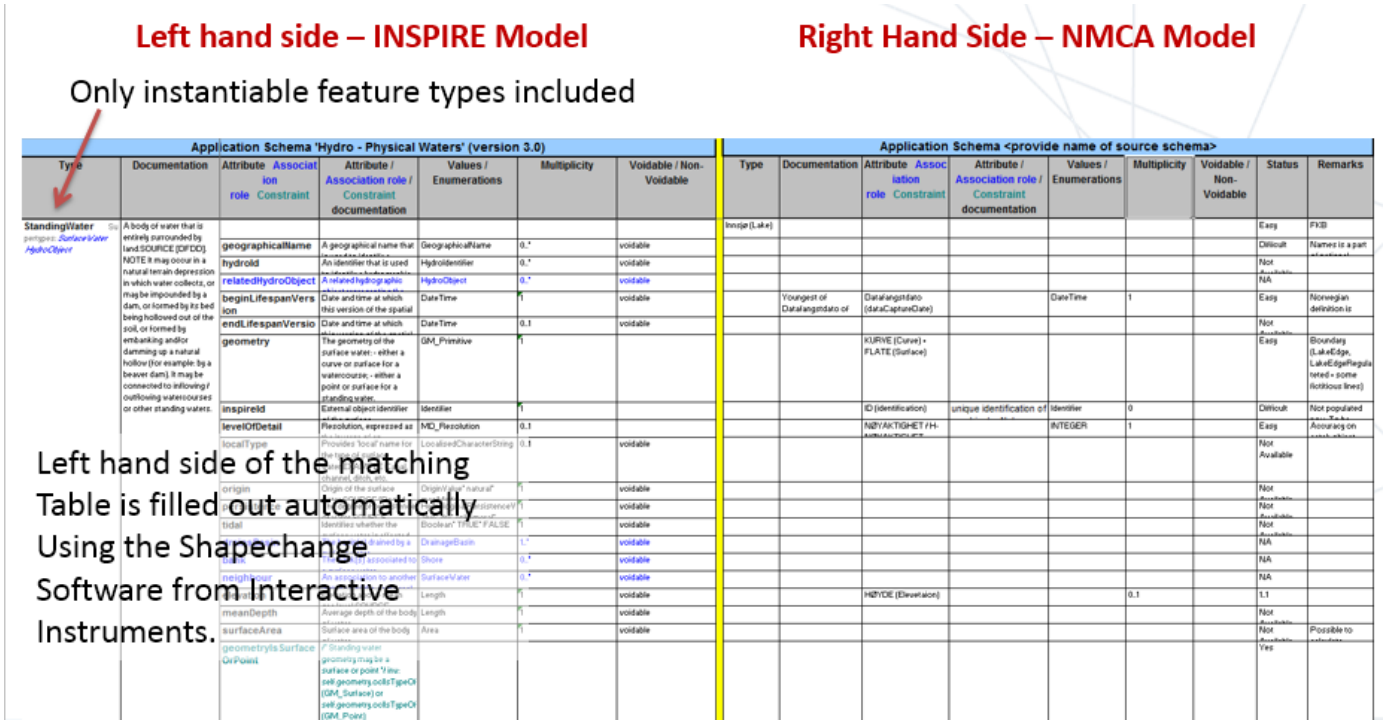


Figure 6. ELF Mapping Tables

The mapping tables were exported from the ELF Data Model in Enterprise Architect by means of ShapeChange version 2.0 [12].

3 Way forward

Changes to the ELF data specifications may be required from INSPIRE maintenance, user demands or data provider perspectives. Figure 7 provides an overview of the ELF data specification maintenance.

For further maintenance and development of the ELF data specification for Regional/Global level of detail the following tasks could be considered:

- translating changes in product definitions into data specifications and quality requirements
- considering further harmonisation between the different levels of detail in ELF
- considering other activities at European and global level
    - UN-GGIM and Global Mapping
    - NGIF – NATO Geospatial Information Framework
    - Arctic SDI

The ELF data specifications should be managed by data specification teams. These teams should follow a structured process: listing change requests, assessing impact and priority, change schemas, test, implement. This mainly involves UML modelling and GML experts but also experts for code lists, SLD and metadata. In the transition phase (2 years after the project) the focus is on bug fixes in the data model and GML application schema and INSPIRE updates if any. Other change requests may have impact on data quality requirements, data specification document and/or portrayal.

There is a need for a general coordinator role to oversee and coordinate the data specification teams. The amount of work is dependent on the amount of changes that will be needed in specifications. While ELF is still under (continuous) development, it will require considerable attention.

Deliverable D2.11 Report on Maintenance of Specifications is going to outline the maintenance process in more detail.

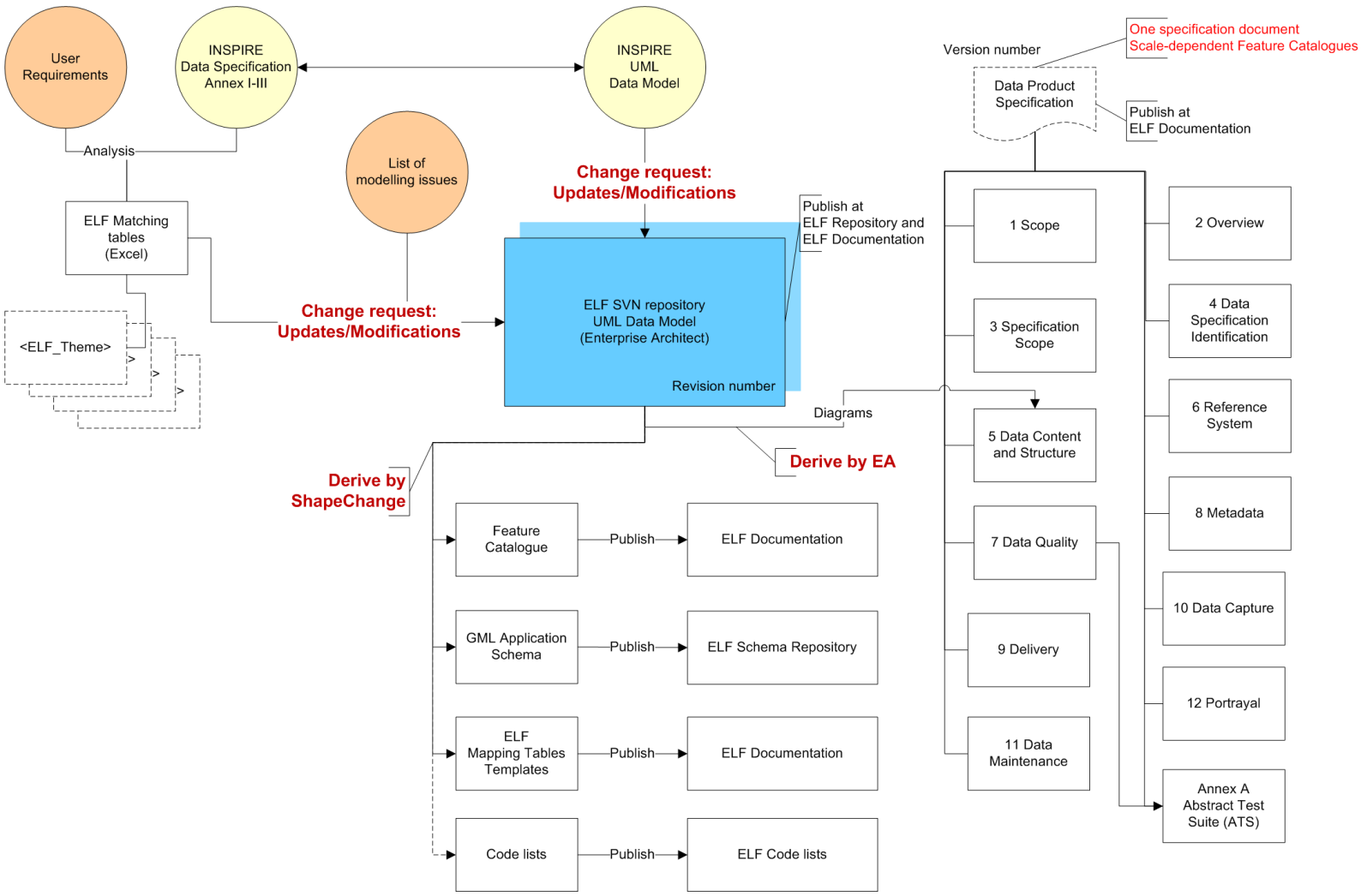


Figure 7. ELF Data Specification Maintenance