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b-solutions

FINAL REPORT

Pilot Action Title: GeoConnectGR

GECT Secrétariat du Sommet de la Grande Région
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1. Please describe the activities and the overall progress of your project, including all of the achievements, milestones and links to other topics/policy areas.

The project was organised in three major work packages and an additional dissemination programme:

1/ The first work package consisted in harmonising the geometry of the hydrographic data at the borders, with primary aim to ensure the connectivity of the hydrographic features.
2/ The second work package was the realisation of the continuous hydrographic dataset in the required data format.
3/ The third work package related to the creation of an agreement between the project partners establishing a licence for a non-commercial use by any user.

Hereafter the schematic subdivision as used during our progress report:

- **Edge matching of the hydrographic features**
  This package consists mainly in the bilateral edge matching of hydrographic features in border regions.
- **Production of a continuous hydrographic dataset and creation of a corresponding service**
  Analysis of possible approaches to create the common hydrographic dataset
  Contacts with potential service providers
  Production of the dataset
- **Solving of intellectual property right issues and commercial aspects**
  Analysis of the suitable licence to put in place
  Analysis of the existing convention and the possibility to enlarge it
  Finalisation of the user conditions
- **Promotion of the project**
  Internal and external promotion of the project GeoConnectGR

While hydrography had been chosen as a test case, on the long run the project aims to obtain the same product for the other core reference datasets.

Finally, one can say that the theme was well chosen for its symbolic value and importance (water management, the blue gold). Nevertheless, the project team was slightly astonished by the difficulties that appeared on the borders. Indeed, many linear features cross the borders. This is true for roads, railway tracks, etc. The same appears to happen for waterways. However, in many cases hydrography forms the border itself. This can also be true for a road, but hydrography can move over the years even without human intervention. This makes the whole theme a bit less suitable for a "simple" test case.

Hereafter we analysed the results of the three first work packages. The dissemination programme is discussed in more detail in section 6 hereafter.

1/ Work package 1: Geometric harmonization at the borders

This process went relatively well. The work was done bilaterally, since these borders always concern only two of the five data producing partners. It was only hampered by the concept of the legal border. The connection of geographic features, in this case water courses, should be done on the representation of the legal border. However, this legal border is not always well established in the geographic data. Hence, it was not always easy to reach an agreement, especially for those partners, working on a cadastral scale, i.e. a very large scale, when compared to the GeoConnectGR scale of 1:10.000.

The project team decided to work on the technical instead of the legal border. This means that the connections are made on a virtual border agreed between the project partners without any legal implication. The basic idea is that, if there is a connecting network on virtual, technical borders, these connections will not be disturbed when the virtual technical border is slightly moved to the eventually established geographic representation of the legal border.

All the bilateral work could be done, except for the Luxembourgish partner. Due to their above-mentioned cadastral approach and a lack of staff, they could not participate in this part of the project. This weakness turned out to be an advantage. It allowed to evaluate the differences for the end user, i.e. between the coordinated geographic harmonisation by the project partners and the automatic or semi-automatic edge matching realised by German Bundesamt für Kartographie und Geodäsie (BKG)/EuroGeographics (EG), the external service provider.

2/ Work package 2 : Realisation of a continuous hydrographic dataset

The realisation of the continuous hydrographic dataset was outsourced to a third party. The non-profit organization EuroGeographics aisbl (EG) developed a product in line with the new concept of Core Reference Data (CRD), as developed within the United Nations (UNGGIM). The CRD approach developed by EG is the only available method of this kind. Hence, the project team has asked EG to perform this work. Since the CRD of EG was preceding the UNGGIM definition of the core reference data – this work is ongoing – , there are small differences between the two data models, but experts from the German BKG and IGN-FR consider them as minor.

Attached, you can find the report established by the German BKG, part of EuroGeographics. Due to the summer holidays 2019, their final work was slightly delayed. The data was delivered in the middle of September, with a one-month delay compared to the operational timetable. However, their work was very well done and required no secondary amendments at this stage.

One major problem appeared at the very end of the project, i.e. the absence of hydrographic toponyms in the Walloon part of the dataset, responsibility of IGN (BE). This is not due to the manipulations by

EG/BKG, but to the source data that are not integrated at the national level. IGN (BE) will evaluate the possibilities to integrate these missing toponyms as soon as possible, but this kind of operation falls outside of the scope of the project.

The WMS layers from the GeoConnectGR dataset are integrated in the geoportal of the Greater Region. WMS services are available on the trilingual mapping application (EN-FR-DE) under the theme "Environment". Pending the introduction of a geocatalogue in 2020, the data and documentation will be available for download in the bilingual thematic portal (FR-DE) of the geoportal of the Greater Region, under the theme "Environment". Direct access to the interactive hydrographic network mapping is also be available from this page.

The following links lead to the WMS servers for the development of non-commercial applications, which could be based on these servers:

- Lakes and reservoirs : https://arcgis-portal.public.lu/server/services/GR/StandingWater_GeoConnectGR/MapServer/WMSServer
- Watercourses with surface features : https://arcgis-portal.public.lu/server/services/GR/Areal_watercousres_GeoConnectGR/MapServer/WMSServer
- Linear watercourses : https://arcgis-portal.public.lu/server/services/GR/Linear_watercousres_GeoConnectGR/MapServer/WMSServer

3/ Work package 3: Licence agreement

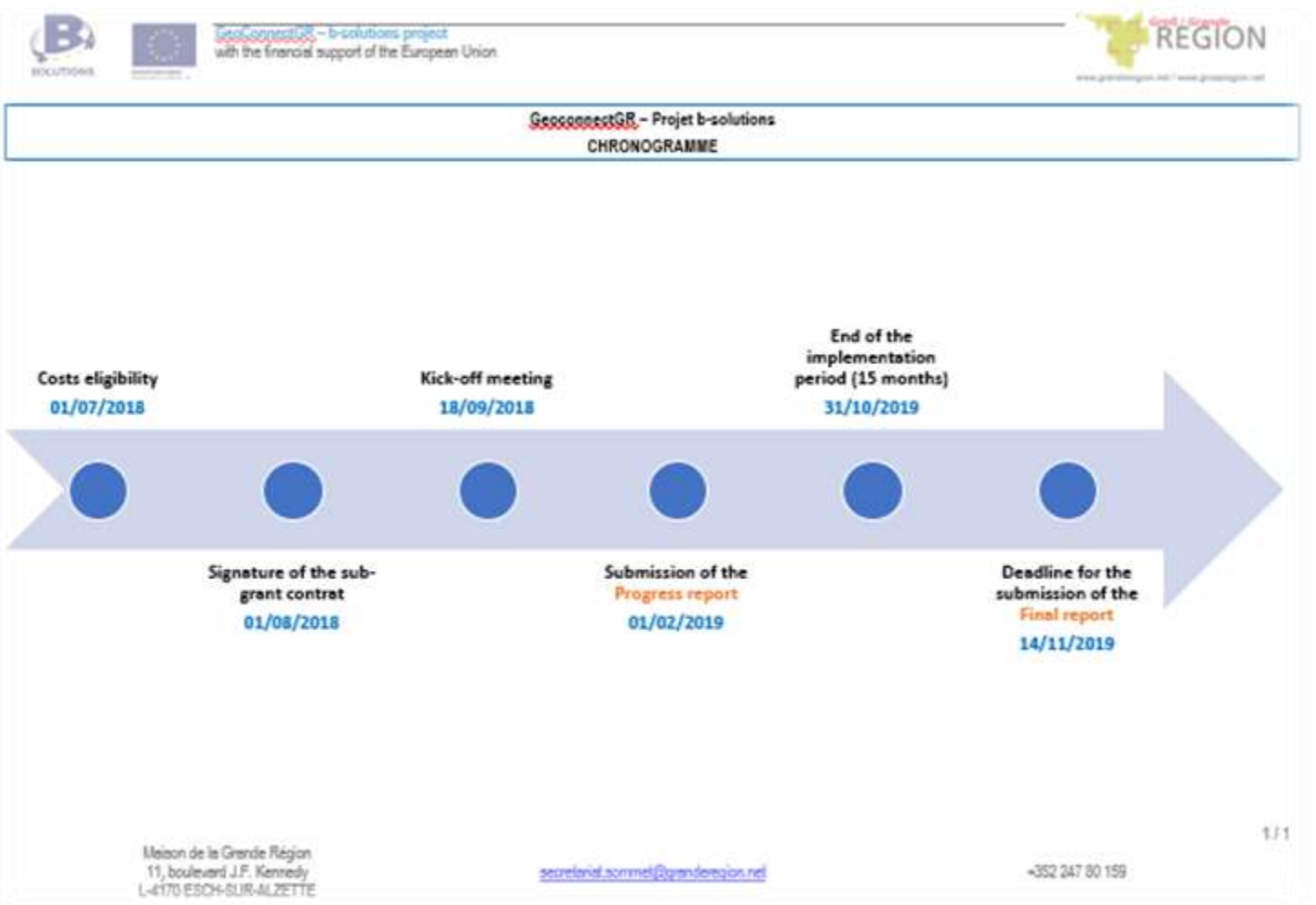
This was the last, but not the easiest part of our work. The major problem encountered in this work package was that the five partners are not governed by the same commercial or non-commercial regulations.

The Open Data policy is more and more accepted in the different member states, including the project partner countries. However, not all the institutions part of our project are at the same level in terms of funding. This is especially true for the five producing partners, i.e. the National Mapping and Cadastral Agencies and the National Mapping Agencies involved. The Summit Secretariat of the Greater Region is less concerned, but the seventh partner, the Geographical Information System (GIS) of the Greater Region based at the Luxembourgish Ministry for Energy and Spatial Planning, identified as the end user also struggles with the commercial character of the data. The GIS will relay the results of the project (data) to other users.

The initial aim to develop a full open data hydrographic layer for the Greater Region was impossible. We managed to establish a one shot quasi-open data agreement, based on the well-known “Creative Commons, By, Non Commercial licence”. The agreement covers the obvious cooperation of the partners within this project and the use of its outcome, but also the future use of the data layer and the future evolution of the project.

2. **Regarding the calendar of activities as part of your application and the sub-grant contract, has the provided timetable been fulfilled? If this is not the case, please state the reasons and explain why the measures that have been put in place to ensure the compliance with the overall timetable have failed. Additionally, have there been amendments to the timetable that had to be approved by the Contracting Authority?**

Our very general timetable has been followed throughout the whole project.



At the very end, we had a small delay due to the production process for Work package 2: Realisation of a continuous hydrographic dataset. Neither the relatively long time we used for Work package 1: Geometric harmonization at the borders, nor the summer vacations have helped. The project leadership only received the end-user evaluation early November. Hence, there was no time for corrective actions. However, these corrective actions will be taken in the cradle of the Land Registry and Mapping Working Group of the Greater Region. The project is a starting point, not an end.

We have asked the Contracting Authority for a small delay, not to cover this aspect, but for a better finalisation of the dissemination of the project. Indeed, on 8 November, we had the opportunity to organise a concluding seminar in cooperation with a few organisations active in geoinformation and land surveying (i.e. AM/FM GIS BELUX, EuroGI, OBGE asbl, ANGE, UBG and OLG).

Eventually, all what was feasible within the time limit of the programme was done.

3. **Please name the major risks and challenges to the project, including the reasons and the measures that have been put in place to overcome those challenges.**

The initial findings presented during the project and reported in the progress report are still valid.

Very soon in the project, we have understood that the EuroGeographics' initiative called Core Reference Data (CRD) was very suitable for the realisation of the production part. It is the sole service provider offering such an approach. Moreover, it combines the skills of the entire official European Cadastral and Mapping Agencies. They already did a test case in another cross border region in Central Europe. The CRD was developed by EuroGeographics, with the aim to provide official authoritative and harmonised core reference data to the European bodies and agencies. We were planning to use the same process to produce the pilot hydrographic dataset.

Unfortunately, as far as we understood, EuroStat decided not to order the CRD and the whole project has been jeopardised, since without any public funding, it will lack the necessary means to be realised. This situation was explained on 31 January during the coordination meeting of our b-solutions project with the partners of DG Regio. We took measures to overcome this hurdle. EuroGeographics and the German BKG have agreed to maintain the CRD project running for a while and to use it for the GeoConnectGR project.

The solution, which we have developed for this issue, might be satisfying for GeoConnectGR. However, it does not solve the structural problem created by the lack of an EU authority in charge of the coordination of all initiatives in the field of geoinformation. It seems surprising to external observers and us, that there is no such effective coordination, in spite of the INSPIRE Directive, and that official authoritative data from member states have to follow the hazardous way of public procurement to be accepted or not.

The INSPIRE Directive certainly provides a good start. However, one can say that it only harmonises existing data through common data models. The result is a first level of interoperability, but INSPIRE data remains heterogeneous across countries. UNGGIM Europe's plan about core data as well as EG's approach complete INSPIRE by guaranteeing a minimum common content between geographical data from different countries.

Our project has shown that even the CRD are not ready and operational yet, due to some missing or non-harmonised data in the camp of the data producers, hence the importance of a higher level of engagement of the EU, with an EU authority for geoinformation.

4. Did the actual expenditure match the proposed budget? If not, please indicate the reasons for it and the correcting measures, as well as the failure of such measures.

We realised during the project implementation that our budget proposal was not adequate in terms of actual expenditure. Hence, we decided to specify the type of expenditure in a new document (annex 4). At the end of the project, the expenditure for the project is 6.000 euros below our first projection.

5. Please describe the cooperation with the co-applicant(s) and affiliated entities (if applicable) with regards to the foreseen roles and tasks, as described in the application. Please also clearly list the division of tasks in the implementation of the project.

1/ **Work package 1 : Geometric harmonization at the borders** was done by the 5 operational partners i.e. the NMCAs of the Grand Duchy of Luxembourg, Rhineland-Palatinate, Saarland and the NMAs of Belgium and France (in Belgium and in France the cadastre depends of the Ministry of Finances and does not interact in the Greater Region). The NMCA of Luxembourg operating at the cadastral scale and suffering from a staff shortage could not participate in the bilateral work including the Grand Duchy of Luxemburg, but it intervened in an advisory role at the level of the project management team.

2/ **Work package 2: Realisation of a continuous hydrographic dataset** was coordinated by IGN Belgium, the Summit Secretariat of the Greater Region for the tendering and negotiations with the subcontractor and by the Luxembourgish Ministry of Energy and Spatial Planning – GIS-GR for the evaluation by the end user. The actual work was performed by EuroGeographics aisbl in cooperation with the German BKG. For this work package, we have extensive reports in ANNEX 1 (production report) and 2 (end user report).

3/ **Work package 3: Licence agreement** was led by IGN Belgium (NMA), IGN France (NMA) and the NMCA of Rhineland-Palatinate. All the project members finally intervened for their part and made sure that the heads of their institutions eventually signed the agreement. The Summit Secretariat of the Greater Region has coordinated the administrative part of the agreement in a very skilled and successful way. The final version of the agreement reached in Work package 3 is attached in ANNEX 3.

4/ **The dissemination** was essentially covered by the Summit Secretariat of the Greater Region in close cooperation with the president of the Land Registry and Mapping Working Group of the Greater Region. It is covered in section 6 hereafter.

6. What kind of measures have you put in place in order to promote the b-solutions initiative? Did you make regular use of the 'Boosting EU Border Regions' network? Did you connect with other cross-border stakeholders?

The essential part of these measures has been realised via our dissemination plan. We made regular publications on the online professional network **'Boosting EU Border Regions'** to communicate about the project's implementation steps and to announce events related to it:

- b-solutions project "GeoConnectGR" - Kick-off
- GeoConnectGR improves the perception of experts from neighbouring countries
- GeoConnectGR: working on a convention to extend the results of the pilote project
- GeoConnect GR's final phase - A step forward for future cross-border and pan-european data integration
- "Inspire, from theory to practice" - Final seminar of the b-solutions project GeoConnectGR
- Final seminar "Inspire, from theory to practice" of the project GeoConnectGR: A call for connectivity at borders in Europe

The posts were translated into German and French and published on the website of the Greater Region **under the section GeoConnectGR**.

We took part in several b-solutions events, sharing our experiences with other cross-border stakeholders:

- 7 December 2018: presentation of the project during a press conference in the town hall of Saarlouis.
- 31 January 2019: participation in the meeting of the b-solutions projects organised by the AEBR in Brussels.
- 5 April 2019: participation in the seminar "Overcoming cross-border obstacles. A new landscape for cross-border cooperation" organized by the AEBR in Saarbrücken.
- 24 October 2019: participation in the annual conference of the AEBR hold in Dresden, and presentation of the results of our project under the scope of trust building. We had a very interesting dialogue in a panel composed of : a representative of the European Commission,

Mr Dirk Peters and his statement to "*Trust building through EU instruments, the case of the ECBM*", a representative of another b-solutions project, Mr Xosé Lago, Director of EGTC Galicia-Norte (ES/PT) on their experience with the b-solution case "*Simplifying CB mobility to carry out cultural, sports or educational exchanges, a representative of Province of Gelderland",* Mr Doede Sijtsma, and a representative of GeoConnectGR, Ms Florence Jacquey who shared about "*The role of trust in overcoming legal and administrative obstacles. The case of a Greater Region's b-solutions".*

Finally, we organized the seminar "Inspire, from theory to practice" as a conclusion of the project. Therefore, we cooperated with other cross-border stakeholders, i.e. AM/FM-GIS Belux (an aisbl active in Belgium and Luxembourg) as well as with EuroGI (a paneuropean GI association). The final seminar was a great success; many participants have expressed their satisfaction about the project GeoConnectGR and the quality of the seminar itself. The presentations are available on the website of the Greater Region.

7. Please explicitly describe the contribution of the project regarding the solution of the legal/administrative obstacle, as described in the application. Did the implementation follow the planned steps and indications? In detail, please include:

- **The legal/administrative obstacle – has the definition of the obstacle changed in the light of the findings achieved during the implementation period? Did you discover new border difficulties related to the predefined obstacle, including new approaches to overcome them?**

As pointed out from the start of GeoConnectGR, despite the advances in the use of cross-border spatial data, there are still a number of administrative and legal obstacles to institutional cooperation in the field of spatial data in the Greater Region and elsewhere in Europe. GeoConnectGR was a first tangible step towards an interoperable dataset for the Greater Region, but it was not possible to solve all the existing problems. This was clear from the beginning of our endeavour.

Legal, organisational and technical principles still vary between mapping agencies, which results in discontinuity in the data (the hydrographic network is one example), a lack of interoperability, a lack of data availability under open licence and costly data acquisition operations. Even if these hurdles still exist, GeoConnectGR has solved the major difficulties for the hydrographic dataset and highlighted the still existing remaining shortcomings.

As far as the user licence for the GeoConnectGR layer is concerned, it was not possible to overcome the differences in terms of funding between the partner institutions.

The end user would have liked a fully open data approach with the data that we have produced, while this is not possible, for a very simple economical reason. Some partners are only partly funded by their state and are legally depending on commercial incomes from their activities. As long as this hurdle has not been overcome, the open data policy will be hard to apply to its full extend.

For the purpose of the project, we have developed an agreement among the project partners for further use of the dataset, based on the above mentioned "Creative Commons, By, Non Commercial" approach. Unfortunately, the dataset isn't Open Data as such, but it is Open Data for Non Commercial use, with the obligation to mention the author of the source, in this case the Greater Region ("*Source des données : Groupe de travail Cadastre et Cartographie de la Grande Région, Consultable sur le géoportail de la Grande Région : www.sig-gr.eu*").

- **The identified solution – could a final solution be implemented or prepared?**

For the first time, our project has produced an international official INSPIRE compliant dataset, based on the pragmatic approach proposed by EuroGeographics (EG), i.e. by using the Core Reference Data approach. A pilot project had been run by EG for AT, CZ and SK, but this time, the project was organized by the NMCA's themselves, with the support of EG and the German BKG.

As shown in the production and in the end-user report in annex 1 and 2, the produced data layer is certainly not perfect, but this was never our ambition. However, the solution is up and running and paves the way to future versions which will gradually meet user requirements and needs. Hence, one can say that a first version of the final solution has been implemented.

One of the remarks by the end users is not shared by the project partners and specialists from the German BKG, EG and UNGGIM. The INSPIRE Directive essentially harmonises the structure of geographic information in the EU, not the content, neither the geographic connectivity nor the semantic comparability. Core Reference Data tend to overcome this limitation of INSPIRE. For instance, INSPIRE foresees many attributes, but only the "INSPIRE ID" was present in all the national hydrographic datasets. All other non-mandatory fields were present in some national data, absent in others. The Core Reference Data approach indeed flattens the INSPIRE model, but it makes sure that there is a cross-border agreement on mandatory fields.

We fully understand the end-users hope that with the finalisation of INSPIRE in 2020 / 2021, they will get the long awaited EU coverage of major terms, duly completed, fully harmonised and with the required geographical connectivity. However, without major changes in the current national strategies this will not be the case. It was very important to highlight this with the project GeoConnectGR and our conclusions should be considered for any further development.

Another important step forward was made in ensuring a better connectivity of hydrographic features in border zones. We realise that the end users can see no difference between borders, and where bilateral work led to geographically harmonised and connected data and other zones where this work could not be performed. This shows that the edge matching process set by the CRD project and applied by the German BKG is fit for purpose. However, it is important to realise that in sectors where harmonisation took place, next updates will require no new harmonisation and this confers a certain stability, also for the end users. In sectors where the automatic or semi-automatic harmonisation was performed, successive versions will require no additional work neither. However, once the actual bilateral harmonisation will take place, the above-mentioned stability of the data will be lost, since in that case, the connecting features will probably have to change.

- **A conclusion – How would you rate the impact of your project and the overall b-solutions initiative against the background of your experiences, outcomes, and lessons learned?**

GeoConnectGR has been successful. Several presentations during the final seminar, as well as expert advices have confirmed that relevant results were obtained.

Presentations by the producer (BKG) and the end user (GIS-GR) have however shown that there is still room for improvement. The presentations and discussions during the final seminar were very frank and open and the respective presentations of the German BKG and GIS-GR contain valuable recommendations for future improvements.

These elements as well as the GeoConnectGR data have now to be evaluated by the data producers, i.e. the 5 producing project partners. We will have to look for a short term solution of the missing toponyms in the Belgian data. Possible amendments cannot be performed within the scope of the GeoConnectGR project.

At the very end of the final seminar, a round table discussion allowed the speakers and some external experts to exchange their views. All were supportive to the GeoConnectGR project. We should go on with our efforts to harmonise the data of the hydrographic theme with the CRD, keeping in mind that these CRD specifications have also to improve from one version to the next.

Several speakers and experts have pointed out that the EU geoinformation infrastructure clearly lacks the required level of coordination. The EU member states possess treasures of geographical information, but they cannot be used by the EU, due to pricing and licencing issues and the lack of coordination of the data, making them less usable than commercial and so-called “free” of “voluntary” counterparts. However, whenever national and EU sovereignty is at stake, these counterparts are of course less reliable and cannot replace guaranteed and authoritative data.

The chairman of the Land Registry and Mapping Working Group of the Greater Region, one of the major players of GeoConnectGR, heavily insists on the urgent need for the EU to create an EU authority in charge of the coordination of all relevant initiatives in the field of geoinformation. It is often said that this is not possible, because it is not foreseen in the Treaties, but this cannot be a justification to persist in this very dangerous situation. The EU security and even defence is at stake and this requires an urgent and far-reaching reaction, with or without changing the Treaties.