

FIG

FIG WORKING WEEK 2017

*Presented at the FIG Working Week 2017,
May 29 - June 2, 2017 in Helsinki, Finland*

Helsinki Finland

29 May - 2 June 2017



Surveying the world of tomorrow -
From digitalisation to augmented reality

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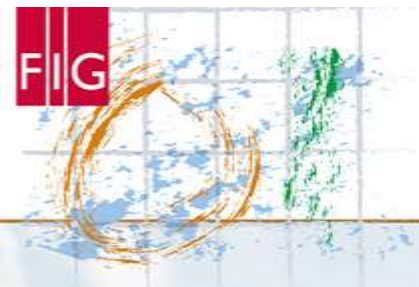


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IGN

INSTITUT NATIONAL
DE L'INFORMATION
GÉOGRAPHIQUE
ET FORESTIÈRE



Recent improvements to the digital files of International Borders of France

Michel BACCHUS, France



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Recent improvements to the digital files of international borders of France

- How French IGN seeks to improve the digital files of international borders of France ?
- Why: it's necessary to meet the requirements of the INSPIRE Directive (art. 10.2).
- This work has been carried in collaboration with neighboring countries
 - with other NMCA's, in the framework of EuroGeographics:
 - common products (EGM, EBM, ERM)
 - State Boundaries of Europe (SBE) Knowledge Exchange Network (KEN)
 - European Location Frame (ELF) Project => *agreed common IB datasets*
 - in the joint demarcation committee (if exists)
 - Maintenance committee (CMA: Italy, Spain, Switzerland)
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- Once the goal achieved, will it be still useful to materialize the boundary by pillars ?



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Improvements to the digital files of international borders of France

- The French National Mapping Agency, IGN plots administrative boundaries on national maps. The national borders of France has been carefully identified by surveyors (marks identified in the field and plotted on the 1:25 000 topographic map).
- IGN has digitized administrative boundaries and keeps them up to date in its databases:
 - BDCARTO (10-meter accuracy)
 - the large-scale reference frame (*Référentiel à grande échelle*: RGE), composed of four interoperable databases:
 - Orthophotography database (BD ORTHO)
 - Topography database (BD TOPO) ← *Administrative Units dataset*
 - Postal addresses database (BD ADRESSE, maintained with the Post Office)
 - Land Parcels database (BDPARCELLAIRE, in collaboration with the Tax Department, DGFIP) [*some discrepancies between cadastral maps of neighboring French municipalities => RPCU (2015-2023 ?)*]



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INSPIRE European DIRECTIVE (2007), ARTICLE 10.2 :

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.

EuroGeographics (EG) is an international not-for-profit organisation representing Europe's National Mapping, Cadastral and Land Registration Authorities (NMCA's: 61 organisations from 46 countries). Together with a number of their members and other partners, EG have been part of the **European Location Framework (ELF) Project**. The collaboration, which ended in October 2016, has developed the standards, specifications, tools and technical infrastructure to deliver pan-European geospatial content, to provide easy access to pan-European geographic and land information from official, national sources.

EuroGeographics is working with members to develop future **European Location Services**.

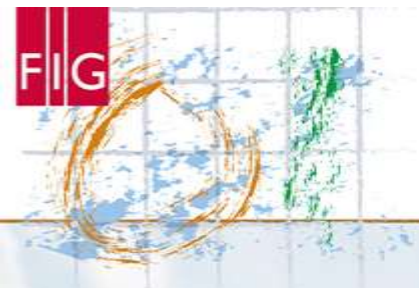


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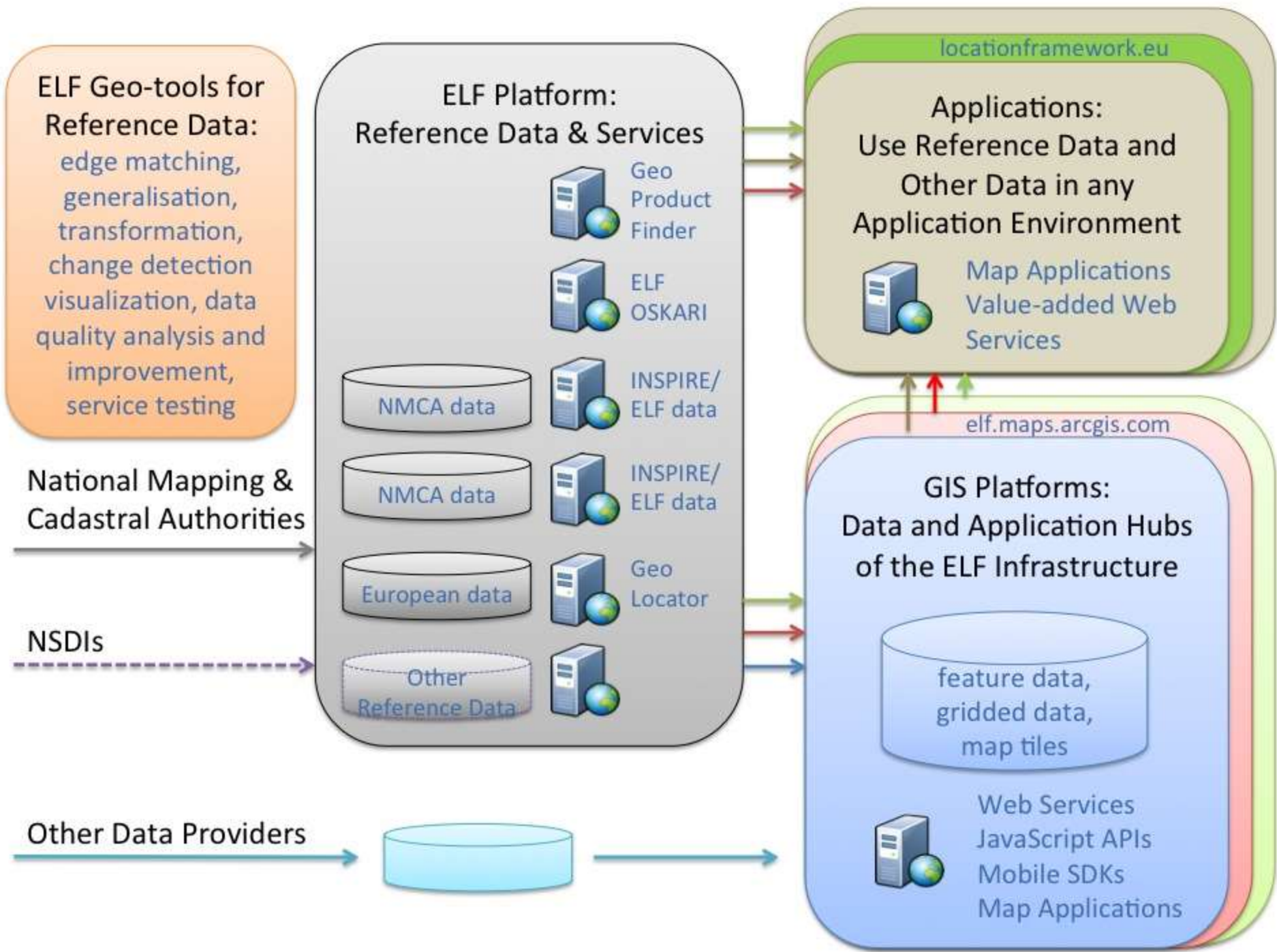
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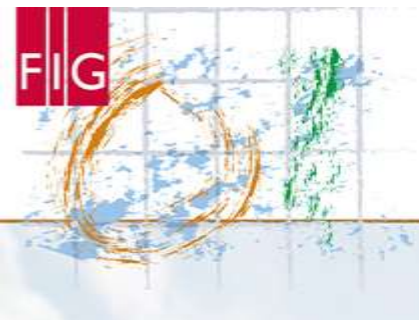


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The European Location Framework (ELF)

In order to achieve the edge matching of topographic reference data at cross-border areas, a dataset of agreed international boundaries is necessary.

The data model and specification of the ELF International Boundaries (ELF IB) describes:

- International boundaries
- Connecting features: locations on the boundaries where edge matched geographic entities from neighbouring countries connect
- Linkage with the national edge matched geographic entities

French IGN had yet provided to SBE Project a BDTopo dataset (Master Level SBE), late 2013; then it provided this dataset to the ELF project as IB layer.

The IGN's objective was to have metric-precision lines on all French borders, provisionally agreed with neighboring countries, before the end of 2016.

With legal-cadaster countries (Germany, Switzerland), foreign line has been chosen. With Italy, agreement for all segments between markers (except for Mont-Blanc area). With Spain, temporary validation and agreement for future actions.

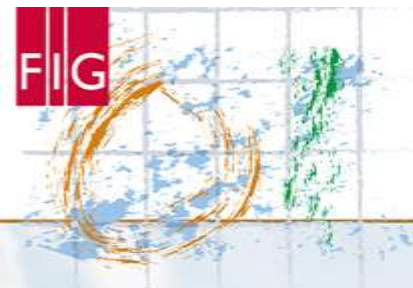
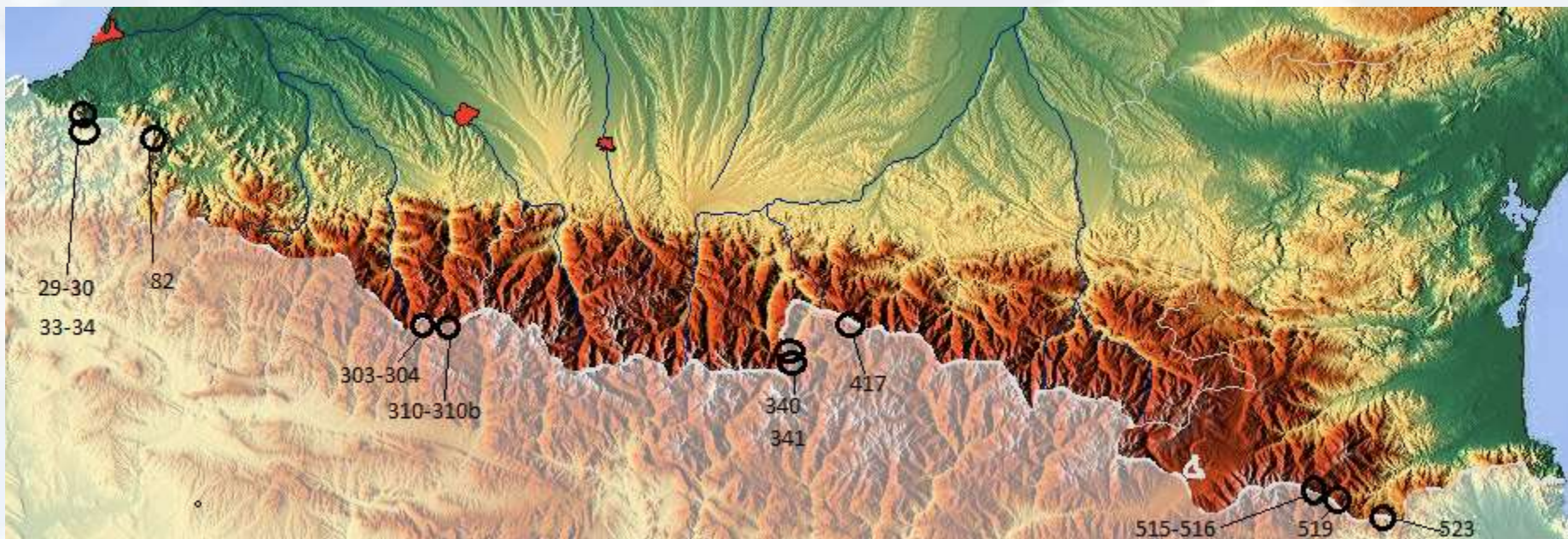


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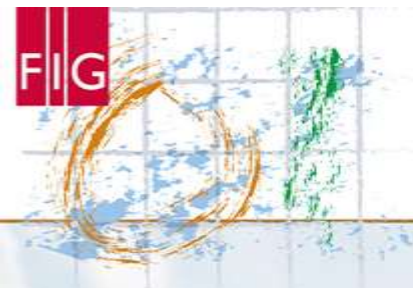


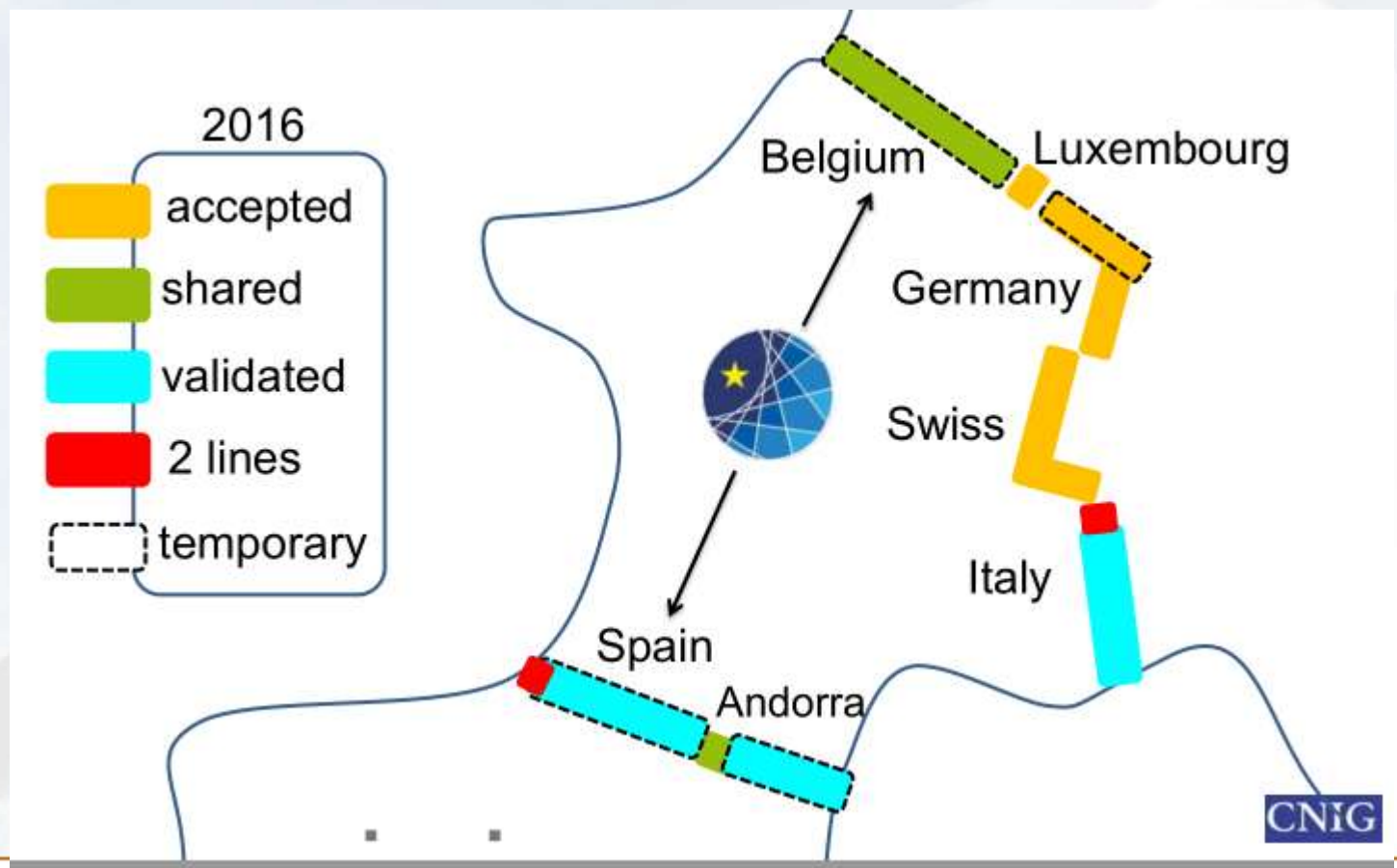
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2016 : 2 EDGEMATCHING PROCESSES ONGOING (BEL, ESP)



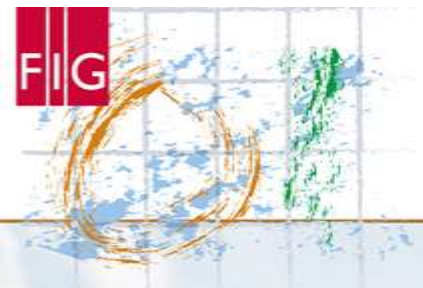


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ELF IB Master LoD

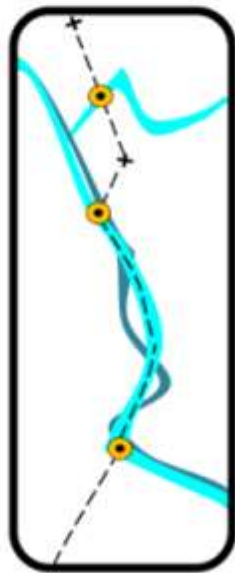
Level of Detail (LoD)

- Existing:
 - ELF International Boundaries Regional LoD [EGM]
 - ELF International Boundaries Global LoD [ERM, EBM]
- Nov 2016 Status →
 - ELF International Boundaries Master LoD



From ELF Project to European Location Services (ELS) a challenge for EuroGeographics

- How to assure the cross-border harmonization and an improvement of data quality (homogeneity, content, portray) ?



- Manual edge-matching: agreement between neighboring NMCAs on the cross-border feature's nodes
 - Guidance, best practice from State Boundaries of Europe KEN
 - Actions to setup multi NMCAs working groups / experts
- Tools for cross-border visualisation
 - Continue collecting state border lines/points
 - Investigation on visualisation policy (approaches), algorithms
- Assurance of the common data quality and portray – user defined visualisation
 - Standardised data content – evaluation, improvements
 - Apply SLD editor by all
 - View services based on the vector features

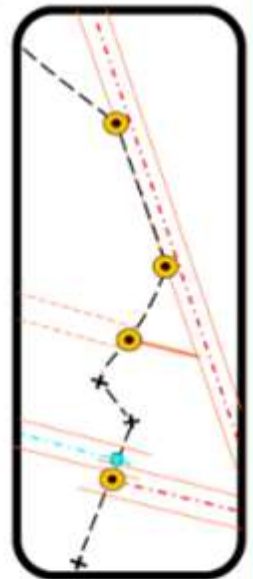




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🔑 Page API permettant de visualiser à toutes les échelles la nouvelle ligne frontière numérique.

<http://cnig.gouv.fr/APIGeoportail/PageAPI.php>

Elle s'insère désormais dans les cartographies des 2 pays mais n'aura de valeur juridique qu'une fois les doutes levés par des vérifications techniques en cours mais dépendantes des financements des 2 états. En effet, elle a un caractère temporaire sur les zones de différences observées entre les 2 restitutions sur les Pyrénées par français et espagnols et dont la résolution passe par un travail bilatéral de mesures des bornes (programmé sur 6 ans) et des 11 zones où la ligne est temporaire et demande une validation. (voir carte ci-dessous)



Commission des Pyrénées 2014

- ✓ Relevé de conclusions visé par les présidents de délégations
- ✓ Annexes au relevé de conclusions

cnig.gouv.fr/?page_id=8646

Site de passionnés de la frontière, avec de nombreuses photos :

🔑 Eef Berns

🔑 Michel Molia

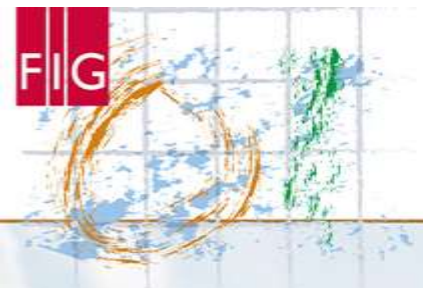


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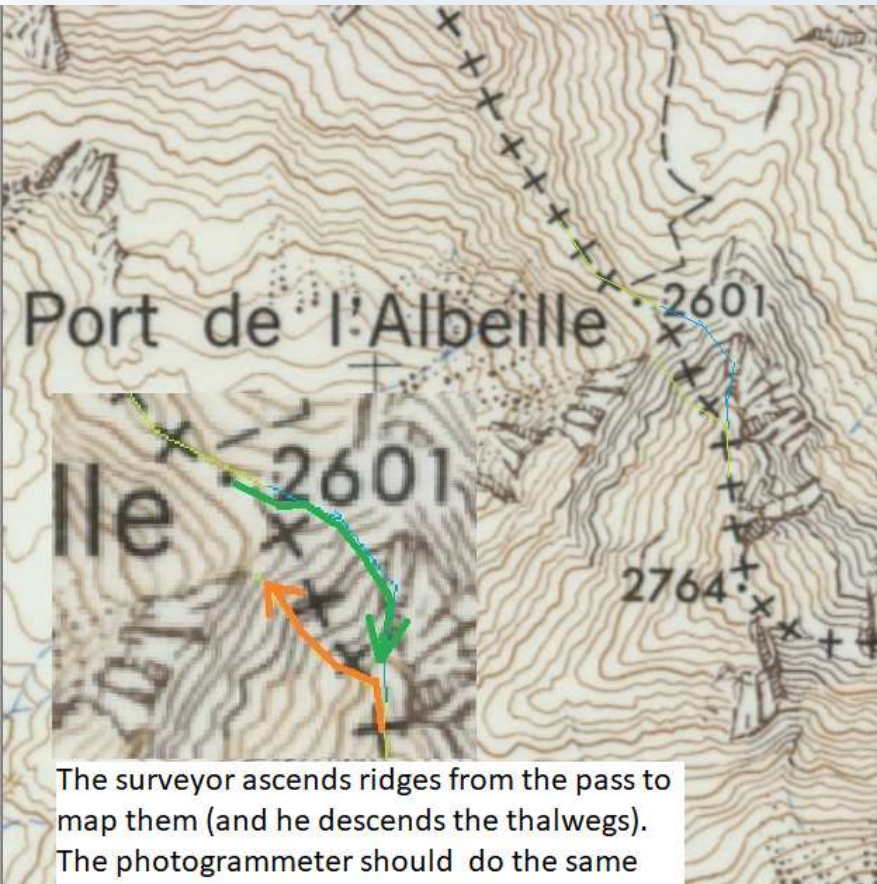
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France - Andorra

- Delimitation agreement is in force since 2016-09-01
- Demarcation commission will establish common ETRS89 line.



The surveyor ascends ridges from the pass to map them (and he descends the thalwegs). The photogrammeter should do the same

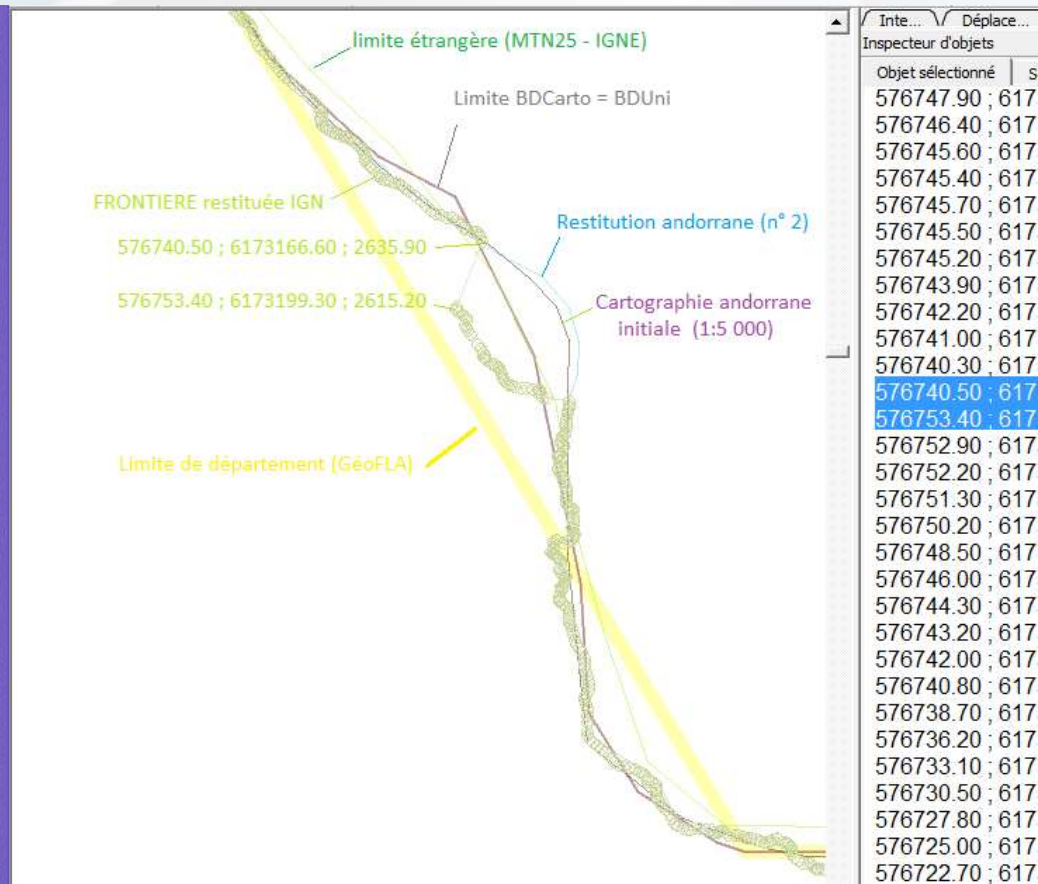




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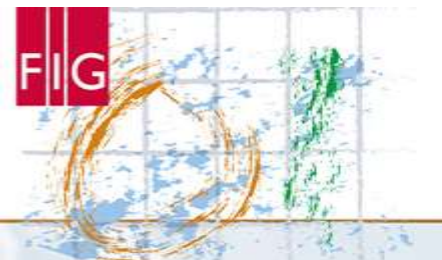


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LES NOUVELLES FRONTIERES NUMERIQUES ET PARTAGEES DE LA FRANCE

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LA REPARTITION DES COMPETENCES RELATIVES A LA DELIMITATION DES FRONTIERES

Abstract

This article settles the present situation about the distribution of competences in France in the area of borders determination and demarcation. It takes at first a census of the existing texts in force – Constitution, treaties, and internal rules – in particular those determining the competences of the main ministries and administrations involved. Then it proceeds with the different steps of borders demarcation: determination, establishing bounds and markers, then survey, checking and maintaining or restoring it. It draws some perspective evolution of the borders markers and its potential change of juridical status, underscoring the fact that starting from 2018, the implementation of the INSPIRE directive might in the future nullify physical marks for the benefit of lines determined by electronic means. It suggests at last ways of clarifying the competences among French administrations dealing with it.

DEMARCATIOn BORDER MANAGEMENT, CROSS-BORDER COOPERATION

JURIDICAL ASPECTS

NEW ?

“...wherever the two states have adopted common limits and determinable by reference to the same system, demarcation is considered proved by reference to that system...”

Official agreements and maintenance

Positions defended by France with foreign countries



Reponsible in coordination and maintenance of the border work, it manages funds

Technical works

cadastre



IGN

Cartographic or geodetic expertise



Local maintenance