# Minutes workshop "Use of INSPIRE data: past experiences and scenarios for the future"

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These minutes aim to complement the presentations by providing short summary and the discussion topics.

## 1. Participants

List of participants is available on:
 https://eurogeographics.org/calendar-event/use-of-inspire-data-past-experiences-and-scenarios-for-the-future/

Presentations and video records are also available there.

## 2. Introduction

- o Workshop welcome and introduction

Marcin Grudzien welcomes the audience on behalf of GUGIK. He explained that partly GUGIK has been interested to host the meeting because of the very limited use of INSPIRE services GUGIK has set up.

Dominique Laurent reminds the audience of the context and objectives of the workshop. Whereas the benefits of general INSPIRE principles (such as discovery and coordination) are widely recognised, the use of INSPIRE interoperable data looks very limited. The workshop aims to present and discuss both the benefits of interoperability and the remaining barriers to use INSPIRE data.
She briefly introduces EurGeographics and EuroSDR to participants not already familiar with both networks.

## 3. European use cases

- o Users of pan-European data

Abigail Page from EuroGeographics presents some use cases of the pan-European products (such as EBM) and the main characteristics users expect from data.

- How INSPIRE could better support EU GIS analysts

Julien Gaffuri presents the main geographic data characteristics expected from Eurostat: wide thematic scope, need for products (and not for scattered pieces of puzzle), multi-resolution data, data comparable across countries, sustainable and easy to access data …

His main conclusion is that there needs to be more central management in the European information infrastructure and that a fully distributed SDI does not work.

Discussion:
- Which level of detail is expected by Eurostat for the pan-European dataset on Transport?

Eurostat is interested by scale 50K, it is under negotiation with EuroGeographics.

- What Open ELS will offer users

Abigail Page presents the priority services envisaged by the project Open ELS. These priorities have been defined by intersecting the results of surveys about user requirements and about what is available.

Discussion:
- Have you considered scientists as potential users? Because some scientists do not need full coverage but rather they need to have data on specific places that are representative of a given phenomenon. This is the case for urban climate for instance. Open ELS might be valuable input for them; OSM is often considered because the interface is "the same" everywhere whereas national reference data are accessible through different URLs

Not yet. We plan to do so in Open ELS 2.
- You mentioned prototype of 3 use cases. What are they about?

They are not yet mature, they will depend on the developed services. One is related to emergency services in Nordic countries (need for cross-border map), another is related to Land Property and decision making by SME.
- What about INSPIRE data?

Users don't care about INSPIRE data but they want easy to access and harmonized data. INSPIRE is seen as starting point. ESRI and SAFE will help us to make INSPIRE data more usable.

- Coverages in INSPIRE

Katarina Schleidt explains very simply the principles and advantages of coverage data. Web Coverage Processing Services are very practical tools enabling to select what you need and to combine data from various coverage themes.

Discussion:
- Is it possible to combine coverages and machine learning?

I am not very aware of it but it could work.
- Which are the users?

INSPIRE is too complex, too long. There is need for working examples.

- Would you encourage Eurostat and National Statistical Institutes to publish data as coverages?

Rather yes.


o <u>INSPIRE and ITS Applications</u>

Christian Kleine explains that HERE is very interested by standardized dynamic data coming mainly from Road Authorities. INSPIRE may be an important source (e.g. use of Spanish data).

Discussion:
- What about incremental updates?

It is not yet done, still just a will; we have language issue (may be XML) but we envisage some feed-back loop.
- Could you analyse and exploit the driver behavior?

No, data is anonymized; there is no long-term use.
- Is there real use of INSPIRE data?

INSPIRE compliance doesn't matter so much but standardization matters.


o <u>INSPIRE data for automatic driving</u>

Heino Rudolf and Dawid Ludyga have developed a simple topologic model fort the road network that has been prototyped with OSM data; the INSPIRE data model was considered too complex to suit the automatic driving requirements.

Discussion
- Why using OSM that is not authoritative data for automatic driving?

This is just a PoC.
- Automatic driving is very demanding, e.g. turns, cm accuracy. Can it be dealt with by your model?

Yes, our model can work with it.
- How do you manage the interconnections from linear referencing and the management of images coming from the car

We store the data from car in database; we want to select data from the cloud.
- What about INSPIRE?

Saxony has more data than INSPIRE but we provide it under INSPIRE rules. Saxony might use our model as mediator between INSPIRE and ITS process.


o <u>Urban climate services requirements and INSPIRE data - on-going work in the URCLIM Project</u>

Bénédicte Bucher presents the context and objectives of the URCLIM project which aims at designing urban climate services, i.e. services that provide scientifically sound and easy to understand knowledge related to climate dynamics and to adaptation strategies efficiencies. A key element in climate modelling is a canopy model –more or less resolute- that takes as input atmosphere data and earth surface data and provides as output resolute climate data.

Climate sciences communities have organized for several years to produce comparable earth surface data appropriate for their canopy models and a typical example is the definition of Local Climate Zones (a land cover model adapted to canopy model) and the WUDAPT portal which describe reusable procedures to collaboratively produce Local Climate Zones data. One objective of URCLIM is to propose a urban land cover model adapted to climate services. A first proof of concept was made on France –with data from the national mapping agency and the statistical institute-. To propose a European solution, there is need for comparable data across Europe on themes such as BU or LC. Researchers in URCLIM are looking at the potential of OSM since it is seen as an international product but this a potential use case for INSPIRE data.

Discussion
- This is a wonderful use case for ELS data. INSPIRE data model on BU is quite richer than OSM.

o <u>INSPIRE interoperability users and use cases (by those who could not come)</u>
Dominique Laurent presents a collection of use cases coming from other events (mainly the 2018 INSPIRE conference). Benefits of interoperability include use of INSPIRE data for cross-border and pan-European use cases (accessibility studies, assessment of building energy …) and use of INSPIRE data models (new standards, ontologies).

## 4. National examples

o <u>INSPIRE Data as base for the National Transport Planning</u>

Cristina Calvo explains that Spain is producing, by integration of IGN data and data provided by the main national and regional transport authorities and stakeholders, a 3D transport network compliant with INSPIRE requirements and including the 5 transport modes (rail, road, aerial, maritime and cable) and their connections.

Discussion:
- How close to INSPIRE is national model?
We have implemented all attributes
- What is your agreement with Road Authorities regarding update?
For national roads, we receive notifications from the ministry of Civil Works; for regional roads, we have in general an agreement about yearly updates; at local level, we work with Cadastre, National Statistics Institute; we have also some agreements.

o <u>Using the INSPIRE data in the Czech Republic</u>
Ivana Svata explains that harmonized data has been available for years in Czech Republic, at least on some themes, both from WFS and ATOM feed.  As most data is open, it is difficult to know users and use cases. When existing, national services are widely preferred.

Discussion:
- Why no national service on theme AD?

It was new collected data in 2012; so we decided to provide only INSPIRE data. For other themes (e.g. CP), national services already existed and were required by national users. We are preparing extensions of INSPIRE data models for our users.
- What about WFS and ATOM?
Both have their users but ATOM is more used than WFS.


o  <u>Switzerland. A specific use case for INSPIRE?</u>

Christine Najar presents the step-wise strategy of swisstopo regarding INSPIRE implementation: feasibility study, focus on open data, decision to provide interoperable data where it is needed (e.g. CAP subsidies for cross-border farmers, Geneva or Bodensee areas). ATOM has been selected for download services.


Discussion:
- Why the choice of themes AU, GN and BU in the feasibility study?
We have chosen a range of themes with both relatively simple data models and some complex models. The premise was that swisstopo is the data owner.
- What about geometric consistency?
First step is to identify the data sets that could be matched at international boundaries. We'll see in next step if possible to have common capture rules.


o  <u>INSPIRE GML used as exchange format of CP in the real estate traffic in Spain</u>
Amalia Velasco explains that INSPIRE GML data is used as exchange formats between real estate stakeholders for theme CP and now BU. This is mandated by a law about the coordination of Cadastre and Property Rights Register. Many tools have been developed to use this INSPIRE exchange data.


Discussion:
- Are these tools open source?
Yes, most of them.


o  <u>INSPIRE integrated in the KLIC service to prevent excavation damages</u>

Ad van Houtum explains that Netherlands has developed an integrated system including both the KLIC application (as services requiring AAA) and INSPIRE (as open). It is expected limited use of INSPIRE data but INSPIRE has pushed utility managers to vectorise their data and has provided a sense of urgency, due to its deadlines.


Discussion:
- What about data accuracy?
Accuracy is +/- 1m; KLIC informs about where networks may be expected, not where they are exactly; there is need to search them.
- What about the obligation to provide data?

It is general obligation for all utility managers for the KLIC application itself; for INSPIRE, there are some exceptions (e.g. telecom not included)

- o Report about ELF user event in Poland

Marcin Grudzien reports about a practical workshop where attendees had to download INSPIRE data on themes TN (road), BU and AU from the czech and polish services and to use this data to compute an optimal route. This exercise proved to be feasible.

Discussion:
- Is there need for user training?

In Poland, we've had huge training; users have learnt but it is still complex. It depends on user background: training about GeoPortal is for all, training about WFS, GML is for dedicated users.
- Has there been some change after the event?

No, we didn't see any increase in use of our INSPIRE services. We haven't planned other workshops.

- o IGN Experiences about use of INSPIRE data

Dominique Laurent explains there are not yet users of INSPIRE data (data only recently available, lack of communication) though some potential users have been identified: cross-border cartography or database, research, application developers.

- o INSPIRE 2021+

Ad van Houtum explains that Netherlands is conducting some research regarding potential scenarios about future of INSPIRE depending on the levels of implementation and of demand.

Discussion
- What about implementation of annexes II and III?

Kadaster deals mainly about annex I themes; we have finished them and Kadaster is now working on the themes of annex II and III. So are the other designated data providers.

- What should be starting point?

EEA: need whole coverage of INSPIRE data to get use cases

Data producers: need users (especially European Commission bodies) of INSPIRE data to push us implementing better INSPIRE.

- o Experiences from supporting planning in the Baltic Sea region

Lena Hallin-Pihlatie presents the cross-border use case of Baltic Sea. The standardized portrayal rules and the WMS services provide a first level of interoperability. An expected difficulty regarding download is how to get relevant information as often, only the layer corresponding to a value in a code list is of interest. Users are interested by harmonized data, in simple models.

**5. Discussion session**

o  <u>Who are the INSPIRE data users? Do we know them?</u>

- we don't know end users; not everyone is comfortable with GML
- No one can speak INSPIRE at once; there is need for education; include training in Universities; researchers are potential users of INSPIRE
- EEA, Eurostat, Universities are more obvious ones; if we want to know others, there is need for a program, we have to make efforts; there is need to build on a community
- There has been some research on users of PDOK (NL) using the IP address; we have discovered new types of users (e.g. groups of citizens)
- There is also lots of engagement towards users in Finland
- Surveys may be a good way. We should also integrate more users in the data processing negotiation cycle, make step by step improvements.
- There is need for INSPIRE data at European level; it is an opportunity to extend your market outside your country, to have your data used by cross-border companies
- In USA, the market is on products; in Europe, it is on services => some heterogeneity remains. It might change if we have strong standard
- At beginning, INSPIRE was just for government; which status of private companies in INSPIRE?
- INSPIRE still requires efforts; we need to know why we harmonise data
- EuroGeographics has provided pan-European products for 2 decades; we are happy when our data is recognized by serious players (UN, World Bank, European Commission ..); it is not yet the case for INSPIRE.
- Users want data useful, easy to access, giving value. We must be active, e.g. by mandating use of INSPIRE data or by making its use easy.
- Make data useful for specific use through apps
- Identify the users: likely, not end users but "users in the middle" for INSPIRE
- There is need for intermediate actors, resellers
- There is need for data with better content; focus on implementation, on quality issues; INSPIRE is not enough
- There is need for "serious data": sustainable and standardised; it may be whatever standard (industry will adjust); INSPIRE has not yet got enough credibility; there are many bricks but a builder is missing
- Demonstrate INSPIRE is working (role of European Commission); make it happen
- Increase use of metadata; software should be able to deal with some heterogeneity (e.g. combine INSPIRE and OSM, OSM itself being a patchwork)

o  <u>How do data producers advertise INSPIRE data?</u>

- Poland: big training about SDI with INSPIRE as legal background; around 2 000 trainees.

- Belgium: We don't advertise so much INSPIRE but mainly our GeoPortal that is quite popular
- Netherland: We don't advertise INSPIRE but we have a community of INSPIRE users; we get feedback and we have to react on it
- Finland: we have published PS and AM; some producers are even reluctant to have their WFS used because it takes capacity and might breakdown the system.
- Slovenia: some meeting with public agencies; no advertisement; almost nothing
- Spain: on-line courses about use of SDI (CSW, WMS, …); we keep our users informed when we publish a new version of data (e.g. social media)
- Germany: lots of advertisement through articles, meetings. We have a platform GDI-DE; we push INSPIRE implementation; we try to find best practices and use cases.
- Switzerland: no advertisement at national level; we try to keep informed about cross-border projects and to make for them presentations, articles …
- Czech: our INSPIRE services serve mainly open data => we don't know who use them; no advertisement.

## 6. Finding / harvesting INSPIRE data

o  Copernicus experiences with harvesting/using INSPIRE data

Henrik Andersen and Alejandro Guinea present the context and results of the Copernicus exercise to harvest INSPIRE data in Europe. There are still many challenges, such as missing data, various download options, licensing. The objective is to gather INSPIRE data and to make it available through CORDA to the Copernicus Services.

Discussion:
- Is there will from Copernicus to have pan-European products for all themes

It depends on Copernicus requirements; focus is on themes AU, TN and HY. Currently, the priority is on theme HY for Copernicus Emergency services but we have many other use cases.
- What about the publication of testing report?

We are still working on theme AU.
- What about integrating third party data if INSPIRE is missing to get pan-European dataset?

INSPIRE is quite easier to use as we know the names of features and attributes. Integration of third party data would be more difficult and possible only if data is very well documented. We don't just need view services but download services (common data model matters).
- How Copernicus could work with new contractors?

Copernicus is about long-term commitment; we need to put in place a structure to ensure regular contact with data producers. It is for long run.
- The quality issues you reported might be avoided if data producers validate data not only against INSPIRE conformity but also against source data. We have performed such a validation in IGN France and this was quite necessary as it enabled us to correct a pair of errors
- Kadaster is coordinating INSPIRE at national level; it would help us to know why and how INSPIRE data is used; we need feed-back from Eurostat, EEA, JRC.. . If there is no use of INSPIRE data, we might just focus on national products.

Copernicus recognizes the value of INSPIRE data but we are still struggling; there are remaining barriers, main one being lack of availability in several countries

o Prospect prototyping the new ELS architecture

Saulius Urbanas explains that the ELF distributed architecture was a basis for the cascading WFS of the European Location Services (ELS). However, the performance has been critical. It is why the new architecture is envisaged, using a more centralized approach and offering a wider variety of services to users. A prototype has been designed for theme AD with a simplified model keeping only core properties.

Discussion:
- Eurostat is very interested by this centralized approach. Could you provide us access to it?

It is just a prototype, not yet a product. A number of issues to be solved, including the ELS financial stability (return on investments), prior offering the service to users.
- What about the support from NMCAs?

Support is there, all members are keen to contribute, but the priorities for resources go to national activities first. Some of our members are not influenced by EU legislations. Use of INSPIRE data by Commission would provide a good rationale for improvements and would raise the need on putting more efforts delivering pan-European content while negotiating NMCAs workplans and budgets in national governments.

7. **Dealing with INSPIRE complexity**

o German study about complexity of INSPIRE data models

First, Thorsten Reitz presents the results of the GDI-DE analysis of INSPIRE data models on themes BU, EF, SD, US and NZ; this analysis has shown some useless complexity (e.g. useless branches, use of references, complex geometry types ..) and has led to simplification proposals. Then, he points out that each encoding has its scope of use (therefore GeoJSON is not going to solve all issues!).

Discussion:
- What about use of metadata data types, such as CI8citation that are quite complex at feature level?

This is an example of over-specification, INSPIRE use a deep structure when generally only one information is provided.
- Why this choice of themes?

Focus was on Annex III themes; we tried to get a representative sample, with some simple and some complex models, with also various types of geometry.

o ELF flattening tentative

Dominique Laurent explains the flattening activities conducted by the ELF project (proposal of flattening rules, flattening exercise on GN) aiming to provide a common flatten model for the ELF geo-tools and for the BaseMap. Whereas it was quite easy to design a simplified and

flat model for the BaseMap, flattening INSPIRE data while keeping its whole content, as required by the geo-tools was quite complex and was abandoned.

    o   <u>The Core Reference Dataset: a simplified view on INSPIRE</u>

Sonja Werhahn presents the objectives of this new potential EuroGeographics pan-European product: its first version, the principle is to harvest INSPIRE data of themes HY and TN and to provide them as a dataset according a simplified and flattened INSPIRE specification.

Discussion:

- Have you thought about the update process (e.g. incremental update)? What about access conditions to the product?

Not yet decision on the maintenance process; we have to investigate if NMCA can provide incremental update. CRD is part of the Open ELS structure improvements. We need to assess the costs.

- What about third party data? In several countries, NMCAs are not responsible for themes TN or HY. In Finland, Environmental Institute has ATOM feed for HY
- Will CRD be open data?

No, we don't promise it. We invest for the first version but there is need for financial support. We have to have our costs recovered.

    o   <u>Get ready for INSPIRE Annex III. Who plays music for INSPIRE today?</u>

Heino Rudolf points out that implementation of annex I theme is globally successful (classical music) but that implementation of annexes II and III is quite more challenging: only 3 years for the remaining 25 themes, many data providers, various information systems, more than 1000 layers (in Germany?); it is more like free jazz. A new approach (central data model, simple data for delivery) is proposed by hdr.consulting to facilitate this implementation of annex III themes.

    o   <u>Dealing with INSPIRE complexity - MIG proposal on alternative encodings</u>

Nathalie Delattre presents the MIG on-going activities about flattening INSPIRE data models and alternative encodings. Current work focuses on proposing GeoJSON encoding with simplification.

    o   <u>INSPIRE plug-in for QGIS</u>

BRGM has sent a video about this tool: it is a demo showing that data from INSPIRE or other standards (GeoSciML, WaterML …) may be integrated on QGIS. The tool also includes a specific component for displaying time series. This video was also presented during the INSPIRE 2018 conference.

o   ELF cascading services and client applications

Henrik Gulliksen Schüller presents the difficulties he met when trying to import INSPIRE data in various client applications, such as QGIS and ESRI tools.  Nevertheless, after  a few iterations, he got some success with QGIS + plug-in, with ArcGIS and with GIS cloud.

Discussion
-   What about FME?

It is the same as with ESRI. The ESRI Data Interoperability extension is coming from FME.
-   Eurostat doesn't have any need for WFS; download by ftp would be fine.


8.   **Better data, better tools, better law**


o   INSPIRE in 2018 – user requirements, expectations and reality

Nicolas Hageman presents the state-of-play of INSPIRE in Germany (also looking for users). Main message is that it is fine to know the requirements of European Commission regarding GI (priority data sets, open data) but these requirements are not in the INSPIRE scope. Another legal instrument would be needed.


o   Dealing with heterogeneities

Bénédicte Bucher presents several EuroSDR initiatives or events regarding wider use of data (valorization of archives, Linked data).


o   The ELF data harmonization and geo-processing

Nathalie Delattre presents the harmonization degrees identified by the ELF project  and the actions taken to reach some of these targets degrees.
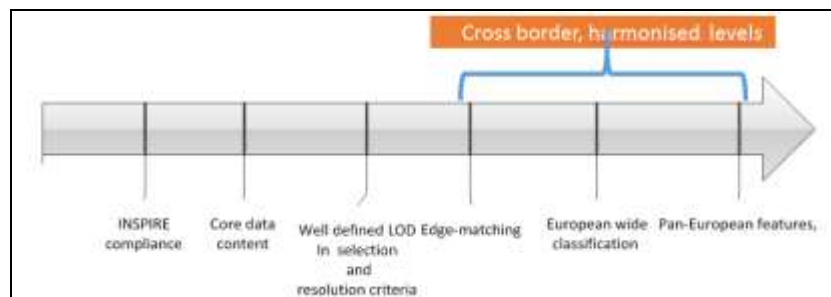


o   More harmonised content driven by the UN-GGIM: Europe core data initiative

Dominique Laurent presents the objectives of core data: encouraging production of minimum common data content to analyse, achieve and monitor the SDG. This initiative combined with INSPIRE would contribute to ensure pan-european data with both common content and common structure.


Discussion:
        - What about the themes outside NMCA scope?

We will have to reach other data producers and trying to convince them to implement core data.
-   Which link between Un-GGIM core data and Core Reference Data?

Until now, they are separate, independent initiatives. In future, CRD might be enriched with the content defined by UN-GGIM

o Open SDI

Bastiaan van Loenen presents the concepts of open SDI and wonders about INSPIRE being FAIR (Findable, Accessible, Interoperable, Reusable) and open: yes in theory but not so much in practice. He presents a simple experience to find, retrieve and reuse some INSPIRE data through INSPIRE portal. The PSI recast might influence future in use of data since it argues that all geographical data at scale 1:20k should be open. A recommendation of the presentation is not to look for many different users but rather to focus on the user identified in the directive INSPIRE: DG Env.

9. **Discussion session: how to remove remaining barriers?**

- Increase coordination between data producers, have consolidated datasets
- Not so easy to achieve; due to legal context, data may be produced at regional level
- In some countries, due to INSPIRE principles (data best maintained at the source), NMCAs are not responsible for themes TN and HY though they still maintain data. We were expected things going more smoothly with INSPIRE but it resulted more complicate.
- Something has to be built on INSPIRE; show value of INSPIRE; have more data.
- Include other types of data (such as OSM) where INSPIRE is missing.
- We need to know why our INSPIRE data is used; we need more user feed-back to improve our data.
- Communicate all the needs expressed during the workshop; if we don't publish our data, something else will be used.
- Extra-work has to be done on top of INSPIRE; likely up to EuroGeographics
- We should put in place some mechanism to collect user feed-back.
- Priority is data availability; strict conformity to INSPIRE not required; remove the burden of providing GML.
- EEA: the need for very detailed user requirements may look like a somewhat defensive approach (NMCA).
- EG: no, we need to learn, to understand, e.g. in case of missing attributes, why are they required?
- This is not an excuse but rather a will for rationale: "help me to help you".
- EEA is interested not only in open data but may also accommodate with more restricted agreements for certain applications; EEA may control access through the use of CORDA and other means.
- Some problem with legal instrument; INSPIRE doesn't mandate open data but open data for the Commission is not used in right practice; EG and/or NMCAs don't have always the power to provide open data to everyone. Apply INSPIRE instrument properly.
- Make knowledge base of users and use cases.

**10. Conclusion**

Dominique Laurent reminds the (few) current or potential users and use cases of INSPIRE data mentioned during the workshop; benefits of interoperability also include the use of INSPIRE data models in new standards or in ontologies and the push for data vectorization. Without requiring explicitly INSPIRE data, interested users appreciate it offers a standard for harmonized data in Europe.

However, the INSPIRE data is still difficult to discover (we don't know well our potential users and they don't know INSPIRE), to download (limited performances of WFS – puzzle effect) and to use (few client applications able to consume complex INSPIRE data).

EEA: INSPIRE is definitively of value and will help us creating pan-European datasets for the Copernicus Services in the future.

Data producers: make it widely and publicly known!