



References CFGI GmbH (Compendium)

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1 CFGI GmbH Center for Geoinformation

CFGI GmbH (Center for Geoinformation) is a completely neutral and product-independent consulting agency for questions on spatial-information use. Its economic focus is on independent consulting of administration, economy and associations in building spatial-data infrastructures, integration of infrastructures into the company and administrative processes and spatial-data management. In particular standardisation and legal aspects play a role here, since the spatial-data and information market is much fragmented throughout Europe where copyright and utilisation rights are concerned. This massively influences the infrastructures' web components. Creation of legal safety for spatial-data use therefore is particularly important to CFGI GmbH.

As an independent market instance, CFGI GmbH uses its extensive network (cmp. Figure 1-1) and the connected market knowledge to best serve the customers' needs. From this network, CFGI GmbH recruits special consultants suitable for implementing the projects in close coordination with CFGI GmbH. Most relationships are held to the university level.



Figure 1-1: CFGI Network

2 Qualifications of CFGI according to Reference Projects

For qualified implementation of the requirements most of our clients have for developing a future-oriented Spatial Data Infrastructure (SDI), the following know-how/experience/references are, among others, required:

- Processes for spatial-data collection, use and transfer within an overall organisation structure
- Regarding geographic information systems (GIS) and spatial data
- Standards and norms, in particular in the Web-GIS area (Open geo-spatial Consortium - OGC, International Standardization Organization – ISO)
- The economic asset "Geoinformation / spatial information" and the economic potential of internet-based application options
- The components of a Spatial Data Infrastructure (SDI) and its technical contents

- In the area of development and building of GIS / GDI in a local, regional, national and international framework

With the following reference projects on many different administrative levels, CFGI GmbH is able to document the respective qualifications (excerpts):

- **Selection of a suitable GIS software with profitability analysis and implementation concept for Stadtwerke Arnsberg**

Stadtwerke Arnsberg (short: SWA) were founded as a municipal service provider. Different specialist departments were combined. The combination of departments also led to transfer of the IT systems to SWA. This heritage makes a great number of systems available, all of which are reasonable from a technical point of view, while being unable to interoperably exchange area-relevant data. The various interfaces programmed to remove this disadvantage, however, could only partially solve this problem. Therefore, SWA tried for a solution for all areas of tasks that was as central as possible. The tasks of CFGI are analysis of the current situation and derivation of a target concept. According to a profitability analysis of the possible solutions, an implementation concept is also drawn up.

- **Concept for the GIS and GDI infrastructure in the state capital of Saarbrücken. Concept generation, budgeting and operating concept to build a GIS and SDI infrastructure.**

The state capital of Saarbrücken has an extensive geo-data landscape. Space-related analyses and visualisations on all levels are part of the everyday work of the specialised authorities. The traditionally grown structures have to be reconciled with the current demand in the area of spatial information processing.

The GIS workplace environment uses outdated infrastructure, and the distribution mechanism cannot meet the demands to modern SDI resulting from the INSPIRE directive, the Saarland SDI-law and the Federal spatial data access law (Geodatenzugangsgesetz). The first step includes analysis of how future-orientedly this infrastructure can support the administration processes and in how far the intended standards can be complied with and the requirements met. The objective is making use of state of the art geoinformation concepts in the GIS and SDI areas and implementing future-proof core components. To support budget plans, a general concept incl. component and service prices and an operating concept are drawn up.

- **Future-orientation of the spatial information system of the town of Leipzig / general and fine concepts of the SDI Leipzig**

The town of Leipzig has to react to the statutory requirements, e.g. in the INSPIRE area, but also to build its "building citizen office". The available infrastructure is unable to offer comprehensive spatial data through state of the art web services. CFGI GmbH drew up a general concept for SDI Leipzig and an action concept / target concept based on an analysis of strengths and weaknesses after completing an analysis of the current state. This was presented to the town government. Where further demand results, CFGI GmbH is charged with the fine concept and tender support of SDI Leipzig.

- **Energy Monitoring for North-Rhine Westphalia (NRW)**

In the scope of the energy cluster of NRW, CFGI GmbH was charged together with the Bochum university (work group geomatics) to derive a type of satellite-supported energy monitoring from the infrared images of the ASTER and TM Mapper satellites. The idea developed by CFGI GmbH is targeted at deriving building energy footprints from the satellite images in cloudless nights. A new method to gather such footprints was developed. The task of CFGI GmbH was, on the one hand, ensuring OGC-compatible presentation of the results in GeoWeb portals, and determination of the market opportunities in the scope of drawing up a business model for the method.

- **Concept of SDI in Rhein-Kreis Neuss / general and fine concepts of SDI RKN between district administration and communities**

Rhein-Kreis Neuss decided to build its spatial data infrastructure with core components by Intergraph Deutschland GmbH. The ALKIS migration will also be based on this product range (Res Publica). Now the question arises of which spatial data and information can be integrated into a SDI and how this SDI will become functional. In contrast to other projects, CFGI GmbH therefore has to design the SDI possible

based on Intergraph's technology and determine in the scope of a district-wide collection which data is present and which services must be designed. The project is divided in a general concept stage with initial structure for the actual district administration, and a fine concept stage for integration of the district's municipalities. The first result is establishing a meta data structure coordinated with Intergraph.

- **geonet NRW (2009 – 2011)**

In the scope of the project invitation for the IKT-Cluster NRW, the Center for Geoinformation applied with a joint project and was awarded the order for his competition contribution in autumn 2008. Since March of 2009, it holds the position of the previous CEGI Center for Geoinformation GmbH (a Public Private Partnership organization), coordinating the activities in the environment of spatial information management NRW, Galileo / Navigation and GMES as "interoperable coordinator". Additionally, CFGI GmbH is responsible for clean processes within spatial information management (cmp. Figure 2-1).

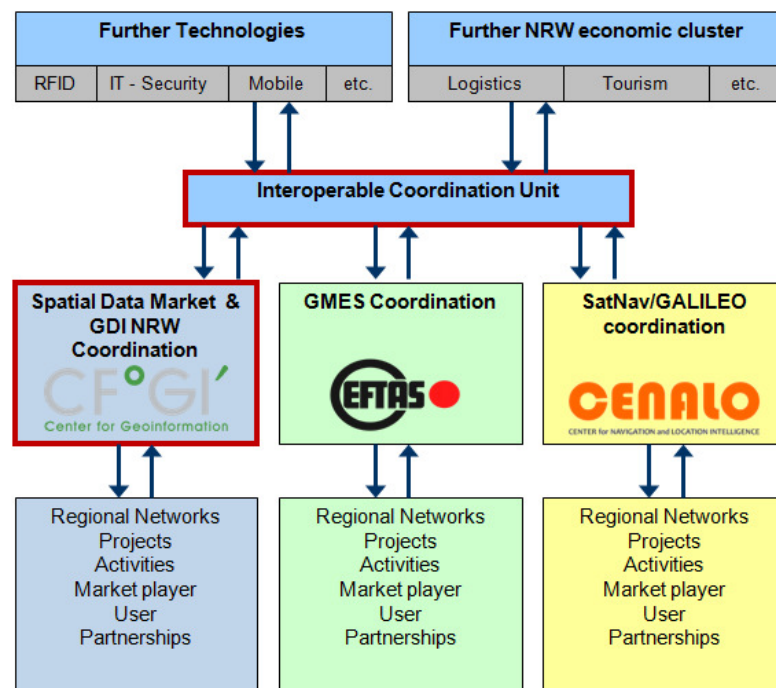


Figure 2-1: The role of CFGI GmbH in the IKT-Cluster NRW

Due to the good project results the three partners again was awarded by the jury in the new project invitation for the IKT-Cluster NRW 2011 to 2013. The new joint project will have a more international focus and will start in spring 2011.

- **Analysis of present functions and derivation of specifications for the Wupperverband association**

Wupperverband (public-law institution) has been leading in SDI-compliant processing and provision of water-management spatial data. The stream area geo-information system (short FluGGS, <http://fluggs.wupperverband.de>) is a water management information system completely integrated into the business processes. The system was built in close cooperation with con terra GmbH. After acquisition of con terra GmbH by ESRI Geoinformatik GmbH, FluGGS was not developed any further for Wupperverband. To warrant future-proofness, Wupperverband FluGGS has invited new offers. For this, CFGI GmbH analysed the functions of FluGGS, intensely questioned the users on existing and new functionality and drew up specifications for a new FluGGS.

- **Drawing up a survey / study on the use of digital signatures in spatial information management**

Fujitsu Technology Solutions GmbH (FTS) charged CFGI GmbH with drawing up a survey to describe the market potential for use of the digital signature in spatial information management. The spatial information management market was researched with suitable methods, and questionnaires for potential users were drawn up and assessed. 18 business fields could be determined, and their business potential was assessed according to defined parameters. Additional interviews were conducted with three partners, and

concrete market opportunities were derived from this. The survey contains concrete instructions for action for the sales team of FTS GmbH. The survey was handed over to the FTS management at the CeBIT 2009.

- **Survey Geo Services Network (GSN)**

After being charged by ESRI Geoinformatik GmbH / Conterra GmbH, CFGI GmbH developed a model for spatial-data roaming via geoweb services. This is about the idea of increasing the pool of available spatial data so that so-called content providers and data refiners gain advantages from entering their data in a network of providers. The plan intend a kind of "supermarket" with shelves filling by every provider expanding his offer with the offers of additional partners, so that he is able to provide the best services to his customers. Content providers and value added resellers were determined and questioned in questionnaires and interviews. Together with assessment of the operation of such infrastructure and definition of various use cases, a business model could then be calculated to be used as a guideline for establishing a GSN.

- **Building and developing an interoperable SDI for the district of Heinsberg**

In the scope of building and developing an interoperable spatial data infrastructure (SDI) for the district of Heinsberg, the Center for Geoinformation analysed the IT/GI systems, structures and requirements situations of the district administration specialist offices already present in the district for integration into SDI on the order of the Heinsberg district administration. Based on this analysis, a multi-level technical and economic action concept was developed to show options for further development of the SDI in the Heinsberg district.

- **System recommendation for an interoperable SDI for the district of Heinsberg**

This resulted in CFGI GmbH being charged with a subsequent order for system analysis and derivation of a system recommendation for building SDI HS. This was the basis for an invitation for tenders for the newly designed SDI in the Heinsberg district.

- **Development of an action concept for building a joint SDI for the Federal States of Berlin and Brandenburg (SDI Masterplan)**

The states of Berlin and Brandenburg are planning joint development of a spatial data infrastructure to better process cross-border planning tasks and to increase attractiveness when marketing geo-basis data by increasing the area. Both states separately developed SDI concepts with different focuses. The task as a neutral consultant included observing both concepts and deriving a concept for action in debates with specialist groups with representatives of both states to best illustrate wishes and needs (e.g. different responsibilities) of the two states.

- **Drawing up a concept for building a SDI for the Solingen "group"**

The town of Solingen planned introduction of a GIS and first looked for a partner to accompany system selection. In the discussion it was determined that no consistent use of geo-basis and geo-specialist data is possible because the infrastructure is too strongly fragmented. To serve various systems, there is a number of dataset derivations that make systematic updates difficult and much more expensive. The task was creating a development concept for a SDI that spans the complete town group (core administration, disposal, utilities, asset operations) that is based on the present one while showing a path for future development.

- **Building and organisation of a regional network (cluster) for SDI subjects**

The economic promotion organization of the Town of Dortmund – Dortmund project GmbH - charged CFGI GmbH with integrating the regional companies and institutions more strongly into the SDI efforts. Therefore, CFGI GmbH founded two networks that dealt with SDI-compliant development of applications in the areas of fire and disaster protection and of tourism applications. The focus here is the use of public spatial data via SDI-compliant services in administration and economy.

- **GDI NRW (<http://www.gdi-nrw.org>)**

The PPP-company CEGI GmbH, which has been liquidated in 2009, was the central consulting and coordination office for all activities of the GDI NRW initiative of the state of Northrhine-Westphalia (competence

centre as a service provider for project management, concept, organisation, marketing, coordination and performance of activities). GDI NRW had the objective of activating the market for spatial information with its market-oriented and economic handling and marketing and optimised use of authority and private geo-data on regional, national and international levels. The GDI NRW initiative is based on the specifications of the OGC and the Technical Committee (TC) 211 of the International Organization for Standardization (ISO). The sister activity GEOBASIS.NRW focused on increased digital development of community data stock.

So-called Special Interest Groups (SIGs) were also coordinated within GDI NRW. The SIGs were open and independent work groups in which development and continuation of technical and organisational standards, their understanding and documentation (in reference model and regulations) are discussed and the respective solution approaches are drawn up.

- **"Plannen en bouwen" project in the Euregio Rhein-Maas**

Together with our Dutch partner RAVI, CFGI developed the project plan for the border-crossing spatial data infrastructure NRW-NL (X-border GDI) for consistent access of the Euregio towns and communities on either side of the border to planning-relevant data.

- **GDI NRW joint project 2004**

The GDI NRW joint project 2004 had the target of building the operational core of GDI NRW. The Center for Geoinformation once more acted as the coordination office here. The joint project was focussed on the implementation of the GDI NRW standards in marketable spatial information offers (e.g. geo-information services for geo-basis and specialist topics, meta data and web catalogue services, applications, etc.) and their sustainable provision for a wide user circle of the GDI NRW. All in all, more than 30 projects participated in more than 150 services and 20 applications, 4 meta-data catalogues, 1 mobile service and 2 services for data use and utilisation.

- **Spatial data infrastructure Freie Hansestadt Bremen (GDI.FHB)**

On the order of the free Hanseatic City of Bremen (senator for construction, environment and traffic; Senator für Bau, Umwelt und Verkehr (SBUV)), an implementation study was performed on the development of spatial data infrastructure for the state and for setting up and operating the central spatial data management. In addition to extensive inventory analysis of the GI structures in administration and economy, a technical and organisational overall concept was drawn up on this basis; it also considers implementation over time, personnel and financial measures. A specific topic was integration into existing projects and programmes (E-Government, etc.), to coordinate cooperation of administration and economy in a future-oriented way for new geo services.

There are continually extensive activities at congresses, trade fairs and other events, including presentations. Dr. Bernsdorf, Managing Director and owner, passed on his knowledge in more than 70 speeches and a total of 35 publications. Consulting of the Deutsche Messe AG in the scope of CeBIT and Hinte Messe in the scope of the Intergeo fair on the development of the spatial information market also proves the competence and independence of CFGI GmbH.

The wide-ranging project experience our staff and in particular the reference projects throughout all administrative levels, as well as our independence from individual system providers sustainably secure neutrality of consultation by CFGI GmbH.

3 Voices of our GDI Clients

"By selecting the Center for Geoinformation, we are making use of a service provider who has been active in the community environment for years and thus understands our structures, questions and tasks. CFGI GmbH's product neutrality is important. It ensures that our requirements and the comparability with other district administrations are at the focus in the light of process-related development of a SDI."

Michael Fielenbach, spatial data management Rhein-Kreis Neuss district

"In CFGI GmbH, we found a company that quickly understood what is important. Dr. Bernsdorf personally supported the project, and his results and arguments saved us lots of time and money during implementation of the project. With his market know-how and assessment of the performance of potential project partners, the number of potential solution providers could be considerably narrowed down. Investment in preliminary conceptual work sent the project down a good path. By now, the first solution suggestions have already been put into practice."

Stefan Storms GIS coordination, Heinsberg district

"When replacing the GIS software in the city of Leipzig, we as project controllers and the city of Leipzig wanted to consider future-proof infrastructure for spatial data distribution at the same time. This is a complicated task in the grown structure where everyone has to be considered technically. Therefore, we and the city of Leipzig together went looking for someone who would have the competence that enabled them to act with proven methods. In CFGI GmbH, we found a partner who is able to cope even with the size of a city like Leipzig. Experience, references and price are also at a reasonable ratio."

Sebastian Rauer, LECOS GmbH (IT service provider, city of Leipzig)

4 Curriculum Vitae Dr. rer. nat. Bodo Bernsdorf



Since 1987, Dr. Bernsdorf has been dealing with the subject of geographic information systems. He developed the GIS labs of the University of Trier and managed them until 1997. Additionally, he established the GIS-teachings for 12 subjects of the department VI Geography / Geosciences.

At the same time, Dr. Bernsdorf designed several AfG-measures for "training as a GIS specialist", performed them independently with a partner for several years and was active as a GIS consultant in the Rhineland-Palatinate and Saarland.

In 1997, he took up work as Business Unit Manager *Professional Services Group* of MapInfo GmbH and was responsible for the area of EMEA-East (German-speaking area, Southern and Eastern Europe and North Africa). He designed the concept for the area of software training, developed it, and founded several GIS training centres in different areas of Germany. His responsibility encompassed the execution of large technology and infrastructure projects (e.g. O₂ Genion, Mobilkom, John Deere, various road construction administrations, GII project of the town of Aachen, etc.) in the German-speaking, East European and North-African areas (EMEA-East).

His other stations included positions in the board of directors (COO, CEO) of i2c Software AG (focussing on mobile phone and internet technologies for location-based services) and department management for development with HERDT-Verlag für Bildungsmedien GmbH (e-learning and training documents on more than 500 IT-subjects).

Then Dr. Bernsdorf successfully managed CEGI Center for Geoinformation GmbH as a Public Private Partnership company until the PPP purpose was met. His tasks included not only management, but also consulting in the areas of spatial data and spatial information infrastructures, marketing of spatial data, use of spatial data for optimising business processes (Metro Broadband Ruhr, Ruhrpilot, etc.); he also was the president of the Deutscher Dachverband für Geoinformation e.V. (DDGI = German umbrella Organisation for spatial information), board member of NAVISAT e.V., manager of the "GEOcluster NRW" branch, member of the GI-committee of the state of North Rhine-Westphalia, speaker of the GDI NRW controlling body, member of the GIW-commission in the Federal Ministry of Economy, member of the expert group for building a border-crossing spatial data infrastructure (X-border-GDI) NRW / NL, member of the project group for spatial information management of the D21.

Today, Dr. Bernsdorf is the managing partner of a company in the area of "active educational travels" (GeoAdventure-Tours Ltd.) and CFGI GmbH Center for Geoinformation. He is a member of the VDI-expert group on town climate and air pollution control, where he is responsible for the integration of GIS and SDI components into a VDI / DIN directive. As the board member of the NRW-user association AIR e.V., founded in 2006 (former NAVISAT), he now combines various spatially-related technologies and designs business models and value-generation chains that are taken up by the economy. Dr. Bernsdorf acts as the "cluster manager" for the spatial information branch in NRW. With his great market knowledge, Dr. Bernsdorf was designated consultant of the inter-ministry committee for spatial information in North Rhine-Westphalia (Interministerieller Ausschuss für Geoinformation in Nordrhein-Westfalen; IMA GDI NRW) in February 2010. There he represents the point of view of the economy and is to participate as a link between the administration and economy.

Dr. Bernsdorf held more than 70 presentations at relevant industry events since 2004 and published about 35 articles in relevant trade journals.