

Webinar “Guidance on implementation of cross-border harmonisation”, 10th December 2018

Agenda

- Introduction (Gert Steinkellner, SBE KEN Chair)
- Guidance for implementation of cross-border harmonization (Saulius Urbanas, EuroGeographics),
- New data model specification of State Boundaries of Europe (SBE) (Marcus Bruhl, BKG)
- Practical exercises edge-matching national spatial data (Marcus Bruhl, BKG)

Open European Location Services

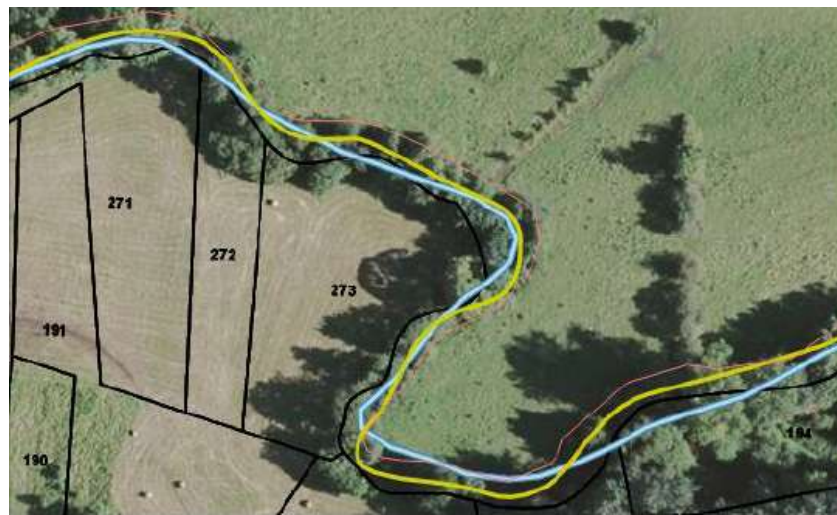
Guidance for implementation of cross-border harmonisation

Webinar, 10th December 2018



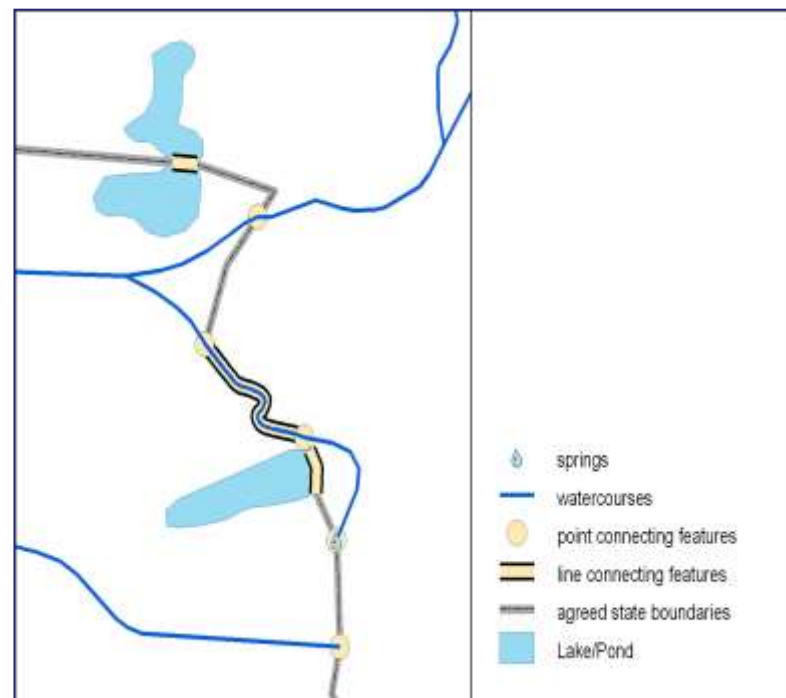
Article 10.2 of the INSPIRE Directive

“...In order to ensure that spatial data relating to a geographical feature, the location of which spans the frontier between two or more Member States, are coherent, Member States shall, where appropriate, decide by mutual consent on the depiction and position of such common features...”



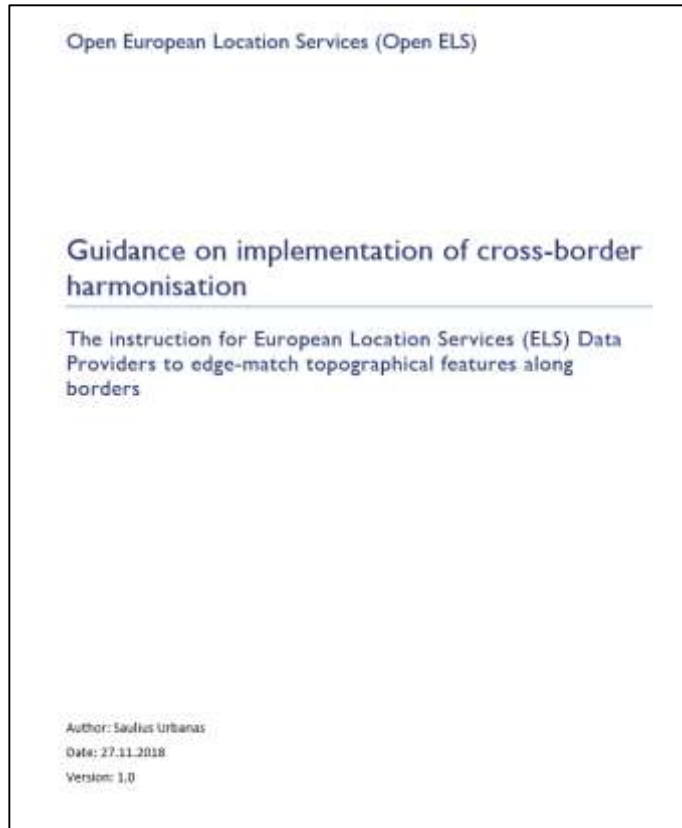
Experience in Cross-border harmonisation

- Manual edge-matching producing EuroGeographics pan-European datasets (EGM, ERM, EBM)
- Test of edge-matching tools and prototyping in the European Location Framework (ELF) project
 - Demand by **each Data Provider to agree on Connecting Points**
- Performing the centralized edge-matching in the production of Core Reference Dataset (CRD)
- National initiatives defining CFs:
 - Nordic countries: FI, SE, NO, DK
 - FR-BE, FR-ES



Open ELS project deliverable:

Guidance on implementation of cross-border harmonisation



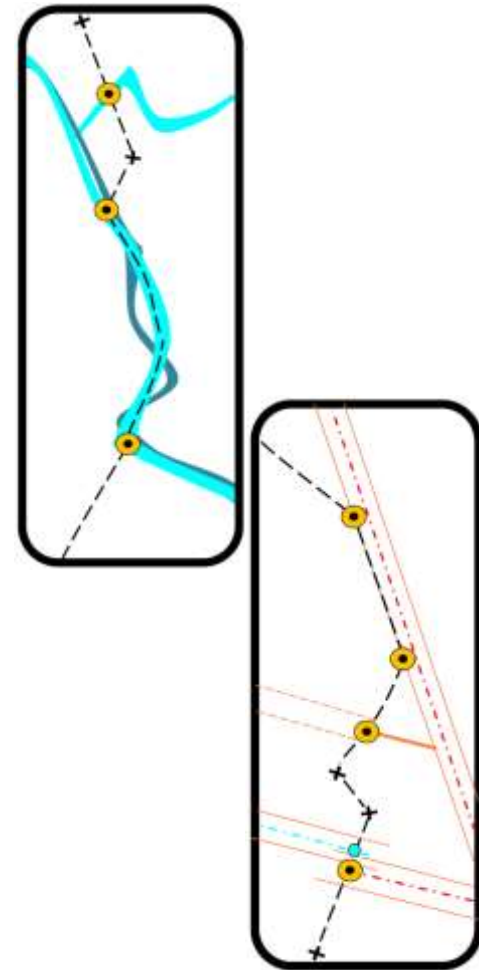
- Document have been drafted by the Open ELS (Task 3.2) team and validated with State Boundaries of Europe (SBE) KEN
- Content of the Document
 - Requirements
 - Glossary
 - 11 recommended actions
 - Communication, reporting
 - Best practice example on FR-BE border

Glossary

Abbreviation	Term	Definition
CF	Connecting feature	Connecting location of the geographic entities from neighbouring countries. CFs have either point or line geometry.
CBF	Cross-border feature	A feature that either crosses an international boundary or follows an international boundary and belongs to each of the neighbouring countries sharing that boundary.
ELS IB	ELS International Boundaries	ELS dataset containing agreed international boundaries and connecting features. ELS IB is defined for all levels of detail. Data of ELS IB could be used for automatic edge-matching or cartographic visualization of spatial data purposes triggered by specific applications.
	Edge matched data	Data, which has been corrected achieving harmonized positioning (no gaps or overlaps) of cross-boundary features between two countries.
IB	International Boundary	A line of demarcation between countries. International boundaries are agreed between neighbouring countries and ideally are based on treaties, and as a minimum, the agreed technical line (points) supplementing to the harmonised representation of anthropogenic features to be defined.
	Neighbouring country	A country that shares a border with the responsible country.
NMCAs	National Mapping, Cadastral and Land Registration Authorities	Public authorities, responsible for national mapping, cadastral and land registration activities, and production of authoritative geo-reference spatial data.
	Party	The responsible authority for provision of data (web-service) in ELS and/or performing the edge-matching.
	Responsible country	The country in which the responsible authority performs the edge matching of national data according to the guidelines.
ELS	European Location Services	EuroGeographics programme to develop a single access point to European geospatial data services from official national sources.
Open ELS	Open European Location Services	The project developing open pan-European data services using authoritative geospatial information and an associated business model. Open ELS is a component of ELS.

Encouragement: to initiate bilateral agreements on CFs

- Each NMCA (Data provider to ELS/CRD) get in contact with the responsible authority in neighbouring country(-ies) for finding an agreement on:
 - Technical representation of cross-border geographical features (rivers, lakes, roads, railroads, etc.) in the border area;
 - No implication on legal definitions of international boundaries.



11 actions to proceed

1.	Build the teams
2.	List the features to be edge-matched
3.	List the datasets to be harmonized
4.	Assess Coordinate Reference Systems
5.	Consider the status of International Boundaries
6.	Define common background data.
7.	Agree tolerance in the cross-border area.
8.	Compare the CBF and investigate reasons for mismatches
9.	Finding an agreement for matching the connecting features
10.	Compilation of the CF dataset
11.	Update the national datasets and web services according to CF

11 actions to proceed: details (1)

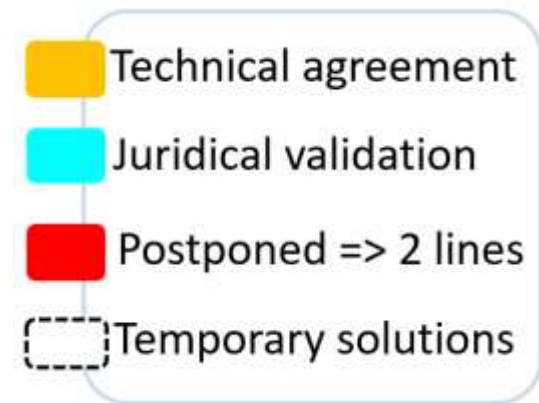
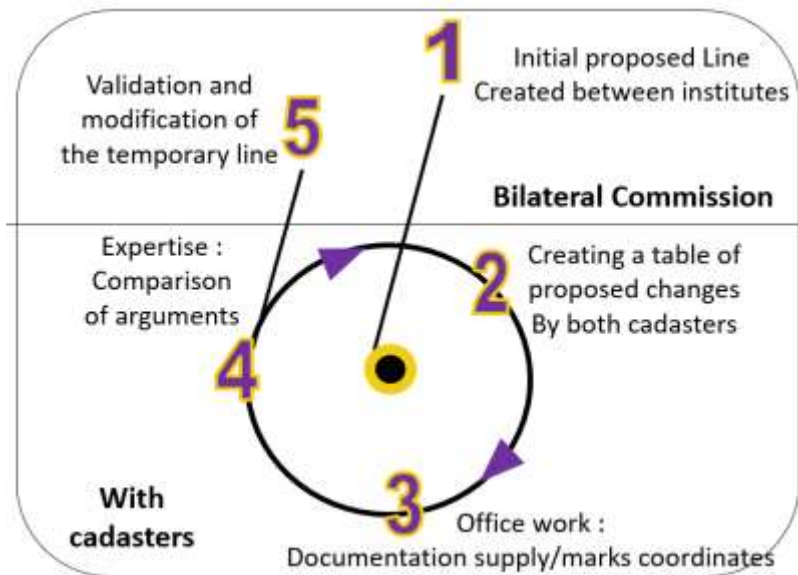
No	Action	Description
1.	Build the teams	The authorities in each country designate the responsible individuals for carrying the process of agreeing the CFs. The primary contact persons for communication on behalf of the Party shall be appointed. The composition of the teams depends on the complexity of maintenance for the national datasets as well as the required expertise. As a minimum (if the scope is small) one person might be designated to carry the edge-matching work on the Party's behalf. If Parties don't have a common language, it is advised to use English as lingua franca. This also supports reporting to EuroGeographics (see section 6).
2.	List the features to be edge-matched	Agree the geographical features (CBF) to be edge-matched. Typical features are: hydrography (rivers, watercourses, lakes), transport networks (railways, roads), constructions (buildings, bridges, pipelines, cables, others). Parties shall prioritise the features corresponding to the content of the spatial data themes of ELS/Open ELS Data specifications [6], [10].
3.	List the datasets to be harmonized	List the datasets that contain the features to be edge-matched (Action 2). Document and exchange the information about scale, point resolution, currency between the Parties.
4.	Assess Coordinate Reference Systems	Use of a CRS based on the geodetic datum ETRS89 is highly recommended. By default, ETRS89 with geographical coordinates (EPSG:4258) should be used. The projection ETRS89 Lambert Azimuthal Equal Area (EPSG: 3035), ETRS89 Lambert Conformal Conic coordinate reference system (ETRS89-LCC) and/or ETRS89 Transverse Mercator coordinate reference system (ETRS89-TMzn) /where zn represents number of relevant meridian zone. Alternative CRS (such as Web Mercator using the ellipsoid GRS80, EPSG:3875) might be used if both Parties see a clear advantage. Both Parties shall describe the status of national coordinate reference systems (CRS) and evaluate a level of possible displacement of locations of topographical features due to the conversions from national CRS. If a transformation from the source CRS to the target CRS is needed, please also document possible positional errors (discrepancies), that impact the transformation results. The agreed CRS shall be documented and the links to other CRS defined.
5.	Consider the status of International Boundaries	Document the valid treaty(ies) on international boundaries, identify the dispute areas, exchange the representations of international boundaries, discover the mismatches. A common representation of the boundary has to be agreed at a technical level as a pragmatic solution. If a common legal boundary in the target CRS is already agreed between neighbouring countries, use this boundary as a reference frame for the edge-matching.
6.	Define common background data.	Agree on the common background data, such as scale, currency as well as other parameters of source data, such as orthophotos or satellite images in the border area.

11 actions to proceed: details (2)

No	Action	Description
7.	Agree tolerance in the cross-border area.	Agree the tolerance in the cross-border area for edge-matching of the CBF, build a buffer zone to consider the selection of the CBF. The tolerance (buffer zone) might also be defined for automatic edge-matching of the CBF to avoid discussions regarding small mismatches in the range of the geometric accuracy of the topographic material.
8.	Compare the CBF and investigate reasons for mismatches	Compare the gaps and overlaps of the CBF. This includes duplicate features, features stretching into neighbouring country, mismatches, missing corresponding features etc. Small mismatches may occur due to the currency and accuracy of the source data (orthophotos, etc) for mapping the features, or due to the different ways of transformation from the source CRSs into the target CRS. However, reasons for major mismatches that exceed a possible tolerance of the source data should be investigated.
9.	Finding an agreement for matching the connecting features	The agreement could be reached individually for each point/line of the connecting feature. It is recommended that discussions and investigations focus on the largest scale of the listed datasets, adjusting the agreed position of CFs accordingly to smaller scale datasets. Different status of agreements might be defined. As a matter of tactic in agreeing the CFs each Party could determine and propose candidate CFs. Both Parties will analyse the candidate CFs and bilaterally agree the definitive CFs. If necessary, field survey and/or observations on the location of connecting features.
10.	Compilation of the CF dataset	The agreed CFs shall be stored in the ELS IB dataset following the ELS IB specification requirements [10]. Each ELS data provider shall contribute by providing the national data of international boundaries and agreed CF to the responsible contact in EuroGeographics (see the clause 6). The specific template has been arranged for a smooth delivery of national data to EuroGeographics [11].
11.	Update the national datasets and web services according to CF	The CBF in the national datasets shall be updated and modified according to the agreed CF. To assure the consistency of the CBF in different level of details/scales, the generalization procedures to be defined. The generalization procedures shall be also communicated to the responsible data provider of the neighbouring country. CFs for different scales shall be defined if necessary, to ensure harmonization of CBF across different scales.

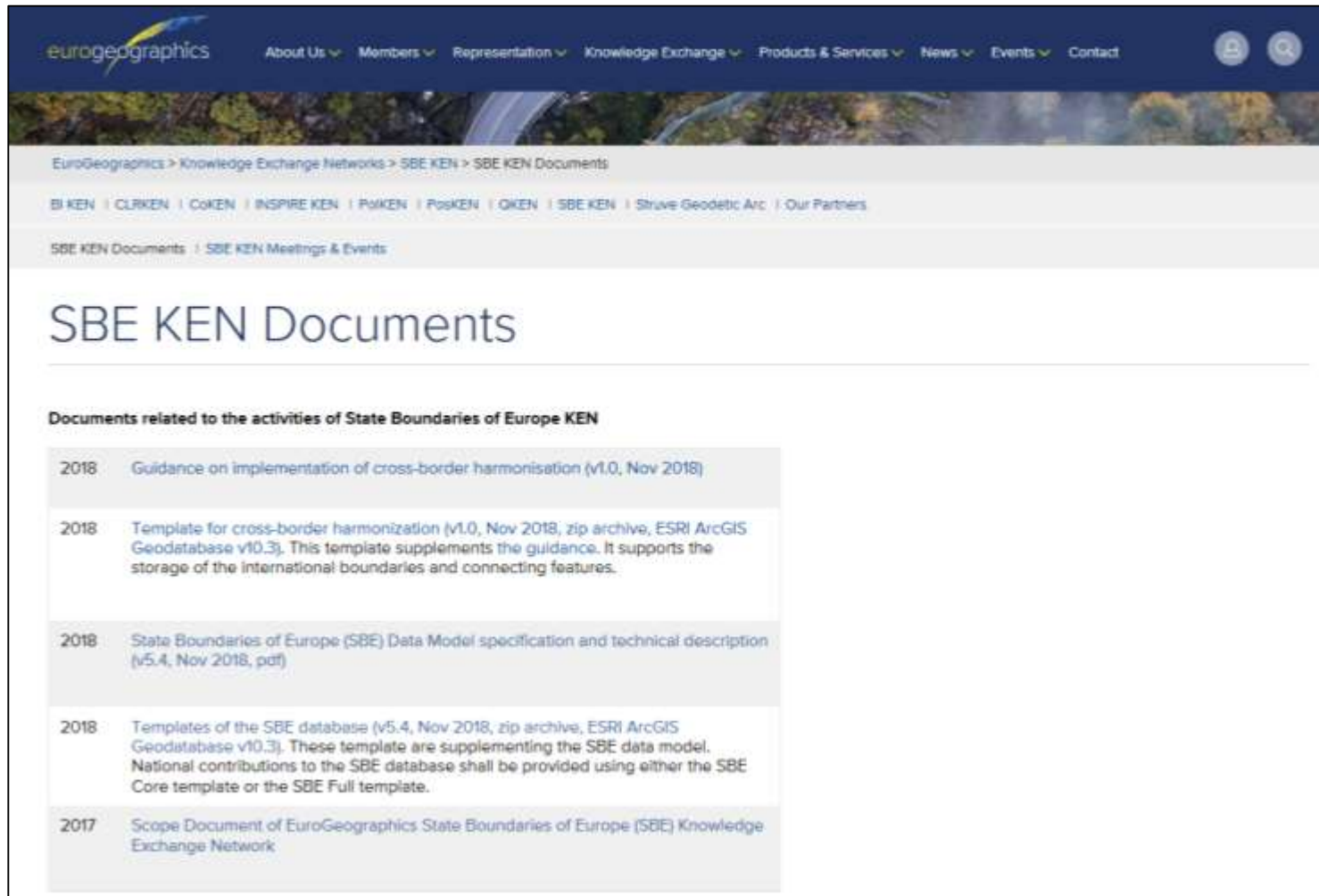
Best practice example of France-Belgium (Annex I)

- Completed project in 2014-2015 on cross-border territory of 620 km



Reference documentation: SBE KEN Documents

<https://eurogeographics.org/knowledge-exchange/sbe-ken/sbe-ken-documents>

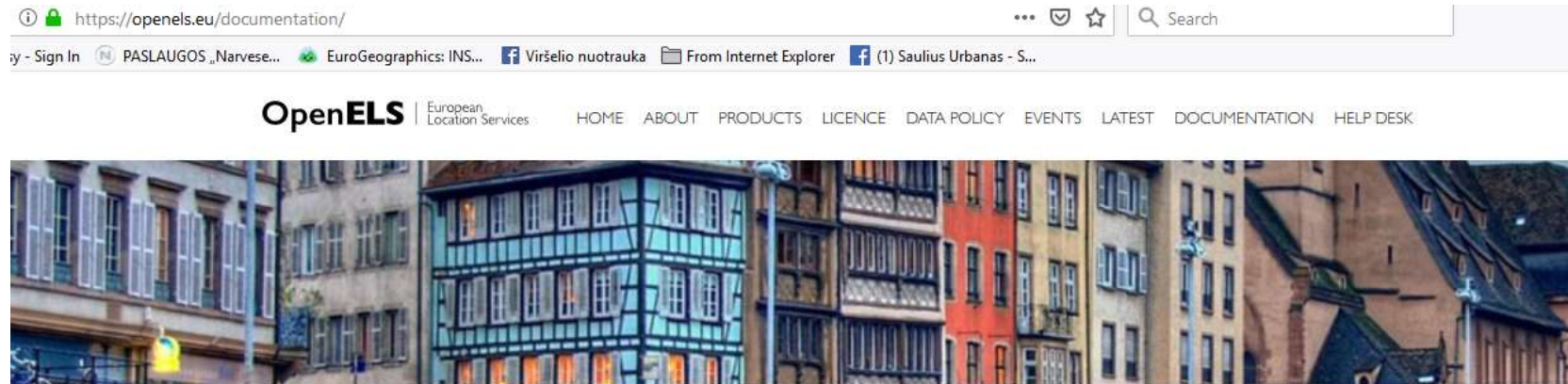


The screenshot shows the EuroGeographics website's 'SBE KEN Documents' page. The header includes the EuroGeographics logo and a navigation menu with links like 'About Us', 'Members', 'Representation', 'Knowledge Exchange', 'Products & Services', 'News', 'Events', and 'Contact'. Below the header, a breadcrumb trail reads 'EuroGeographics > Knowledge Exchange Networks > SBE KEN > SBE KEN Documents'. A secondary navigation bar lists various KENs: 'BI KEN', 'CLIKEN', 'CoKEN', 'INSPIRE KEN', 'PoKEN', 'PosKEN', 'QKEN', 'SBE KEN', 'Struve Geodetic Arc', and 'Our Partners'. Below this, a link for 'SBE KEN Documents' is highlighted. The main heading is 'SBE KEN Documents'. Underneath, a section titled 'Documents related to the activities of State Boundaries of Europe KEN' lists five documents with their years and titles:

- 2018 Guidance on implementation of cross-border harmonisation (v1.0, Nov 2018)
- 2018 Template for cross-border harmonization (v1.0, Nov 2018, zip archive, ESRI ArcGIS Geodatabase v10.3). This template supplements the guidance. It supports the storage of the international boundaries and connecting features.
- 2018 State Boundaries of Europe (SBE) Data Model specification and technical description (v5.4, Nov 2018, pdf)
- 2018 Templates of the SBE database (v5.4, Nov 2018, zip archive, ESRI ArcGIS Geodatabase v10.3). These template are supplementing the SBE data model. National contributions to the SBE database shall be provided using either the SBE Core template or the SBE Full template.
- 2017 Scope Document of EuroGeographics State Boundaries of Europe (SBE) Knowledge Exchange Network

Reference documentation: Open ELS website

<https://openels.eu/documentation/>



DOCUMENTATION

Documentation and guidance notes available from the Open ELS Project

Guidance on implementation of cross-border harmonisation

Instructions for European Location Services (ELS) Data Providers to edge-match topographical features along borders.

OpenELS | European Location Services

Home
About

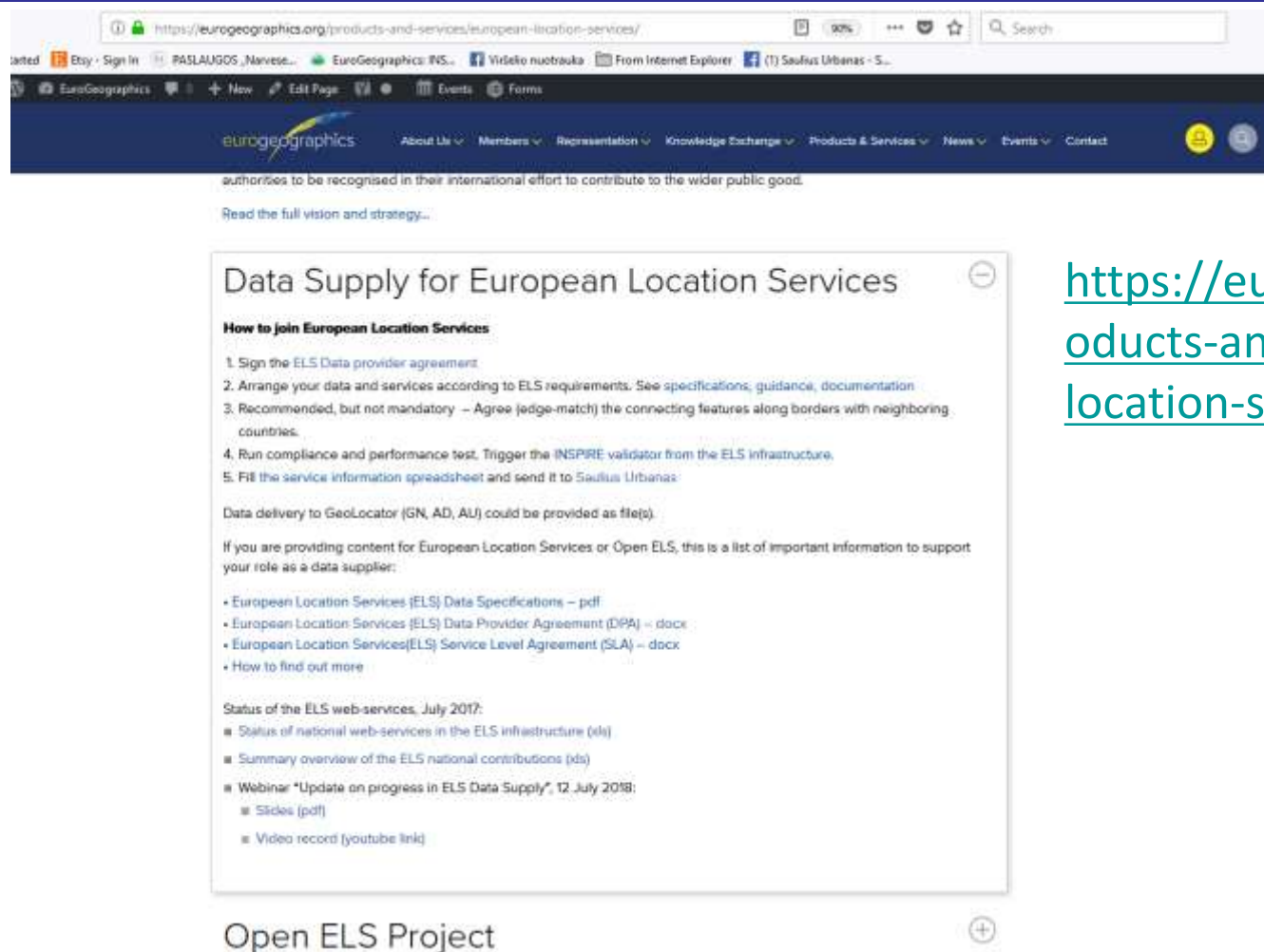
 Co-financed by the European Union
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ELS in the EuroGeographics website



The screenshot shows the EuroGeographics website with the URL <https://eurogeographics.org/products-and-services/european-location-services/> in the browser address bar. The page title is "Data Supply for European Location Services". The content includes a list of steps for joining European Location Services, a section on data delivery to GeoLocator, and a list of links for European Location Services (ELS) Data Specifications, Data Provider Agreement (DPA), Service Level Agreement (SLA), and a webinar update on progress in ELS Data Supply.

Data Supply for European Location Services

How to join European Location Services

1. Sign the ELS Data provider agreement.
2. Arrange your data and services according to ELS requirements. See specifications, guidance, documentation.
3. Recommended, but not mandatory – Agree (judge-match) the connecting features along borders with neighboring countries.
4. Run compliance and performance test. Trigger the INSPIRE validator from the ELS infrastructure.
5. Fill the service information spreadsheet and send it to Saulius Urbanas.

Data delivery to GeoLocator (GN, AD, AU) could be provided as file(s).

If you are providing content for European Location Services or Open ELS, this is a list of important information to support your role as a data supplier:

- European Location Services (ELS) Data Specifications – pdf
- European Location Services (ELS) Data Provider Agreement (DPA) – docx
- European Location Services(ELS) Service Level Agreement (SLA) – docx
- How to find out more

Status of the ELS web-services, July 2017:

- Status of national web-services in the ELS infrastructure (xls)
- Summary overview of the ELS national contributions (xls)
- Webinar "Update on progress in ELS Data Supply", 12 July 2018:
 - Slides (pdf)
 - Video record (youtube link)

Open ELS Project

<https://eurogeographics.org/products-and-services/european-location-services/>

Expected actions on implementation of the cross-border harmonisation

1. NMCAs of neighbouring countries express interest to agree on CFs:
 - Contact neighbouring NMCA, inform EuroGeographics (Saulius Urbanas)
2. Perform the bilateral project, agree the CFs
 - Support from Open ELS project and SBE KEN
 - Facilitation of communication, webinars, meetings
 - Share experience, advice
 - Store the CFs information as a contribution to the ELS IB Dataset and send to SBE KEN (Marcus Bruehl or Saulius Urbanas)

Benefits in having defined the Connecting Features

- Definitive reference of the harmonized cross-border content:
 - Practical approach - Saving of efforts and time operating with updates and contributions to regional/pan-E products
 - Assure the harmonized content even if national data have not been adjusted to CFs
 - Possibility to perform an automated or semi-automated edge-matching by tools
 - Useful asset in production of national data covering the neighbouring areas (map sheets)
- Opportunity for NMCA's specific role in ESDI
 - Credibility of NMCAs - fulfillment of the INSPIRE directive
 - Maintenance of the definitive ELS IB database by national experts in State Boundaries of Europe (SBE) KEN.

Questions, comments?

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