

**GEOINFORMATION IN GERMANY  
– IMPLEMENTATION OF THE INSPIRE DIRECTIVE**

**GEOINFORMACJA W NIEMCZECH  
– IMPLEMENTACJA DYREKTYWY INSPIRE**

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**Geoinformation and INSPIRE**

Information is a good of a significant economical value, which grows constantly together with the development of information techniques (Püschel, 2006). Public authorities are the biggest producer of public information in Europe. Its economical value amounts to about 68 billion Euros. Geoinformation constitutes a critical part of it. For instance, according to the assessments of the German Federal Ministry of Economics and Technology (Bundesministerium für Wirtschaft und Technologie), German geoinformation – when only that collected before 2008 is considered – has a value of about 2 billion Euros and its full exploitation could create 14.000 new workplaces (<http://www.bmwi.de>).

This demonstrates the need to establish an Infrastructure for Spatial Information in Germany and in Europe in order to enable the use of the spatial information, constantly collected on the basis of various public law regulations. The expenditure on the collection of information in an appropriate – interoperable – way can be recouped in a value at least several times higher in quite a short term. An example of profitable use of spatial data is the Flood Hazard Mapping Program, started in 2001 by the American Federal Emergency Management Agency (FEMA). After the estimation of benefits, the sum of all countable costs of the modernization plan was \$847.6 million and the total discounted benefits of the plan amounted to \$175 billion. Finally, a benefit to cost ratio was over 200 to 1 (COM\_SEC(2004)0980).

The examples provided above demonstrate what kind of profits easier access to spatial data may bring, among others, in the area of the environmental protection. It was also one of the main reasons to find political intent to successfully enact the Directive 2007/2/EC of the European Parliament and of the Council establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) of 14th March 2007 (Official Journal L 108, 25/04/2007 P. 0001 – 0014). According to the plans, the average annual benefits per Member State (EU25) after the implementation should amount to €27–42 million (COM(2004) 516 final).

The Directive came into force on 15th May 2007. Its aim is the establishment of the Infrastructure for Spatial Information in the European Community and, as a result, facilitation of the use of spatial data.

The importance of environmental policy for the INSPIRE is confirmed by the fact that the Directive in question was enacted on the basis of Article 175 (1) of the Treaty establishing the European Community (Official Journal C 325 of 24 December 2002), which refers to environmental protection,<sup>1</sup> although the data which are collected and made available according to the rules set up by the INSPIRE may also be used for other purposes, and their beneficiaries may be natural and legal persons, as well as public authorities.

INSPIRE will build upon infrastructures for spatial information established and operated by the Member States. According to the Directive, the sets of spatial data ("spatial data" – further referred to as "SD" – means any data with a direct or indirect reference to a specific location or geographical area – Art. 3, p. 2 INSPIRE) will be processed and described by metadata. Metadata will also describe spatial data services.

As with all directives, INSPIRE needs to be implemented<sup>2</sup> into the national legal order.<sup>3</sup> The details will be prepared in the implementing rules, which are designed to amend non-essential elements of the Directive by means of supplementing it. These lay down technical arrangements for interoperability and, where practicable, for the harmonisation of spatial data sets and services.<sup>4</sup>

## Germany's Spatial Data Infrastructure

In the Federal Republic of Germany spatial data are collected not only at the Federal but also at the Federal States and local level. Therefore, the implementation of the INSPIRE is complicated and requires cooperation on all these levels (INSPIRE implementation in Germany: State of Play Autumn 2007).

The idea to make German digital spatial data available by means of the use of new technologies did not come out during the works on the INSPIRE-Directive. Already at the turn of the century, the German authorities were interested in the matter of geoinformation and it hasn't changed.<sup>5</sup>

The first steps to establish the German Spatial Data Infrastructure were made in 1998, when the German government set up the Inter-Ministerial Committee for Geo Information (Interministerieller Ausschuss für Geoinformationswesen – IMAGI) in the "Report about improvement of coordination on the level of spatial data information" (Bericht zur Verbesserung der Koordinierung auf dem Gebiet des Geoinformationswesens). Since the beginning IMAGI

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<sup>1</sup> about the importance of spatial data for German environment you can read in: e.g. Deutscher Bundestag Drucksache 16/7082, 07. 11. 2007; Drucksache 16/7082, 07. 11. 2007

<sup>2</sup> a time schedule of INSPIRE implementation in graphical form, can be seen on: [http://www.gdi-de.de/de/inspire/f\\_inspire.html](http://www.gdi-de.de/de/inspire/f_inspire.html)

<sup>3</sup> Art. 249 Treaty establishing the European Community (Official Journal C 325 , 24 December 2002)

<sup>4</sup> a lot about the drafting teams and its work may be found on: <http://www.ec-gis.org/inspire/>

<sup>5</sup> see documents German's Government and Parliament (e.g. Deutscher Bundestag: Drucksache 14/4139, 27. 09. 2000; Drucksache 14/5323, 15.02.2001; Drucksache 15/809, 08. 04. 2003; Drucksache 15/1209, 25.06.2003; Drucksache 15/5834, 27.06.2005; Drucksache 16/2959, 17. 10. 2006; Drucksache 16/3975, 28. 12. 2006; Drucksache 16/6218, 10. 08. 2007;)

was led by the Federal Ministry of the Interior (BMI) and involved of eight other ministries. This example shows that building a Spatial Data Infrastructure (SDI) is not easy, because spatial data are used by different institutions and in different contexts (Lenk, 2005). For this reason, only a working group including experts from all (many) the aspects of the usage of SD may be successful in establishing a SDI.<sup>6</sup>

The IMAGI works in collaboration with representatives of economy and science. Its major aim is to establish a system of an effective data management for spatial data at the federal level (among others through the development and operation of metainformation systems). It also seeks to determine among others the compatibility of data, and the charges for accessing this data, at the Federal and the Federal States level. The third aim is to create the norms and standards with which spatial data should correspond. Last but not least, IMAGI shall strive to popularize knowledge about spatial data and its functions in a modern society (Bericht zur Verbesserung der Koordinierung auf dem Gebiet des Geoinformationswesens).

The next important step in establishing the German Spatial Data Infrastructure (GDI-DE) was the statement of Bundestag (lower house of German Parliament) in 2001, in which it appealed to build the GDI-DE and to use the spatial data at the Federal and Federal States level. Since this moment Bundestag wanted also to be informed about the progress in building the SDI in Germany in the national, European and international context (Entschließung des Deutschen Bundestages vom 15. Februar 2001 zur Nutzung von Geoinformationen in der Bundesrepublik Deutschland).

The German Spatial Data Infrastructure was established by the decision of the head of the Bundeskanzleramt and the heads of the Staats- und Senatskanzleien of the Federal States in November 2003. The aim of easier use of spatial data is approached at all the levels of the administration: Federal, Federal States and municipal. A Steering Committee, GDI-DE, and an Office for Coordination of the GDI-DE have been established. GDI-DE consists of members of the Federal Government and of the representatives of the federal states and the communal associations (Kommunale Spitzenverbände)<sup>7</sup>. The GDI-DE is a part of the German E-Government project (Architektur der Geodateninfrastruktur Deutschland)<sup>8</sup>.

In October 2004 the working group of the State Secretaries for E-Government decided upon the tasks of the Steering Committee GDI-DE. The main tasks are: firstly, designing a concept to provide the GDI-DE as a part of the European SDI. Secondly, steering and coordinating the activities of the Federal Government, the Federal States and the municipalities in developing, updating and implementing the standards of the European and international SDI. Thirdly, deciding on pre-operating studies in implementing geo-portals in Germany according to the principle „some for all“. Fourthly, caring about the installation of the National Spatial Data Bases (NSDB) by the government administration of the Federal Government, the Federal States and the municipalities (Reindl, 2005)<sup>9</sup>.

<sup>6</sup> in a booklet: „Geoinformation und moderner Staat“ contains a list of 50 geodatenholders at the federal level (which are known to IMAGI)

<sup>7</sup> these are: Deutscher Städtetag (DST), Deutscher Landkreistag (DLT), Deutscher Städte- und Gemeindebund (DStGB)

<sup>8</sup> see also: Josef Frankenberger, Geoinformation on Demand – the Bavarian Example, Plenary Session 3, Shaping the Change XXIII FIG Congress Munich, Germany, October 8-13, 2006

<sup>9</sup> further information about GDI-DE and spatial data services in Internet: “Geo-Dienste im Internet. Ein praktischer Leitfaden für Aufbau und Betrieb webbasierter Geo-Dienste in der öffentlicher Verwaltung”

## INSPIRE in Germany

The INSPIRE Directive shall establish an Infrastructure for Spatial Information in the European Community, built upon infrastructures for spatial information organised and operated by the Member States. Because in the Federal Republic of Germany spatial data processing takes place on the federal, federal states' and municipalities' level, implementation of the Directive must be accomplished both by the Federal Parliament and the Parliaments of the Federal States.

For the whole federation, it was decided to pass new legislation and to implement the directive in one act – the Act concerning access to digital spatial data – Gesetz über den Zugang zu digitalen Geodaten (Geodatenzugangsgesetz – GeoZG). Each Federal State is responsible for the implementation of the INSPIRE with respect to its own public authorities at the Federal States level. To guarantee the interoperability of data collected at all levels, the proposal of GeoZG (EGeoZG - the act is not valid yet, at the moment the latest version is the 3<sup>rd</sup> version of 8<sup>th</sup> April 2008) was prepared in close co-operation and consultation with public authorities from the Federal and Federal States level, with communal associations and with the German SDI (080408 Referentenentwurf Georg V.3.0. – Stand 08.04.2008).

The proposal seeks to establish the legal framework for the German Spatial Data Infrastructure as a part of the European SDI. The EGeoZG (Proposal of the GeoZG) creates a legal framework to access spatial data, spatial data services and metadata from the geodata holders (geodatenhaltende Stellen) according to the regulations of INSPIRE. The use of these data and services should primarily aim at environmental protection (§1 EGeoZG). The proposal repeats some of the definitions from Art. 3 INSPIRE-Directive, such as the notions of spatial data or metadata. It consolidates other concepts, for example by binding the definition of spatial data services with the catalogue of network services from Art. 11 INSPIRE, which lists and describes discovery services, view services, download services and transformation services (but without services allowing spatial data services to be invoked). §3 p.7 EGeoZG defines network services as the means used for the purposes of communication, transaction and interaction using the Internet (e.g. E-Payment-Services). The proposal also contains the definitions of interoperability, infrastructure for spatial information and of Geoportal: these definitions are based on the corresponding definitions from INSPIRE.

EGeoZG (just like INSPIRE) does not create any obligation to collect new spatial data (§4 p. 5 EGeoZG). It applies to data related to an area of the Federal Republic of Germany or to exclusive economic zones situated on the territory of the Federal Republic of Germany. The data have to exist also in electronic format and be held by or on behalf of any of either geodata holders (when falling within the scope of their public tasks and when the geo-data holder has produced these data, or the data were received by the geo-data holder, or the data are being managed or updated by that geo-data holder) or a third party (to whom the network has been made available in accordance with §9 p. 3 EGeoZG, who will commit to prepare the data according to the regulations of EGeoZG and to observe the technical requirements).

The data must also be related to one or more of 34 themes (which are a duplicate of themes from Annex I-III of INSPIRE): coordinate reference systems, geographical grid systems, geographical names, administrative units, addresses, cadastral parcels, transport networks, hydrography, protected sites, elevation, land cover, ortho-imagery, geology, statistical units, buildings, soil, land, human health and safety, utility and governmental services,

environmental monitoring facilities, production and industrial facilities, agricultural and aquaculture facilities, population distribution – demography, area management/ restriction/ regulation zones and reporting units, natural risk zones, atmospheric conditions, meteorological features, oceanographic features, sea regions, bio-geographical regions, habitats and biotopes, species distribution, energy resources and mineral resources. The detailed specification of these themes will be decided in a regulation (Rechtsverordnung), which will be adopted according to §14 EGeoZG. The act also regulates the (§§ 5–7 EGeoZG) main conditions for provision of spatial data, spatial data services and network services and metadata. The interoperability is guaranteed in accordance with §8 EGeoZG.

According to EGeoZG metadata, spatial data, spatial data services and network services will be components of the national Spatial Data Infrastructure and will be connected into an electronic network. Access to this network will be possible at the federal level through a Geoportal. Spatial and metadata from a third party may also be prepared for being used through the Geoportal, when this third party commits to prepare that data according to the regulations of EGeoZG and to observe appropriate technical requirements (§ 9 EGeoZG).

The INSPIRE Directive obligates the Member States to provide appropriate structures and mechanisms for coordinating the contributions of all those who have an interest for spatial information in their infrastructures across the different levels of government. That is why the draft designates a Steering Committee (SC) to be responsible for the organisation of the national GDI and to be a contact point in charge of contacts with the Commission with regards to the INSPIRE Directive. The details of its organisation and functioning are to be regulated by the federation and the Federal States in an Administration Agreement (Verwaltungsvereinbarung).

Generally, the spatial data and spatial data services are available for the public use. The proposal of the GeoZG limits public access to spatial data sets and services when such access would adversely affect international relations, public security or national defence. Usually, access to the information is also forbidden when revealing the information would create disadvantage for confidential advice by obliged offices, for the course of justice, for the ability of any person to receive a fair trial or for the ability of a public authority to conduct an enquiry of a criminal, administrative or disciplinary or for of environment. The information should not be given when it would adversely affect the confidentiality of personal data, intellectual property rights, the confidentiality of commercial, industrial, tax or statistic information (§11–12 EGeoZG).

The holders of geo-data which offer spatial data and spatial data services are entitled to demand payments and to give licenses (§13 EGeoZG). The act will enter into force on the day subsequent to its promulgation (§15 EGeoZG).

Implementation of INSPIRE in Germany has to take place at the Federal States level, because only the Federal States parliaments are able to regulate the creation of a spatial data infrastructure at the level of the Federal State.

At the moment, only the Bavarian government has prepared a proposal for an act aiming at the implementation of INSPIRE in Bavaria, which has been sent to the Federal State's Parliament. Other Federal States either have given the date when they will be ready with preparation of an appropriate law, or have not decided about it at all, as Mecklenburg-Vorpommern and Saxony-Anhalt (Sachsen-Anhalt).<sup>10</sup> Therefore, this article will describe the

<sup>10</sup> see: [http://www.gdi.bayern.de/Downloaddateien/INSPIRE\\_Legal\\_Transposition\\_in\\_Germany1.pdf](http://www.gdi.bayern.de/Downloaddateien/INSPIRE_Legal_Transposition_in_Germany1.pdf)

implementation of INSPIRE on the level of the Federal States using the example of the proposal of the Act of Bavarian Spatial Data Infrastructure (Gesetzentwurf Bayerisches Geodateninfrastrurgesetz – Drucksache 15/10670 of 27.05.2008).

The aim of BayGDIG is to create a legal framework for the building and functioning of the Bavarian infrastructure for spatial information as a part of the national (German) SDI. According to the proposal, BayGDIG will apply with respect to public authorities. The public authority is each office which provides the functions of public administration (Art. 1 p. 2 Bayerisches Verwaltungsverfahrensgesetz, BayRS II, S. 213). These authorities are the public authorities of the Free State of Bavaria, municipalities and communal associations, which do public law administrative work. These are also legal persons of public law being under the control of the Free State of Bavaria. In the sense of Proposal of the BayGDIG (EBayGDIG), the notion of public authorities includes also natural or legal person providing public services relating to the environment (Art. 2 EBayGDIG).

The definitions are presented similarly to these from the EGeoZG, the difference is visible first of all in the chronology. The definition of spatial data services in EBayGDIG contains all the five kinds of network services from the Art. 11 INSPIRE (discovery services making, view services making, download services, transformation services and services allowing spatial data services to be invoked).

In accordance with Art. 4 of the EBayGDIG, which may be compared with §4 EGeoZG (and has the same function), the EBayGDIG applies to the spatial data and special data services related to an area of the Federal State of Bavaria that exist in electronic format and are held by or on behalf of any of the following: public authority (when falling within the scope of its public tasks) when

- 1) the geodata holder has produced these data, or
- 2) the data were received by the geodata holder, or
- 3) the data are being managed or updated by that geodata holder

or a third party (to whom the network has been made available in accordance with §8 p. 3 BayGDIG, who will commit to prepare that data, according to the regulations of BayGDIG and to observe the technical requirements).

The data must be also related to one or more of the themes from Annex I-III of INSPIRE (only the names of themes are mentioned in EBayGDIG and there are references to the INSPIRE directive and to its Annexes). One of the most important provisions of EBayGDIG, which contains its general sense, is the Art. 10. According to this, the spatial data and spatial data services are generally available to the public and for the use by public authorities (restrictions are similar to those from Federal law).

Other regulations of EBayGDIG are also similar to those from Federal EGeoZG and it is expected that they will be similar in other Federal States' laws as well because in the GDI-DE the federation, Federal States and the communal associations are working together and have the same aim of establishing German spatial data infrastructure.

## Conclusions

The INSPIRE Directive, which seeks to create a spatial data infrastructure in Europe, is a very interesting subject. It is related to many different aspects of community live. Its implementation is a big challenge because all (or nearly all) the ministries in each Member

State have to participate in this task. In Germany, as a federal state, the INSPIRE Directive has to be implemented on the federal and the Federal States level. Only a well prepared and organised co-operation may bring a success in connecting the European and German Spatial Data Infrastructure. Time will show what shape the implementation acts of the INSPIRE passed by the Federal Parliament and the Federal States Parliaments will have. The details of both kinds of acts shall be ordered in the regulations. As long as these are not published, the implementation in Germany does not seem to be very hard and rather consists of coordination and collaboration efforts. The main aim and structure of SDI which is to be established is decided by the Directive itself and the national acts in Germany only duplicate (more or less) its regulations. The main problem will be the need of ensuring interoperability of all the data and integrating them into one network but that is not only a problem for Germany but for the whole INSPIRE initiative in all the Member States. Thus, the implementation rules (IR) are of utmost importance in the implementation process. Due to the fact that the regulations shall be based on the IR, further research should clarify the details of implementing rules related to the national regulations.

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#### **Abstract**

*The aim of the Directive 2007/2/EC of the European Parliament and of the Council of Ministers dated 14 March 2007, establishing an Infrastructure for Spatial Information in the European Community (INSPIRE), is to set up a spatial data infrastructure (SDI) and to simplify access to spatial data and spatial data services in Europe. Because of the transnational aspects and the general need to coordinate the conditions of access to, exchange and sharing of spatial information within the Community, it can only be sufficiently achieved at the Community level. Each Member State has an obligation to implement INSPIRE. In Germany the implementation procedure has to take place both on the federal and the Federal States level. Thus, good coordination of work and cooperation between the federation, Federal States and municipalities is essential. The federation and each of the Federal States are responsible for the implementation of INSPIRE with regards to its own public authorities. This article presents the general aspects of geoinformation and the works on existing spatial data infrastructure in Germany and the proposals for the acts implementing the INSPIRE Directive at the federal and the Federal States level, using the example of Bavaria.*

#### **Streszczenie**

*Celem dyrektywy 2007/2/WE Parlamentu Europejskiego i Rady z dnia 14 marca 2007 r. ustanawiającej infrastrukturę informacji przestrzennej we Wspólnocie Europejskiej (INSPIRE) jest ustanowienie infrastruktury informacji przestrzennej i ułatwienie dostępu do danych przestrzennych i usług danych przestrzennych w Europie. W inny sposób byłoby to trudne do osiągnięcia, ponieważ ze względu na ponadnarodowy charakter oraz z powodu ogólnej potrzeby koordynacji warunków dostępu, wymiany i wspólnego korzystania z informacji przestrzennych w obrębie Wspólnoty, wspomniany cel może zostać lepiej osiągnięty na szczeblu wspólnotowym. Każdy Kraj Członkowski zobowiązany jest do implementacji INSPIRE. W Niemczech procedura implementacyjna musi zostać przeprowadzona na poziomie federalnym oraz krajów związkowych. Z tego powodu dobra koordynacja pracy i współpraca między federacją, krajami związkowymi i gminami jest tak ważna. Zarówno federacja, jak i każdy z krajów związkowych jest odpowiedzialny za implementację INSPIRE, w odniesieniu do własnych urzędów publicznych. Niniejszy artykuł ukazuje problematykę związaną z geoinformacją w aspekcie ogólnym oraz prace nad istniejącą infrastrukturą informacji przestrzennej w Niemczech i projekty ustaw implementujących dyrektywę INSPIRE na poziomie federacji i krajów związkowych (na przykładzie Bawarii).*

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