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EUROGI Members Meeting
“GIS UTILITY INFRASTRUCTURES SUPPORTING DIGITAL SOCIETY”
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SUMMARY AND RECOMMANDATIONS

*An event supported by IGN (Institut national de l’information géographique et forestière),
The French Mapping Agency
December the 7th, SAINT-MANDÉ (neighbouring municipality of PARIS), IGN’s headquarter, France*

1. SUMMARY

EUROGI, European Umbrella organisation for Geographic Information, organized a one day conference in cooperation with AFIGEO, named “GIS utility infrastructures supporting digital society”, during its *Members Meeting* the 7th of December 2017.

As a matter of fact, “GIS utility infrastructure” is an issue EUROGI seized as soon as 2014 when it took part of UPSIDEDOWN European project. In order to ease the understanding of this field and feed members’ thoughts, EUROGI decided to focus its *Members Meeting* on that topic.

1.1. OPENINGS

The opening of the meeting was insured by Daniel BURSAUX, CEO of the French mapping agency “IGN-France”, Jean Marie SEÏTE, president of AFIGEO (umbrella organization in France for geographic information), and Henning STEN HANSEN, president of EUROGI (umbrella organization in Europe for geographic information).

Daniel BURSAUX recalled how a network as EUROGI is essential for linking national bodies and ensures a relay towards the European Commission. He also insisted on the importance of GI standards, especially in the buried networks sector, and on the involvement of IGN France in that domain.

Jean Marie SEÏTE emphasized the key initiative and steady involvement of AFIGEO in the PCRS (large scale core street map standard) process, from the beginning in 2009, thanks to the fact AFIGEO tore down the silos between local authorities, network operators and national stake-holders.

Henning STEN HANSEN underlined AFIGEO has been a key player in EUROGI and one of the founding members more than 20 years ago. In Denmark, the utility sector was the first adopter of digital mapping. However, utilities have generally been forgotten on the Geoinformation agenda for many years. Currently there is a growing awareness for this topic. Concerning INSPIRE, utilities feature under the Annex 3 data sets, which does not reflect its great prominence for our modern societies.

1.2. STATE OF PLAY IN FRANCE

Eric LESAGE, from GRDF (main operator of the French natural gas distribution network) set the French utility scene and regulatory background. In 2011, new rules came into force, and the national observatory DT-DICT has been established. DT-DICT is an acronym which means statement about works:



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excavations, drillings, digs... also used when naming the rules itself; DT-DICT rules or anti-damages rules. The observatory gathers all the stake-holders; project manager within contracting authorities, performer of works within public works companies, and networks operators. Cartographic aspects of the rules introduced the notion of accuracy class, the sensitive buried networks (gas, power, lightning...) plans, provided by networks operators in response to work's statements, have to be georeferenced in the national system of coordinates with 40 cm accuracy (class A). Networks operators must also upgrade the previous networks plans they have, through detection investigations. New networks have to be georeferenced, in open-cut, to obtain a final precision of class A. Stake-holders are spurred to share a basic map, a kind of skeleton of accurate core data to locate precisely the buried networks. This skeleton has been named PCRS which means: "Very large scale Core Street map". At the end of the day, what we see is a 33% slump in damages on networks between 2013 and 2016.

Thierry MARBACH, from INERIS the public body for mitigating industrial and environmental risk, presented the "single portal for networks security" (<http://www.reseaux-et-canalisation.ineris.fr/>). This unique national internet platform maps all the overhead and underground networks, the portal is updated in real time. The infrastructure features a reliable, instantaneous and free mean to know networks operators concerned by the footprint of any work project. This single portal releases from liability many municipalities which had difficulty taking on. Thierry MARBACH showed an example of a statement DT-DICT such as a project manager, within a contracting authority, can set it up. There are 200.000 statements each year for a 1,9M€ budget. The economic model of the platform relies on networks operators fees calculated on their networks length. Shortly, geographic coverage of the networks will be used instead of length, encouraging operators to be more accurate on their networks mappings.

Eric TOURON, mayor, regional advisor and vice-president of Energies public body (SIÉML) in Maine-et-Loire (district of 800.000 inhabitants), presented the large scale core street map (PCRS) project in Maine-et-Loire. The purposes of SIÉML are directly connected to roadworks: monitoring of the power operator, management of public lighting networks (100,000 devices). In Maine-et-Loire, SIÉML decided to insure the role of local public authority relevant for the implementation of the large scale core street map. This implementation will be an example of pooling and sharing between stake-holders, currently ENEDIS (public operator of the electricity distribution network) and different water public bodies. A vector large scale core street map will cover 4.000km of networks in urban areas, and will be completed by an orthophotography with 5cm resolution and 10cm accuracy on the whole territory of the Maine-et-Loire district.

Pierre N'GUYEN TRONG, from GRDF, main operator of the French natural gas distribution network, recalled that, according to the law, any French gas distributor must have a cartography in order to locate the pipes and buried accessories, and to know the operation framework. The cartographic activity in GRDF stands for 1.700 daily visitors out of 8.000 potential users of the map viewer "Phileas". In 2016, the cartographic budget in GRDF accounted for 50M€, 50% for new laid pipes location data collecting and 50 % for stored data improving. GRDF is involved in many large scale core street map initiatives.

Cedric SEIGNEURET, manager of GÉO VENDÉE, a platform for geographic data created in 2006 by energies public body SYDEV, water public body VENDÉE EAU, and AMPCV mayors association in VENDÉE district, presented the large scale core street map (PCRS) project in VENDÉE. First of all, Cedric SEIGNEURET recalled the content of the large scale core street map designed by the CNIG (French national council for geographic information); vertical projection of the frontage buildings, edges of the pavements in the streets, emerging networks' infrastructures on the road or pavements (manhole covers), and addresses. The accuracy of the data must be 10cm. then Cedric SEIGNEURET presented his



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approach for producing a large scale core street map in VENDÉE. After testing data from ENEDIS which did not meet its requirements, GÉO VENDÉE compared different technologies; photogrammetry, mobile mapping and traditional GPS. The quickest and the cheapest way to record the data is by photogrammetry using plane's imagery, the most accurate is traditional GPS, and the most valuable is mobile mapping. GÉO VENDÉE will launch a tender for a vector core street map in urban areas, and an orthophotography with a resolution of 5 cm in rural areas. The tender will be split in 4 or 5 stages, without imposing a specific technology.

Dominique CAILLAUD, president of the data committee within the CNIG, outlined his vision of the situation in France regarding large scale geographic information (PCRS). The CNIG has designed a national GI standard; the large scale core street map (PCRS). Initiatives are currently flourishing all-over France, mainly headed and funded by local authorities. Step by step, this large scale core street map will cover the whole national territory. As a national GI reference, its production process should be at least coordinate at a national level. Cost overall assessment of a France coverage PCRS amounts to 400M€ to 500M€ which is similar to a few years networks operators' current spending in their own cartographies. France needs a national willingness in geographic reference data policy.

1.3. BEST PRACTICES IN EUROPE, AND RESEARCH IN FRANCE

Ad VAN HOUTUM, advisor at Dutch KADASTER, exposed "Extending the INSPIRE theme Utility Networks Data Model, a business point of view". The presentation began with a brief explanation of KLIC: the Dutch public service for exchanging maps of utility networks. In 2016, Netherlands had some 33.000 damages due to excavations with an average cost of nearly 800€. Since nearly 1968, the Netherlands have a service for excavators to obtain maps of the underground infrastructures in the excavation area. Since 2010, the network operators supply standardized maps to the central information point of KADASTER, which bundles these documents and provide them to the applicant via a download service. The economic model relies on applicants requests which cost 19€ each. This service will be modernized with web services and with an extra product to meet the INSPIRE-requirements. The data model of INSPIRE is accepted as a base which must be extended for national purposes. INSPIRE is intended to be open, anonymous and free of charge, this would lead to misuse of the information for excavations. In that sense it would cannibalize on the KLIC-service. Therefore, industry sector demanded INSPIRE, to be captured in the KLIC-service.

Jef DAEMS, KLIP project leader within "INFORMATIE VLAANDEREN", the Flemish information agency established in 2016, exposed the utility networks services (KLIP) in Flanders. The purpose of this agency is to support the Flemish government in its transition to an information-driven government. The KLIP system is a broker system between map requesters and utility network operators with regards to the positioning of utility networks in the underground. Since 2013, KLIP is moving, step by step, to a fully digital exchange solution. Map requests are registered in KLIP and sent to the utility network authorities. The KLIP platform has the responsibility to package and display these various network answers into the map viewer, with one base map, in accordance to PMKL (common presentation model of cables and pipes). This viewer is available as an online and stand-alone offline PC version. The map request initiator will use the KLIP viewer when preparing or executing the excavations, he can download the vector data in order to integrate into a CAD system for combining with other data. KLIP is enforced by law, an increased use of over 200.000 map requests is expected in 2018, requests costs 10€ each. Collaboration with Netherlands is standing already for many years, with a number of Scandinavian countries, a group for sharing knowledge has been set up. The current KLIP solution is only at the beginning. It should be the trigger to improve data quality within the next couple of years. Works companies would like to see improvements in this area.



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Carsten RÖNSDORF, Spatial Data Infrastructure Lead at ORDNANCE SURVEY, presented “Complexity of utility infrastructure from an interest, governance, regulation and policy perspective”. Through a very broad approach, different issues regarding utilities have been raised in that presentation.

Dr. Ingo SIMONIS, director innovation program & science at Open Geospatial Consortium (OGC), exposed “OGC’s Underground Information Activities”. OGC is a not-for-profit body, international voluntary consensus standards organization, leading open innovation for geospatial data. OGC was founded in 1994, number around 525 member organizations, and designed 48 Open Standards. Dr. Ingo SIMONIS recalled a standard is an agreed way of doing something. Standards are powerful tools that can help drive innovation and increase productivity. He also underlined that “CityGML” is a mature standard for above ground, and that underground infrastructure is the place to be now. Beginning 2017, OGC launched a “concept development study” regarding underground infrastructures thanks to sponsors: New York City, Ordnance Survey, and Singapore Land Authority. The results were published 2017 August 31. The study recommends developing interoperable common data models for underground infrastructure. OGC will now launch an underground pilot to deploy, test and demonstrate interoperability of underground information based on open standards. Pilot’s duration is estimated 62 weeks starting late 2017, or early 2018. Technical deliverables (data model and architecture) will be usable in procurements.

Nicolas Paparoditis, director of research and education at IGN, outlined research and innovations at IGN-France around 3D data collection and its applications. After a presentation of ongoing technical evolutions and trends (aerial-based 3D imaging systems, ground-based mobile mapping systems, underground or indoor mapping systems...), Nicolas Paparoditis emphasized several current or future applications such as; urban planning, positioning of solar panels, green cadastres, urban microclimatology simulations, traffic simulation, accessibility diagnosis, path generation for disabled, itinerary calculation, autonomous navigation...

2. EUROGI RECOMMANDATIONS

Regarding underground infrastructures, European countries or regions features different states of play. For instance, Netherlands and Flanders, highly populated territories having willingness policy, hold relevant accurate basic maps for overlapping with networks operator data. It’s not yet the case in France, nevertheless a strong momentum is currently raising thanks to new rules and GI standardization.

Unfortunately, since decades, most of the time, only disasters led to utility networks services’ implementation. Currently, these services are moving to fully digital exchange solutions, with web services, and data higher quality seeking. As standards are powerful tools to drive innovation and increase productivity, OGC has even been seized to develop an underground infrastructure one.

Pipes and cables don’t stop at the boundaries. In the current moving context, taking into account more and more people are living in cities, and that an efficient management of networks will be so more and more required, EUROGI would like to point out what seems to be key issues and give some recommendations:

- Share utility networks services experiences between European member states and regions to upgrade national or regional platforms which would need,
- Encourage GI standardization in Europe at a national or regional level regarding underground networks map and basic map as well, in compliancy with INSPIRE and OGC.