Arbeitsgemeinschaft der
Vermessungsverwaltungen der
Länder der Bundesrepublik Deutschland

AdV

Official German Surveying and Mapping

National Report

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The official German surveying and mapping *with the responsible State authorities for the real estate cadastre, the state survey and the geospatial reference data information system has consistently accepted the challenges for the expansion of the spatial data infrastructure in Germany (GDI-DE) and in Europe (INSPIRE). Further progress has been made on the way to standardised processes, standardised products, standardised services and central front offices and structures using all available – unfortunately, limited – resources with clear successes and increasing, significant dynamism. Important here is not only the integrated collaboration with all federal states but also the coordination with the federal government. This is the role of the Working Committee of the Surveying Authorities of the States of the Federal Republic of Germany (AdV) in which the federal government participates with the Ministries of the Interior, Defence and Traffic, Construction and City Development. It definitely serves the common objectives that the federal government-states relationship in the AdV has almost ideally stabilised and been further developed despite different interests and difficult budget situations. As the present AdV activity report makes clear, the official German surveying and mapping is on a good course.*

It has been achieved by the AdV that all 16 federal states have made an administration agreement for the **geodata centre** with the federal government. With this administration agreement about the provision of digital topographic and cartographic geospatial reference data of the state survey and geoinformation authorities of the states by the Federal Agency for Cartography and Geodesy (BKG), there is a central starting point available for all users of geotopographical basic data.

The geodata centre is supported by the steering committee newly formed in December 2006 which drafts outline requirements for concluding contracts with users and monitors contracts. The visible result of this administration agreement and the efforts to provide the geospatial reference data in the whole of Germany matched to the needs of the users is the conclusion of contracts about the usage of the state survey data with nationally operating companies so that their bilateral contracts with individual federal states could be replaced. In the lead-up to the recently completed expansion of the administration agreement between the Federal Ministry of the Interior and the federal states about the continuous provision of digital geospatial reference data of the state survey for use in the federal area, all currently managed geospatially referenced building addresses (house coordinates) were made available to the BKG. The federal states are also making available all digital orthophotos for the complete territory of the Federal Republic of Germany to the BKG. The data transfer is almost complete.

The AdV has also consciously structurally bundled an effective, joint publicity work, a present and matched information service and a standardised operative distribution of its activities for public relations and marketing and created a **Task Force** (TF-PRM) for this in which all federal states and the federal government participate. A particular success is that all federal states have completed the nationally standardised 1:50 000 Digital Landscape Model at the basic level (ATKIS®-DLM 50.1) by the end of 2006 and have already handed it over in homogenous format to the BKG for national usage. In this respect, the unanimous and clear commitment of all federal states for the completion of ATKIS®-DLM 50.2 by the end of 2009 must be emphasised.

After intensive and enthusiastic meetings with those involved, all 16 federal states have now declared their accession to the agreement about the SA*POS*® **central office** and belong to the operator association. This is another important success as a standardised appearance of the official German surveying and mapping for Germany-wide users of the SA*POS*® services is achieved. Thus the federal states are best prepared to integrate as well as GPS also Galileo and GLONASS coming to a resolution by circulating e-mails (circular resolution) standardised in the short term in the Germany-wide SA*POS*® services. With the geodata centre at BKG for the geotopographical core data of the states, the Central SA*POS*® Agency for the official geodetic reference systems and navigation services , and the “Association for the distribution of the geospatially reference building addresses”, there are three **central distribution points** available in Germany for the national usage of the geobasis data of the federal states.

The **decision-making processes** in the AdV in the past were significantly chronologically determined by the rhythm of the plenum meetings. Flexibility and dynamism in the AdV work have been significantly increased by means of the intensive use of the instrument and the newly created possibility that the working groups can also independently make AdV decisions. Thus decision processes can be standardised and dynamically driven forward. Exam-

ples of this are that, based on a circular resolution of the central office for agricultural documentation and information, digital raster data of the topographic maps were made available for the expansion of a geographic specialist information system in the context of emergency food supply and, with another circular resolution, the way was cleared for networking the standard ground values information system (VBORIS) as a model project in “Deutschland ONLINE” and “GDI-DE”. Thus the special functioning of circular resolutions as efficient working tools for successful work of the AdV plenum between the annual meetings showed itself again. In 2006 alone, the AdV made 10 circular resolutions, 8 working group resolutions and 14 resolutions at the plenum meeting, i.e. a total of 32 decisions. These resolutions are being successfully jointly implemented step by step. Regular meetings of the AdV President with the leaders of the working groups have been held for coordination of the activities of the AdV working groups. The objective of these meetings is to discuss technical aspects of the working group work jointly in order to drive forward the integrative approach of the official German surveying and mapping. Finally, it must be stressed that fast and agreed solutions must also be made for difficult decision processes. The “regional conferences” of the AdV President have proven themselves as a new instrument for this. Here, the AdV President holds “brainstorming” sessions followed shortly afterwards by intensive discussions for decision making – finally with all those involved.

The coordination work in the official German surveying and mapping by the AdV is particularly in the focus of the activities for expansions of the national and European **spatial data infrastructure**. The AdV is performing valuable basic work here, not least by the specifications for the integrative AAA model. The member authorities are also directly involved in the GDI-DE model projects.

Looking forward, as well as the continuous and important development work of its technical working groups, the AdV has **four complex tasks** to deal with in the future.

First: It must be examined how the spheres of activity of the three **central distribution points** can be integrated. Such a front office network of the official German surveying and mapping should, if possible, be able to rely on the to be created network of the geodata portals of the federal government and federal states and on an absolutely reliable joint process development.

Second: The activation of the geodata market and the INSPIRE guideline require decisions about charging for viewing services and metadata of the official German surveying and mapping. This is generally the question of future-oriented fee levels and transparent fee structures for geospatial reference data and services which are placed on Web services and take account of the modern forms of digital provision.

Third: Geoinformatics is increasingly leaving its mark on the complex tasks in official surveying and mapping complementary to the classical professional field of surveying. The universities have already reacted to this by offering new geoinformatics courses. In order to be able to cope with the upcoming tasks for geodata management, for the cartographic presentation and for the integration in the geospatial data reference system, the structures and requirements for the **surveying technician and cartographer training**, which have been developed separately from each other to date, must be examined.

Fourth: The AdV needs a forward-looking, medium to long term concept – a **strategy** – for its coordination function. It must be drafted and agreed by and binding on the member authorities.

For all four upcoming complex tasks mentioned above, the AdV has set up **special working groups** in order to prepare fast, agreed strategy decisions.

The official German surveying and mapping is subject to a basic, spatial reference **guaranteeing and activating infrastructure task of the state**. The following report about the activities of the AdV for this should give an overview of what has been achieved.

Prof. Dr.-Ing. Klaus Kummer
President of AdV

Wilhelm Zeddies
AdV Secretary General

1 Organisation and performance of tasks

In Germany, the federal states assume responsibility for the performance of tasks in field of official surveying and mapping. Since 1948, the specialist authorities of the federal states and Federal Ministries of the Interior, Defence as well as for Traffic, Construction and City Development responsible for official surveying and mapping have been co-operating in the Working Committee of the Surveying Authorities of the States of the Federal Republic of Germany (AdV), in order to handle technical issues of fundamental and national importance. The German Geodetic Commission (DGK) as representative of geodetic education and research and the Bund/Länder Working Committee for Sustainable Rural Development (ArgeLandentwicklung) responsible for land consolidation and rural development in Germany have guest status in the AdV.

Surveying and cadastral authorities of the federal states

In most of the federal states, the specialist authorities responsible for surveying, mapping and cadastral systems and geographic data information are assigned to the Ministry of the Interior of the respective federal state. They have a two- or three-level administrative structure. The administration of topographic geospatial reference data up to now has been the area of responsibility of the respective state surveying authorities. At regional level, there are still cadastral authorities for handling real estate cadastre tasks and providing large-scale geospatial reference data. In the course of the administration reform, some federal states have merged their state surveying authority and their cadastral authority into an integrated geospatial reference data authority and are making use of the synergy effects produced from this.

The range of services offered by the surveying and cadastral authorities includes:

- the area-wide provision of spatial reference data via reference networks in the Authoritative Control Point Information System (AFIS®), consisting on the one hand of terrestrial control points and their proof and on the other hand based on the satellite supported positioning service SA*POS*®,

- the storage of an area-wide image of the Earth surface using geotopographical products in the Authoritative Topographic-Cartographic Information System – (ATKIS®) using landscape and terrain models, the official topographical state maps and the aerial photographs,

- the area-wide digital proof of buildings and approx. 62 million land parcels in the official real estate cadastre for ownership rights in the land register (currently using the method of the automated real estate map – ALK and the automated real estate register – ALB, in the future with the Authoritative Real Estate Cadastre Information System – ALKIS®) and

- the integration of the real estate cadastre and state survey in a geospatial reference data system.

Federal Agency for Cartography and Geodesy

Bundesamt für Kartographie und Geodäsie

The Federal Agency for Cartography and Geodesy (BKG) is a federal authority responsible to the Federal Ministry of the Interior. In co-operation with the federal states, the BKG fulfils the following tasks in the field of geographic information and geodesy.

- provision and representation of current analogue and digital topographic-cartographic information as well as the advancement of the procedures and methods required for this purpose;

- provision and updating of the geodetic reference networks of the Federal Republic of Germany including the required
  - services pertaining to surveying and mapping as well as the theoretical services for the acquisition and processing of measuring data and the participation in bi-lateral and multi-lateral works for determining and updating global reference systems,
  - advancement of the implemented measuring and observation technology;

- representation of interests of the Federal Republic of Germany in the field of geodesy and geographic information on an international level.

Geographic information service of the Bundeswehr

The task of the Bundeswehr Geoinformation Office (BGIO) is to merge all geosciences relevant to the Bundeswehr (geodesy, geography, geology, remote sensing, cartography, geoinformatics, meteorology, climatology, ecology, biology), so that under the slogan "Geographic information from one source" the geoscientific basis for deployment of the armed forces can be created and the fulfilment of all spatial tasks of the Bundeswehr can be guaranteed. The BGIO closely co-operates with the surveying departments of the federal states and other federal authorities.

Federal Ministry for Transport, Construction and City Development (BMVBS)

Bundesministerium für Verkehr, Bau und Stadtentwicklung

The BMVBS has been a member of the AdV since 1950. It has assigned the Federal Water and Shipping Authority (WSV) of the Federal Government as a specialist authority, which employs its own surveying personnel, with the operation and maintenance of the federal waterways stretching over 7,300 km. The surveying and real estate division has almost 500 employees. Throughout Germany, official surveying and mapping tasks are carried out that require close consultation with the AdV. The WSV maintains its own reference network (position and height control points) and is a constant user of the SA*POS*® stations. For the waterway network, a digital map system (1:2 000) is created and updated, the contents of which are used for advancement of the ATKIS® basic DLM. The BMVBS is represented in the AdV by the waterways division.

This graphic shows the organisation of the AdV. Its organs are the President and the Plenum. The AdV uses your support of the working groups and the management.

AdV-President:	Prof. Dr. Klaus Kummer
AdV-Vice-President:	Hans Gerd Stoffel
AdV-Secretary General:	Wilhelm Zeddies
Chair WG RB:	Dr. Cord-Hinrich Jahn
Chair WG LK:	Dr. Winfried Hawerk
Chair WG GT:	Jörg Schaffer
Chair WG IK:	Jürgen Kremers

Fig. 1: Organisation of the AdV

Objectives and tasks of the AdV:

The member authorities collaborate in the AdV

- to regulate technical matters of basic and national importance for the official surveying and mapping in a standard way,
- to create a stock of standardised fundamental geospatial reference data oriented to the requirements of the information society and
- to provide the infrastructure for the geospatial reference data as an important component, particularly for modern eGovernment architectures.

In order to achieve these objectives, the AdV performs the following tasks:

- creation and agreement of future-oriented joint concepts for the national standardisation of real estate cadastre, State survey and the geospatial reference data information system according to the needs of politics, economy and administration,
- advancement of the common execution of nationwide important plans,
- moderation and co-ordination of the standardisation for the recording and management of the geospatial reference data and the access and sales methods
- support of the structure and further development of the national and European spatial data infrastructure and the corresponding electronic services,
- representation and presentation of the official German surveying and mapping to the outside world
- participation in international technical organisations for advancing the transfer of know-how,
- co-operation with subject-related organisations and authorities as well as institutions of geodetic research and education and
- agreement for issues of technical training.

Statistics for official surveying and mapping

State	Inhabitants in thousands	Square kilo-metres	Land-parcels in thousands	Number of authorities		Licensed Surveyors (ÖbVI)
				State authorities (businesses)	Regional authorities	
Baden-Württemberg	10.736	35.752	7.910	1	44	150
Bayern	12.469	70.552	10.451	1	51	–
Berlin	3.395	892	381	1	12	45
Brandenburg	2.559	29.479	3.015	1	18	157
Bremen	663	404	205	1	1	6
Hamburg	1.744	755	240	1	–	9
Hessen	6.092	21.115	4.952	1	7	84
Mecklenb.-Vorpommern	1.707	23.180	1.864	1	13	78
Niedersachsen	7.994	47.624	6.102	1	14	105
Nordrhein-Westfalen	18.058	34.085	9.184	1	54	484
Rheinland-Pfalz	4.059	19.853	6.395	1	20	89
Saarland	1.050	2.569	1.308	1	–	9
Sachsen	4.274	18.416	2.557	1	12	120
Sachsen-Anhalt	2.470	20.446	2.594	1	–	57
Schleswig-Holstein	2.833	15.799	1.831	1	8	41
Thüringen	2.335	16.172	3.017	1	–	76
Germany total	**82.438**	**357.093**	**62.006**	**16**	**254**	**1.510**
Comparison with 1992	**79.722**	**356.854**	**61.281**	**16**	**643**	**990**

In the context of dealing with special, cross-state technical issues, the activity focuses of the AdV and the performance of tasks are in the areas of geodetic spatial reference, geotopography, real estate cadastre, and information and communication technology.

2 Spatial reference

All types of surveying and mapping are based on suitable reference systems which are defined internationally and nationally and are updated at given times. In this context, the AdV and the BKG are working on various international projects for the realisation of the spatial reference and in standardisation bodies.
With the resolution for the nationally standardised spatial reference, the classic type of geodetic control stations will be transferred into a new future which is basically oriented towards the integrated character of the position, height and gravity spatial reference. As well as the repeat levelling of the DHHN, the simultaneous measurement of GNSS and absolute gravity points is also making its core contribution.
The increasing use of the SAPOS® nationally standardised satellite positioning service represents a pleasing development for the provision of the spatial reference which is also clearly reflected in the commission business of the Central SAPOS® Agency.
The AdV with its resolution in 2006 to implement other satellite navigation systems (GLONASS, Galileo) in the SAPOS® service has defined a clear objective for the expansion of this national service.

Connection to the global reference systems

With its strong participation in the international services of the International Association for Geodesy (IAG), the BKG ensures the basic geodetic supply of Germany and simultaneously contributes to the advancement of geodesy.

Together with the Satellite Geodesy Research Facility (FESG) of the Munich Technical University, it operates the Fundamental Station Wettzell. In the context of the "International VLBI Service for Geodesy and Astrometry" (IVS), extensive quasar measurements are being carried out with the 20 m radio telescope (VLBI: Very Long Baseline Interferometry) which are contributing to the realisation of the "International Celestial Reference Frame" (ICRF), the "International Terrestrial Reference Frame" (ITRF) and the derivation of the Earth Orientation Parameters (EOP). Distances, coordinated 365 days per year around the clock by the "International Laser Ranging Service" (ILRS) to the geodetic satellites (SLR: Satellite Laser Ranging) are being measured with the "Wettzell Laser Ranging System". The Wettzell Fundamental Station as "IGS Operations Centre" is remotely operating 21 permanently installed GNSS stations in the context of the International GNSS Service" (IGS) and the European (EUREF) and the German GNSS Reference Network (GREF), The spatial geodetic techniques (VLBI, SLR and GNSS) are supplemented by local observations such as gravity measurements, meteorological and seismological observations. Unique in the world, a ring laser is used on the Wettzell Fundamental Station which makes it possible to record short term rotation fluctuations of the Earth. Thus, pole fluctuations, among other things, could be documented.

One installation comparable to the Wettzell Fundamental Station, the Transportable Integrated Geodetic Observatory (TIGO), is maintained by the BKG in Concepcion, Chile. Due to its location on the Southern hemisphere, TIGO is making significant contributions to the IAG services, IGS, ILRS and IVS.

At the Northern tip of the Antarctic Peninsula, the BKG is jointly operating the GARS O'Higgins "German Antarctic Receiving Station" with the German Aerospace Center (DLR). VLBI observations on a campaign basis and continuous GNSS measurements are being performed here.

The global spatial reference has been decisively influenced by the implementation of ITRF2005 and the use of absolute phase centre variations (APCV) for GNSS antennas with the start of the GPS Week 1400 on November 5, 2006. Due to the change from ITRF2000 to ITRF2005, the reference coordinates change as a result of the increased observation period and also the evaluation strategy. Overall, the implementation of APCV is resulting in an improvement of the reference system. However, at the same time it is causing a station specific change in the heights component depending on the respectively installed antenna. These global

changes have also been taken into account at the same time in all European and national evaluations of GNSS permanent stations.

Together with well-known partner institutions and companies, the BKG is involved in three projects for the implementation and use of Galileo. The "Galileo Integrated Georeference Applications (GIGA)" project is particularly concerned with the potential of Galileo and EGNOS for the energy sector. The objective of the "Galileo Local Element Augmentation System (GALILEA)" project by using local reference networks is to disseminate and monitor information about troposphere and ionosphere errors and data integrity states in real time and to derive forecasts from this. The basic principles for the realisation of the Galileo geodetic reference system and a prototype for a service provider to ensure further operation are being developed in the course of the "Implementation of Galileo Geodetic Service Provider Prototype" (GGSP) project. Approximately 100 IGS stations, together with the Galileo experimental stations, form the basis of the geodetic reference system until the installation of Galileo's own station network.

National geodetic spatial reference

Following the resolution of the AdV in 2004 for the creation of a nationally standardised spatial reference consisting of the geodetic reference network points, the 1st order height control points, the gravitational control points of the gravity reference network and of the 1st order gravity reference network and the reference station points, all state surveys are actively working on the further realisation of this forward-looking, integrated geodetic control station.

This AdV resolution is based on the strategy for the standardised spatial reference and takes account of changes in the system, the density and the maintenance of the future geodetic control stations. Thereby, the establishment of the geodetic reference network points is a consistent and necessary further development of the many years of use of spatial techniques in the classic, trigonometric geodetic control stations to a genuine, three dimensional approach. This results directly in the existing horizontal networks in a clearly noticeable reduction of classic, geodetic fixed control points in all federal states. In doing so, the reduction of the existing fixed control point is made according to state-specific factors. After the establishment of all reference network points, high quality monitoring of this three dimensional network in connection with the SA*POS*® reference stations is made in order to satisfy the requirements for accuracy, homogeneity and the respective current link to the European reference system.

In 2006, the AdV decided on the guidelines for the standardised spatial reference of the official surveying and mapping in the Federal Republic of Germany. These guidelines formulate the requirements for a modern and standardised fixed control point framework for the position, height and gravity for Germany and provide a recommendation to the federal states for the issue of their own state regulations. These guidelines permit highly precise linking in the future of all state surveys to the Europe-wide standardised ETRS89 reference system and provide an efficient preparation of the state reference system for the position and the height.

In addition to the extracts from the surveying authorities documentation, the provision of the official spatial reference today is mainly made using the SA*POS*® satellite positioning service of the German state survey. Thereby, the HEPS real-time positioning service, predominantly that of the real estate cadastre, and the GPPS post-processing service for highly-precise determination of coordinates for the purpose of geodetic engineer tasks are used. Thereby, SA*POS*® is enjoying a constantly increasing popularity as it is possible to use this service in diverse ways and is thus very efficient. This manifests itself not only in the increasing number of customers and users of the federal states but also for the central provision of data via the Central SA*POS*® Agency office in Hanover whose task is mainly the national merging and provision of the SA*POS*® data for national users.

The year 2006 was marked by the landmark decision of the AdV to integrate the Russian GLONASS as well as the American GPS data in the future and in the near future also the data of the European Galileo system into the SA*POS*® service. Figure 2 shows an overview of the current expansion and further planning status of the SA*POS*® reference stations which initially reflects the intentions of the surveying authorities for renovation of the reference stations with GLONASS receivers. Furthermore, SA*POS*® provides the spatial reference as an integral part of the infrastructure basic provision in Germany.

This renovation will not result in any reduction of reference stations in the SA*POS*® service as the physical broadcasting conditions in the atmo-

sphere are hardly influenced by average reference station spacing of 50 kilometres due to additional satellites. The expected benefits of combined GNSS usages will particularly be an increase in redundancy for the use of independent satellite systems and the use of a higher number of satellites. An increase in the number of available satellites will also let the use of spatial methods increase further in unfavourable visibility conditions. A high quality positioning service and a precise position determination derived from it will also be necessary in the future.

The AdV decided to evaluate daily a network of GNSS permanent stations in Germany called DREF-Online for creating a reference framework for SA*POS*® and for monitoring the SA*POS*® coordinates. Although the setting up of DREF-Online is not yet complete, daily measurements have been evaluated since December 12, 2006 and the results have been made available to authorised users. It is intended to operate DREF-Online as an integrated GPS/GLONASS network from the data acquisition to the generation of the results.

Fig. 2: Implementation of GLONASS on the GPS-SA*POS*® reference stations

The GREF national reference network of the BKG has been further extended to an integrated real-time network. This extension consists of supplementing new observation stations with combined GPS/GLONASS receivers and implementing the data transmission in real-time via "Networked Transport of RTCM via Internet Protocol" (NTRIP) on all stations. Further local security networks for the GREF stations with terrestrial measurements have been created. The extension of GREF also includes the combination of the geometric satellite positioning process with dynamic methods of height determination and/or gravity measurements. Therefore, there are also some stations located close to level measuring stations, geophysical observatories or stations of the German gravity reference network.

Data centres which can be accessed online are indispensable today for the provision of information and results for the users. This, the GNSS data centre of the BKG also performs many functions, ranging from the provision and archiving of GNSS measurements to the provision of comprehensive GNSS results. The functions of the data centre have now been extended so that so-called "highrate" data are also maintained in the 1 second interval and DREF-Online has also been set up as a new project. By means of integrating "Google Maps", the user can now let all stations of the data centre be presented particularly conveniently as maps.

Special attention in the spatial reference has undoubtedly been paid to the renovation of the German Height Reference System decided in 2005 and thus to the new measurement of almost 80 % of the levelling loops of the 1st order network. The measurements and evaluations are taking place in the years 2006 to 2011 and will be followed by the compilation and publication of the results. On the one hand, the increasing loss of quality in the German Height Reference System and on the other hand the partially very heterogeneous and out of date data should be counteracted by this national measuring campaign. These data were determined more than 30 years ago and thereby emanate from very different eras. The results should continue to be included for covering possible height changes in Germany by using the digital geometric precision levelling and modern digital levellers.

A specification of 250 GNSS and 100 absolute gravity points is being made at the same time as the classic levelling measurements. These measurements are carried out on identical points which are currently ascertained and marked under the various measuring technique conditions in the federal states. The complete DHNN project is enjoying a very high significance as a three-dimensional realisation of the nationally standardised fixed control point framework will be achieved at the same time for the first time with this measuring campaign. After completion of this project, the old idea of a genuine three-dimensional integration of the geodetic control stations will become reality and will be completed by means of this first period measurement. The results are flowing into an update of the national quasi geoid and thus result in an improved transition between the satellite geodetic specified and the physically determined height values.

To safeguard the gravity reference system of the Federal Republic of Germany as regards level and scale in the long term, the BKG conducts regular absolute gravity measurements in combination with continuous recordings from the supra-conducting gravimeters in Wettzell, Bad Homburg and Moxa (station at the University of Jena). The BKG participated at the international comparison of the absolute gravimeter at the international calibration authority BIPM in Paris.

The Bad Homburg station is used as a regional comparison station for absolute gravimeters as the temporal gravity variations are very precisely known using the combined evaluation of absolute gravity measurements and measurements of the superconductive gravimeter.

Furthermore, interconnection possibilities between the gravity component, the height determination with spatial geodetic techniques, the precision levelling and selected coastal level points have been created on the basis of absolute gravity measurements on the GPS stations of the GREF network and on points of the integrated "European Combined Geodetic Network (ECGN). The absolute gravity measurements on the GREF stations will be repeated approx. every two to three years. The repeat measurement on points of the German Gravity Reference Network 1994 (DSGN94) has been completed.

The successful testing of the new A10 field absolute gravimeter on outdoor stations showed the possibilities of this method for stabilisation of the gravimetric reference networks.

The database has been extended for the expansion of the AdV quasi geoid in the North Sea and Baltic Sea region. The results of a joint project with the Dresden Technical University for

derivation of precise height data from altimetric measurements in the model construction have also been incorporated. An aerial survey of the South-western Baltic Sea and the bordering Danish and German land areas was carried out in October 2006 in cooperation with the Danish Space Centre (DNSC) using a LaCoste & Romberg gravimeter and partially using a Riegl laser scanner for closing gaps in the gravity data in the coastal area.

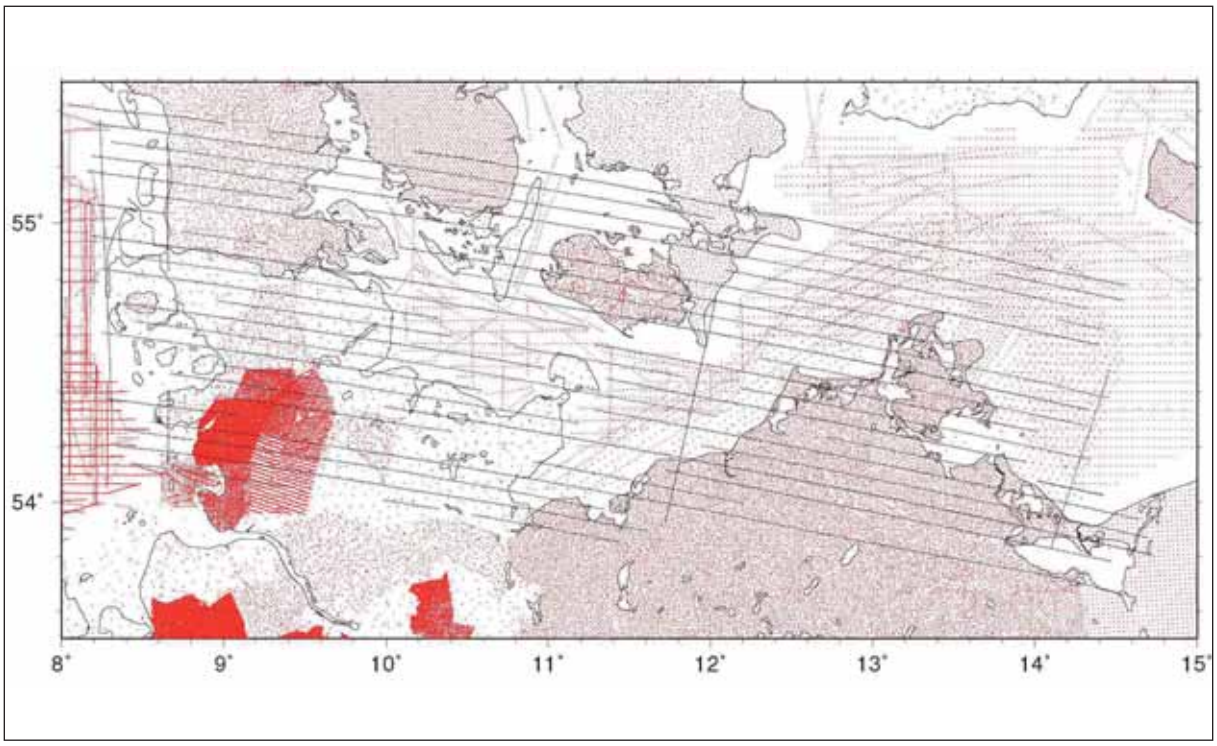

Fig. 3: Aerial gravimeter measurements 2006 (Red: terrestrial measurements)

3 Real estate cadastre

The implementation of ALKIS® in all federal states is being driven forward with a specific status from state to state; however it has not been put into operation in the states yet. In some federal states, the work advanced significantly at the same time to complete the ALK data, an important prerequisite for the migration to ALKIS®. The documentation of the AAA Model has been further continued. Other changes should support the implementation.

The real estate cadastre represents an important basic database for the establishment of a geospatial reference data infrastructure. The requirements for up-to-dateness and completeness of the database are a challenge we are making to the surveying authorities of the federal states.

Implementation of ALKIS®

The member authorities of the AdV had committed themselves to start the implementation of ALKIS® from 2005. The status of the conversion work is quite different due to the prevailing conditions in the federal states. Indeed the official conversion of the databases to a production environment under ALKIS® could not be realised in any Federal State; however there are a large number of activities in the federal states.

The GIS industry is continuing to work on completion of the software components for the realisation of ALKIS®. The ALKIS® technical schema on which this work is based has been adapted several times due to experiences during implementation both for the companies as well as in the administration. However, these model changes also result in delays for the realisation of the procedural solutions. This optimisation process will, however, stabilise with the current version so that further changes will only be expected at greater time intervals. Therefore, the bodies of the AdV have raised the standards for the recording of reports which would result in further model changes in order to guarantee an implementation certainty as high as possible in the federal states. This work will be decided in the coordination committee for the AAA model in which all technical working groups of the AdV are represented.

In parallel to the implementation work of ALKIS®, the initial recording of the ALK data has been/is still being worked on hard in some federal states. With only a few exceptions, the federal states are reporting a complete conversion or are very nearly complete. In 2006, the degree of completion considered nationally is approx. 97 %.

GeoInfoDok 5.1 has been published. Version 6.0 is in preparation in order to particularly take account of the current ISO and OGC international standards in modelling (adaptation of the basic schema and the NAS to GML 3.2/ISO 19136, metadata encoding according to ISO 19139).

Real estate cadastre and land register

The “Principles for collaboration and technical requirements for the exchange of data between the Authoritative Real Estate Cadastre Information System (ALKIS®) and the mechanically managed land register” were decided in 1999 by the AdV and the Government-States Commission for Data Processing and Rationalisation in the Judiciary. These principles are based on the realisation of the AAA model on the part of the surveying and mapping and require a database supported process on the part of the land register. The legal administrative bodies are currently developing a concept for “Redesign IT Land Register”. The AdV is represented in the Interfaces working group. The objective, in close collaboration with the Land Register administration, is to realise electronic exchange of information between both processes which minimises the manual effort for updating the respective databases. Both sides agree that a web-based technical solution should be pursued which ensures the customer has a comprehensive overview in a standardised, structured environment of the legal and actual state of property ownership without an organisational change of the responsibilities being necessary. However, no statement about the realisation date of this objective can currently be made.

Real estate cadastre and spatial data infrastructure

The EU Directive for the establishment of a European spatial data infrastructure in the context of INSPIRE contains in the Appendix 1, as well as the metadata to be primarily considered, the data which should be available as the first priority. These data also include the cadastral

parcel. Thereby, internationally applicable standards must be complied with. Due to the work performed in Germany up to now, these requirements for the real estate cadastre should not result in insurmountable difficulties.

It has been established in the course of setting up a spatial data infrastructure in Germany (GDI-DE) that the real estate cadastre data represent a significant geospatial reference data database. Discussions in the various working groups of the GDI-DE and of the geoinformation industry (GIW Commission) show that the surveying authorities must meet the requirements of the customers more than has been the case up to now. This mainly concerns the completeness and up-to-dateness of the databases. The focus here is particularly on the documentation of the buildings in the real estate cadastre. The documentation of planned buildings in the real estate cadastre is not planned nationally. They do not belong to the agreed geographic core data of ALKIS®. However, the actuality of the documentation of existing buildings is a justified requirement of the customers and meeting this is being worked on with high priority.

Networked Standard Ground Values Information System (VBORIS)

The information and communication technology and real estate cadastre working groups of the AdV have developed a model for the establishment and operation of standardised and GDI-compliant standard ground values information systems of the federal states and their networking (VBORIS) and have presented this throughout Germany in an information event. Thus, the conceptual phase of VBORIS has been completed and a joint portal of the Federal States (www.gutachterausschuesse-online.de) has been established with links to the already realised federal states solutions. VBORIS has also been decided as a model project for establishing the GDI-DE and will also be supported by Deutschland Online in the “Geodata Plans”.

Based on the available model description, implementation in as many state communities as possible is recommended. Coordination work for this has already started. A large number of the federal states are assigning high priority to the realisation of VBORIS. Further standardisation will be coordinated by the information and communication technology working group and maintenance of the joint portal will be monitored by the real estate cadastre working group.

Gutachterausschüsse ONLINE

Community for the distribution of house coordinates (GVHK)

Since the beginning of 2006, all States have been represented in the GVHK. The State Survey Office of North Rhine Westphalia takes over the central provision of house coordinates for national customer desires.

The comprehensive database available from now on represents the key for the customers to open up new markets and to identify and exploit customer potentials. In connection with additional information and own customer data, the wholesale and retail sector, banks, publishing houses, insurance or power supply companies are able to gain more information on their customers and their respective requirements and to control sales and promotion campaigns in a more efficient way. A wide application range is also given in the fields of vehicle navigation, location based services and municipal environments.

The house coordinates are an attractive database for many customers. The increasing sales figures for the GVHK are definite proof of this. A nationally standardised database with building outlines will be provided in the future for expansion of the data provided.

Census preparation law

A census is planned for the year 2011. Legal plans for the preparation of this census which should created the conditions that this census can take place largely using the existing register and other databases are currently in the consultation phase. The Federal Statistical Office will establish an address and building register for this.
This database is primarily based on the house coordinates data and will be enriched by a multitude of other information from other sources such as, e.g. inhabitants´ data, chambers of commerce and industry, the housing industry etc. This database will be deleted after completion of the census work.

The justified requirement for a current and comprehensive database of the surveying authorities of the federal states will also be raised here.

SA*POS*® journals

The real estate cadastre working group has developed the "SA*POS*® and tachymeter measurements for the real estate cadastre (MessDokLiKa)" documentation. This documentation is used as the basis for the creation of a manufacturer-independent interface which should transport all relevant data as far as the acquisition of the point information to be stored in the real estate cadastre. The users should be able to produce a journal from this which corresponds to the respective requirements of the responsible surveying and cadastre administration or own task. Special requirements for individual federal states which will not be harmonised in the short term can be taken into account in the required scope.

The documentation is available at www.adv-online for all interested parties.

4 Geotopography

Ensuring the up-to-dateness for essential topographical objects in the sub-year area and the customer oriented distribution of geospatial reference data continues to be the focus of the surveying authorities' activities. With the Geodata Centre at the Federal Agency for Cartography and Geodesy (BKG) and the further expansion of state-specific "geodata portals", data and metadata can be offered to a wider circle of users. An animated exchange of ideas regarding dealing with access conditions and extended usage conditions is still pending. The ATKIS® migration to the AFIS®-ALKIS®-ATKIS® data model represents a new challenge for the surveying authorities.

Digital landscape models

One of the core tasks of the state survey continues to be the establishment of the Digital Basic-Landscape Model in ATKIS® (Basic-DLM). The ATKIS® basic DLM database is the basis for the derivation of the small scale ATKIS® DLM50, DLM250 and DLM1000 digital landscape models and for the derivation of official digital topographic maps in medium and small scale with new map graphics. The ATKIS® Basic-DLM is being set up gradually, is currently available nationally in its 2nd stage and will be completely useable from 2009 in its 3rd stage with more than 120 topographic objects.

In the course of the "ATKIS® Generalisation" project, under the control of seven of the state surveying authorities supporting the project, the prerequisites have been created for being able to derive the DLM50.1 in an automated way from the basic DLM using model generalisation. With this geotopographical database which has been available since the end of 2006, a widely available digital landscape model standardised for Germany is ready which shows a more simple structure and a lower amount of data as compared with the basic DLM so that it is particularly suitable as basis for computer supported analyses and for location based services (LBS) or for the calculation of routes and for applications at the federal administrations level. The "ATKIS® Generalisation" project will be continued with the objective of creating preconditions so that the DLM50.2 can be derived from the DLM50.1 using automation supported cartographic generalisation as a database for the final production of the DTK50.

The DLM250 and the DLM1000 processed in the BKG are available in the first realisation phase covering the needs and are annually updated. The contents are continually extended for the production of the EuroGeographics products EuroRegionalMap and EuroGlobalMap and for the linking of technical data.

The digital landscape models can only meet the requirements if a high up-to-dateness of information can be ensured. The state survey authorities and the BKG constantly endeavour to improve the currency of the topographic data. In doing so, they are primarily setting up a close co-operation with the parties responsible for the topographical changes and also using photogrammetric and computer-controlled terrestrial reconnaissance systems.

Implementation of the continuous object structuring of the real estate cadastre and topographic data as part of the AFIS®-ALKIS®-ATKIS® concept is crucial to the further development of the digital landscape model as part of the ATKIS® project. The feature type catalogues for all ATKIS® DLMs in the complete documentation of the AFIS®-ALKIS®-ATKIS® project, the GeoInfoDok, are available for the ATKIS® technical concept

Digital terrain models

In parallel with the digital landscape models, the state surveying authorities are managing digital terrain models (ATKIS® DGM) with various precisions. As well as regularly distributed geodetic points, the digital terrain models usually contain vector structure elements in the form of terrain form lines and particular terrain points. For the ATKIS® technical concept within the scope of the AFIS®-ALKIS®-ATKIS® concept, the DGM feature type catalogue is also available in the GeoInfoDok.

As a result of the computerised merger of the digital terrain models of the federal states with the BKG, an homogeneous DGM-Germany with a terrain-type dependant height accuracy of ±1 to ±3 m and a grid width of 25 m is available for the Federal Republic of Germany which is provided by the geodata centre of the BKG jointly with the federal states. The objective of the federal states is to qualitatively further develop their DTM databases so that a terrain-type dependent height accuracy of <1 m for a grid width of ≤15 m, and a terrain-type dependent accuracy of <0.15 m for a grid width of ≤1 m for areas which can be submerged during high water or whose flooding is used to avoid flood damage, will be available.

Digital topographic maps

On the basis of the already available digital landscape and terrain models, the state survey authorities have started the derivation of the topographic map books on the basis of new map graphics, documented in the ATKIS® portrayal catalogues. Digital topographic maps (ATKIS®-DTK) with scales of 1:10 000 and 1:25 000 are already achieving a high profile in the product range of the state surveying authorities. First map sheets of the DTK50, a future joint civil/military map book, are available for the 1:50,000 scale. Processes for an as much as possible automation supported generalisation of the DTK50 and DTK100 still have to be further developed so that a significantly more efficient derivation from the digital landscape and terrain models can be achieved in the future.

With the completion of the SK100, SK250 and SK1000, the portrayal catalogues for the ATKIS®-DTK are complete and can be viewed at www.adv-online.de. The figures 4 und 5 give a first impression of the future DTK250 and DTK1000. The transfer of the portrayal catalogues to the ATKIS® technical concept in the context of the ALKIS®-ATKIS® project has been started. The first portrayal catalogue, the SK25, has been published in the GeoInfoDok. Based on this, the transfer of all SKs will be striven for in 2007.

Until the topographic map books to be created on the basis of the ATKIS®portrayal catalogues are available, the Federal Government and its states will update the conventional topographic map books within the required scope, keep them ready for printing and store them as raster data record for diverse applications.

Fig. 4: Map section of the map graphics of the future Digital Topographic Map 1:250 000 (ATKIS®-DTK250);

Fig. 5: Map section of the map graphics of the future Digital Topographic Map 1:1 000 000 (ATKIS®-DTK1000);

Interactive topographic maps on CD-ROM

The Version 5 new edition has been started for the CD-ROM series published for the whole of Germany by the Federal Government and its states which presents the raster-formatted topographic map 1:50 000 “Top50“ and the topographic overview map 1:200 000 “Top200“ as software. Mainly functional expansions are linked with this version such as the client/server capability for activation using a licence key, the integration of a plug-in for planning, upload and download of GPS routes for Garmin GPS receivers and freehand drawing on a touch screen or with a mouse (Figure 6).

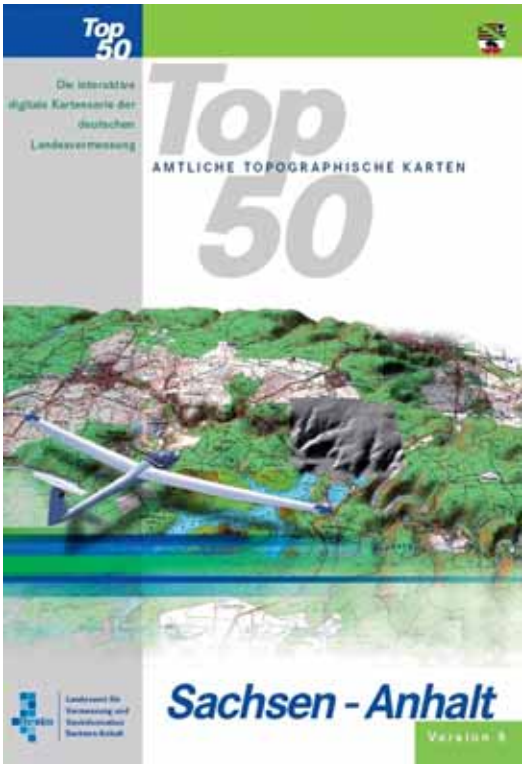

Fig. 6: CD-ROM Top50 – cover

Toponymy

In collaboration with the permanent committee for geographic names (StAGN), the BKG has been providing a standardised (gazetteer) service since autumn 2006 which provides the toponymy (GN-DE) from the vector data of the DLM 250/1000, VG250 and GN250/1000 products. A new data model for geographic names has been designed for the implementation. The GN-DE database is available as a standardised Web Feature Service (WFS) according to the specification of the Open Geospatial Consortium (OGC) at the geodata centre of the BKG.

Prompted by a request from the European Commission to the Ministry of Foreign Affairs of the Federal Republic of Germany, the StAGN has made a proposal for the classification of Europe. The following subdivisions of Europe are recommended:

Fig. 7: Rough structuring of Europe according to cultural, space-related criteria without consideration of today’s country boundaries (Jordan 2006)

Fig. 8: Rough structuring of Europe according to today’s country boundaries (Jordan 2006)

Both presentations have been taken from Jordan, P. (2006): Großgliederung Europas nach kulturräumlichen Kriterien, Europa Regional 13 (2005), Heft 4, S. 162-173, Leibniz-Institut für Länderkunde, Leipzig.

Copyright and sales

Together with the traditional provision of official geotopographical information via printed media, the use of digital topographical data has established itself in administration and the economy. Modification of the data and sales structure in the state surveying authorities has also been set up. Together with the provision of geotopographical data on data carriers, Web-based applications are achieving a high profile and geoportals, geoservices and geoviewers are being provided gradually (Figure 9).

The geodata centre of the BKG distributes the ATKIS® digital landscape and terrain models and the digital topographic maps throughout Germany in a harmonised form in collaboration with the federal states. Via the World Wide Web portal of the Geodata Centre (www.geodatenzentrum.de), interactive maps for direct access to the databases, test data for download, services for finding addresses and geographic names, online coordinate transformations and technical information and aids are provided. An online ordering system enables geodata to be requested via the Web and federal institutions can obtain the data online immediately. Linked with the Web portals and Web shops of the federal states, the meta information system gives information about the availability, features and contact persons of the products.

Fig. 9: Geodata portals, geoservices and geoviewers of the federal states; date 31/12/2006

Public relations work, trade fairs and exhibitions

Within the scope of the development of spatial data infrastructures in the Federal Republic of Germany, the AdV is endeavouring to raise the level of awareness for products offered by the state surveying authorities (geospatial reference data). As in previous years, the German official surveying and mapping, represented by the AdV, appeared on stands at INTERGEO® 2006 in Munich – the international trade fair for surveying (Figure 10) and at the book fair in Frankfurt am Main. Besides the presentation of state survey products, accompanying lectures and discussions were also held.

Fig. 10: The geodata of the German state survey are presented at exhibitions and trade fairs on a joint stand of the AdV – here, at the INTERGEO® 2006 in Munich.

5 Information and communication technology

Information and communication technology forms the technical interface between the spatial reference, real estate cadastre and geotopography work. It supports the establishment of the spatial data infrastructure (GDI) based on official geospatial reference data using networks and geoservices. The focus is the maintenance and further development of the AFIS®-ALKIS®-ATKIS® (AAA) concept for the modelling of the geoinformation from the official surveying and mapping and in the IT coordination of the GDI activities for the AdV at national level.

AAA model

The AAA basic schema forms the basis for the technical application schema for modelling the AFIS®, ALKIS® and ATKIS® objects and for data exchange. Being a neutral entity, other technical information systems can use the classes defined in the AAA basic schema for their own modelling. For supporting wide use of the AAA model, licence conditions have been developed in the period covered by the report, based on which the software scripts the modelling is based on are made available to third parties.

The priorities are the adaptation of the AAA basic schema and the NAS as standard-based data exchange interface to international standards (ISO 19136, GML 3.2). In the course of this, the documentation for modelling the geoinformation of the official surveying and mapping (GeoInfoDok) has been continued in the version 5.1. The subsequent version number change to GeoInfoDok 6.0 should take place after completion of the international standardisation and should not contain any migration-relevant model expansions.

Registries

For supporting applications based on GeoInfoDok, it is necessary on the one hand to make the GeoInfoDok resources available via formal mechanisms, so-called registries, and on the other hand to publish their availability and status using these registries.

In the course of a pilot project, the establishment of registries using the coordinate reference systems used in AAA data as an example are currently being implemented as a prototype. Based on the perceptions gained from this pilot project, a concept for establishing other GeoInfoDoK registries as integrated GDI components should be produced.

Geoinformation network for geospatial reference data

In order to further expand the Web-based, comprehensive provision of the geospatial reference data as basis of the GDI in Germany, an actions catalogue – in the form of a stage-by-stage plan – has been compiled for the establishment of a geoinformation network for geospatial reference data. In the first phase, a link portal will be created on the AdV website which links the existing federal state and federal government portals. This will be immediately followed by the harmonisation of the existing Web Map Services for the provision of the topographic maps and orthophotos and the piloting of a first Web Feature Service for the “Germany house coordinates” product. Other Web Services are contained in the stage-by-stage plan as subsequent actions with the objective of the harmonising the activities of the federal states and the federal government and to realise an as much as possible standardised and comprehensive provision of Web-based geospatial reference data and geospatial services.

6 Participation in the framework of the GDI-DE

With the joint establishment of the spatial data infrastructure Germany (GDI-DE) by the federal government, its states and communities, the potential of geographic information, particularly for political as well as administration- and economy-relevant decision processes is increased. The AdV is actively supporting the establishment of the spatial data infrastructure for Germany (GDI-DE). In addition to this, the AdV plays an important role in the development of necessary procedures and technologies as well as in the distribution and application of standards.

Measures for Web-based comprehensive provision of the geospatial reference data

The Web-based comprehensive provision of the geospatial reference data as basis of the GDI-DE by all federal states has been further extended. Actions for the establishment of a geoinformation network for geospatial reference data have also been decided which include the creation of a link portal of existing federal state / federal government portals on the AdV website, the takeover of the GDI-DE profile WMS-DE 1.0 and the WFS-G pilot project for the Germany house coordinates.

In order to ensure long-term core competence in the areas of data modelling, data sharing and standardised geo-services, the AdV has set up the "GDI Standards" project group whose focus is on the maintenance and further development of the AAA basic schema and of the NAS, and on the development and implementation of standardised services for geospatial reference data. It is actively working on many model projects and is thus supporting the establishment of the GDI-DE.

The AdV metadata profile contains the metadata elements to be managed. The AdV Plenum intends to make a resolution at its meeting in autumn 2007 for the metadata profile and for the adaptation of the AdV-specific coding of metadata to international standards.

Model projects

Various model projects for the sustainable establishment of a spatial data infrastructure in Germany are being worked on and/or supported inside the AdV:

- Networked standard ground values information system VBORIS

The VBORIS model has been presented to the departments of the federal states responsible for the evaluation committee for plot values and the federal departments concerned and its realisation discussed at an information event. Thereby, the VBORIS model has been deemed future-oriented and well realisable. There are already concrete ideas for implementation in most of the federal states. The AdV will take over the maintenance and further development of VBORIS. The GDI-compliant VBORIS solution will be increasingly driven forward in the Deutschland-Online initiative and as a model project of the GDI-DE.

- Networked meta information system

The "Networked meta information system" model project has been successfully completed; some federal states have set up metadata catalogues for the geospatial reference data. Central access is ensured via the AdV metadata information system. The "Interoperable metadata catalogue" model project will be executed within the GDI-DE with regard to the anticipated requirements of the INSPIRE implementation provisions with regard to the provision of metadata. The AdV will participate in this model project and in the Metadata working group of the GDI-DE.

- Establishment of a gazetteer service for the house coordinates

The core objective of the project is the realisation of a gazetteer service for the provision of the GVHK Germany house coordinates and building outlines via the World Wide Web. The realisation of the gazetteer service taking account of a cascading approach will be completed in mid 2007. The draft of a business model for the operation via the World Wide Web by the GVHK exists.

- Establishment of a registry for coordinates systems

In the context of the GeoInfoDok, the AdV has developed a technical concept for the establishment of a registry for coordinates reference systems (CRS). The starting point for this is the need for a machine-readable and mainly machine-processable specification of the coordinates reference systems used in AAA data. This project is coordinated by the GDI Standards project group.

• Standardised WMS profile GDI-DE 1.0

The AdV has defined the requirements in the GDI Standards project group which ensure provision of the geospatial reference data via interoperable services. These requirements have been incorporated in the current GDI-DE application profile for WMS services.

• MySDI

The objective of the mySDI project is the provision of an application in the cellular network which makes access to the available geoinformation services in the network possible for end users. The contribution of the federal states to this project is limited to the provision of Web Mapping Services (WMS).

• Administrative boundaries

The chambers of industry and commerce use the administrative boundaries for participation in all legal planning issues such as the assessment of zoning maps. Last but not least, they are also helpful for supporting business development and consultancy. Medium-sized businesses use this geoinformation for location selection. To date there were partially significant regional and national access possibilities which hinder efficient usage. In order to dismantle these hurdles and create approaches for a pragmatic implementation, national framework conditions, based on the sample licence agreements for the use of state geoinformation developed by the AdV, have been developed in the "Administrative boundaries" project of the commission for the geoinformation industry (GIW-Commission).

Activities of Deutschland-Online

The Deutschland-Online project "Geodata" pursues the objective of harmonising the heterogeneous geoinformation landscape in Germany and to pursue this as a common objective at all three political levels. The federal government and federal states adopted the Deutschland-Online action plan on 22/06/2006. The projects, standardisation and market development core areas have been specified for the project Geodata. "VBORIS", "XPlanung", "Presentation of the DLM 50.1" and a "Gazetteer service for house coordinates" are the current projects. The early participation of the geoinformation industry is being made by GIW-Commission projects such as, for example, the "Administrative boundaries" lead project which the AdV is actively participating in.

7 Cooperation in national and international organisations

EuroGeographics

EuroGeographics (EG), the association of national mapping and cadastral agencies, has defined as its primary objective to establish the reference data (geodetic reference networks and spatial base data) of a European Spatial Data Infrastructure and to bring about their interoperability. EuroGeographics has for this purpose set up a program, with the intention of pushing ahead the harmonization of the data and service specifications required for the European Spatial Data Infrastructure, while at the same time also preparing the upcoming implementation of the Inspire directive of the EU. The program will be actively put into practice by different expert groups (see www.eurogeographics.org/eng/05_asp) comprising also a number of experts of BKG and the federal states. The two expert groups *Geodesy* and *Information and Data Specifications* are run by collaborators of BKG. The two new expert groups *Business Interoperability Group (BGI)* and *EU Coordination Group* replace the expert group *Legal and Commercial* Issues. They started work in November 2006 and March 2007, respectively.

Within the frame of EuroGeographics BKG cooperated above all in the preparation of the products **EuroBoundaryMap** (EBM, formerly known as SABE) in its function as project manager, **EuroGlobalMap** (EGM) as a regional coordinator and **EuroRegionalMap** (ERM) as a further partner. Moreover, BKG is represented in the different working groups of the **EuroBoundaries** project.

EuroBoundaryMap, a European wide vector dataset of the administrative boundaries, reaching from federal states to the communal level, was first published in 1993 on the basis of

a specification developed at BKG and has since then been continuously updated using data supplies from the European countries involved. All versions prepared until now are offered at the application scales 1:100 000 and 1:1 000 000 as well as in different GIS formats. During the period under review EuroBoundaryMap was converted to the database format 'Geodatabase', and in the course of this conversion different adaptions and improvements in the data model were performed, especially also with respect to a process of harmonization with the specifications of ERM and EGM. For this reason, an improved re-edition of the EuroBoundaryMap 2004 / NUTS product (last published in January 2006) became necessary. This version still refers to the revision status July 2003 for all previous EU member countries, and May 2004 for all new EU countries as well as for all other countries represented at EuroBoundaryMap. Beyond that, this product contains for the local administrative units of all EU countries a reference to the NUTS classification, updated in January 2004 by the European Commission or Eurostat, which ensures interoperability between this European wide geographical database of administrative boundaries and statistical data. In addition, so-called "Full Europe" versions (all countries in one feature type class) are generated as a new product variant for each scale as an alternative to the products distributed by the individual countries. Within the scope of the licence agreement, concluded at the end of 2005 between the European Commission / Eurostat and EuroGeographics on the supply of a Europe wide geographical database of the administrative regions and statistical area codes BKG compiled a dataset 'Statistical Regions', based on the EuroBoundaryMap 2004 / NUTS product, as well as a newly edited, extended and supplemented version of the SABE 2001 / Census product in accordance with the contractual specifications of Eurostat. At the end of 2006 the aforementioned contract was renewed for another year with a view to revise in 2007 the dataset with the new status date 01. 01. 2006 and to extend it to new countries. Besides the provision of data and metadata BKG offers all customers and interested parties also technical advice in all related matters, an up-to-date user manual as well as a specimen dataset for download from the EuroGeographics website http://www.eurogeographics.org/eng/04_sabe.asp.

After in the years 2003 and 2004 the EU-promoted projects **EuroRegionalMap** (ERM) and **EuroGlobalMap** (EGM) had successfully been completed in the form of the first versions of the topographic reference datasets 1:250 000 and 1:1 000 00, respectively, these products were continued in 2005 and 2006 by their stages of revision and extension. Also, apart from the provision and implementation of the national datasets BKG assumed within the different project teams, under the guidance of the responsible product managers from Belgium (IGN-B) and Finland (NLS-FI), important project-related development tasks, as e.g. data modelling (conversion to geodatabase structure), supply of data exchange modules, harmonization of the specifications etc. Furthermore, BKG participated in the EGM project as a regional coordinator for the territory of Central European partner countries, and concerning the ERM project VMap datasets were converted into the ERM specification for the needs of Italy and Portugal. In addition, BKG gave its support to IGN-B with the submission of a successful tender as a response to another invitation to tender issued by the European Commission (Eurostat) for the provision of mean scale topographic reference data. In January and March 2007 the new EGM and ERM versions were finished (preliminary version sent to Eurostat in January).

Beyond that, the online ordering and distribution system matched by BKG to the relevant European products was kept and maintained in the report period (see www.eurogeographics.org/eng/04_buying.asp).

During the second half of 2006 and the beginning of 2007 work on the **EuroBoundaries** project concentrated on the compilation of test data according to the previously specified EuroBoundaries data model (including modelling of the topographic features linked to the boundary for the support of edge matching across country boundaries). BKG, too, edited for this purpose data of a section of the Bavarian-Czech boundary, which had been made available by courtesy of the 'Landesamt für Vermessung und Geoinformation" (Bavarian Office for Surveying and Geoinformation).

In autumn 2006 the 6th General Assembly of EuroGeographics took place in Amsterdam. This time discussions of the representatives focussed on the upcoming implementations of European initiatives such as INSPIRE and GMES. Željko Bačić, Director General of the State Geodetic Administration of the Republic of Croatia was confirmed as President of EuroGeographics for another year.

European Infrastructure for Geographical Names Data – EuroGeoNames (EGN)

The EuroGeoNames (EGN) project was initiated in 2004 by BKG and integrated into the work program of EuroGeographics, in which BKG assumed the overall concept and the project coordination. The objective of this project launched on 1 September 2006 is to set up services for an internet-based infrastructure, which shall enable geographical names searches in all European languages. In this context it must be pointed out that geographical names referring to recognized minority languages shall also be considered, as e.g. Sorbian and Frisian in Germany. The EGN information network is developed in close cooperation with the European national surveying institutions and authorities, which make their names datasets accessible for these needs. Data keeping and updating will continue to be the sole responsibility of the respective countries. EGN will make a contribution to the setup of the European Spatial Data Infrastructure (ESDI), which will be established within the frame of the INSPIRE initiative.

The EGN project is carried out by an international consortium comprising nine partners from the economy, science and public administration sectors and coming from five countries (Austria, Germany, the Netherlands, Slovenia, Great Britain) as well as EuroGeographics. Further agencies belonging to 12 countries (Cyprus, Czech Republic, Spain, Finland, France, Hungary, Lithuania, Latvia, the Netherlands, Norway, Slovakia, Turkey) presently constitute the reference group and are the potential data suppliers having declared themselves prepared to make their national geographic names data stocks available for the requirements of the project. The total project costs amount to 1.8 Mio Euro, 50% of which are promoted by the EU within the scope of the eContentplus Program. The project duration is 30 months.

The 1st workshop took place at BKG on 23-24 October 2006 within the frame of the EuroGeoNames project. Presentation of the geographical names data of the 15 European countries involved was a major issue of this meeting, where both the revision and updating methods applied by each country were introduced and discussed. On 17 January 2007 the 2nd workshop was held in Utrecht dealing with the subject of user and economic requirements on geographical names data. Already at 6 March 2007 the 3rd workshop was organised in Madrid, where discussions concerning a uniform data model for geographical names data as well as the technical concept for a decentral Web services architecture, which is necessary for the linkage of the national names data stocks, were the main focus of attention.

Further information on the previous workshops and on the EuroGeoNames project as a whole can be found under: www.eurogeonames.com.

Reference Information Specifications for Europe (RISE)

The RISE project is running within the frame of the EU's FP6 program and has been financially supported by the EU. The project consortium includes the following organisations: EuroGeographics (project coordinator), OGC Europe, Qinetiq Ltd., Lantmäteriet (National Land Survey of Sweden), and the BKG. The aim of this project consists in developing guidelines for the compilation of harmonized specifications for European geodata, RISE being based on the ISO and OGC standards. The task has been coordinated with the strategic targets of the European INSPIRE and GMES projects. The project partners test their guidelines and methods on the example of the pollution of waters. In this context BKG assumed, among others, the task of describing the different applications within a conceptional scheme. This important partial result could be presented already in March 2007.

Working Party on Land Administration (WPLA)

The AdV again actively contributed in the period under review to the activities of the Working Party on Land Administration of the United Nations Economic Commission for Europe (WPLA). The AdV's representative was in November 2005 appointed as President of WLPA for the term of office lasting until November 2007. Besides the workshops of WLPA held regularly twice a year a number of other activities are performed and assisted by the AdV, the main emphasis being on a number of studies on fundamental and topical issues of land registration and real estate cadastre, which are dealt with by established working groups (Task Forces).

Permanent Committee on Cadastre (PCC)

On 1 January 2007 Germany took over the presidency from Finland and will pass it on during the forthcoming Plenary Meeting to Portugal in June 2007. Since spring 2005 a joint expert group of PCC and EuroGeographics has been dealing with the role of the parcel cadastral within the scope of the data to be provided as well with the use of cadastral data within the national spatial data infrastructures. The results obtained by the survey on the role of the cadastral parcel in INSPIRE have directly entered into the work of the INSPIRE Drafting Team “Data Specifications”. The AdV is represented in the group of experts by its Secretary General.


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