



# I Starting points

The level of information society development depends above all on the level of functional information infrastructure. **Spatial information – i.e. such information about the object of the real world that specifies its relationship to the space** – is one of the inevitable components of information infrastructure. Usually we speak about so called **geoinformation** - some information that can be referred to a particular location on the Earth's surface (by co-ordinates or by some other identifiers). The importance of geoinformation is mainly increasing in connection with huge development of information and communication technologies and methods that enable quick, easy and reliable acquisition, processing and exchange of spatial data. Expanding possibilities of versatile use of geoinformation in various spheres of human activities, above all in decision-making, make premises for economic development, for improvement in governance and for the support of sustainable development.

Functional geoinformation infrastructure is becoming the next natural demand of the organized society. Almost in all developed countries the above mentioned facts evoked the need to define and build-up a geoinformation infrastructure related to the initiatives carried out in a broader scope, e.g. the European EGII (*European Geographical Information Infrastructure*) or the world-wide GSDI (*Global Spatial Data Infrastructure*).

Recently, the necessity to formulate the strategy of geoinformation infrastructure development in the Czech Republic has been expressed in several important documents - from both public and professional sphere – together with identification of targets and projects leading to the implementation of this strategy. The specification of the national **geoinformation infrastructure** programme of the Czech Republic (NGII) is identified as one of the objectives in the following governmental documents: “**State Information Policy – road to Information Society**” (1999), “**The Conception of the Public Information Systems Development**” (1999) and “**The Action Plan for the State Information Policy (SIP) realization**” (the first version of May 2000). The main actors are in this case the Governmental Council for SIP, The Office for Public Information Systems, the Czech Office for Surveying, Mapping and Cadastre (COSMC) and the Ministry of Finance. The definition and the development of NGII belong to the main programme objectives of the Czech Association for Geoinformation (CAGI) as it is also stated in the State information policy document.

Nowadays, the most important platform for the NGII programme specification is the association called **Nemoforum**. The activities of the Nemoforum are carried out by the above-mentioned institutions and also by other public administration subjects as well as the professional associations, chambers, unions and universities. Due to the composition of the Nemoforum members, this association is supposed to play a substantial role in co-ordination of the NGII development and it may become the further reviewer of fulfilling the NGII programme.

A number of important NGII elements already exist in the Czech Republic, till now however without a necessary co-ordination, integrity and consistent conceptual background in the form of a NGII programme. The present NGII environment consists of independently launched activities within the responsibilities of public administration bodies and other subjects (mentioned in brackets in alphabetical order) oriented towards the following issues:

- spatial reference frame of geodetic control points (COSMC);
- state map series in analogue and digital form (COSMC, Ministry of Defence);
- resort thematic maps (Min. of Traffic, Min. for Regional Development, Min. of Agriculture, Min. of Environment);
- the Fundamental Base of Geographic Data (COSMC);
- basic registers of public information systems (Office for Public Information Systems and relevant governmental bodies responsible for particular registers);
- wide-area network of cadastral information system (COSMC);
- new study subjects in geomatics and geoinformatics involved in study programmes of universities (Ministry of Education and the relevant universities);
- educational programme for the enhancement of professional qualification of public administration employees in the field of geoinformation (CAGI, Ministry of Interior);
- metainformation systems about geoinformation sources (CAGI, Min. of Agriculture, Min. of Environment, Office for Public Information Systems);
- standardization of geoinformation (CAGI, Czech Standards Institute, COSMC, Office for Public Information Systems);
- a stable frame of regular professional events (national and international conferences, seminars, trade-fairs and exhibitions).

The necessary framework for the NGII development is supported by the information infrastructure, in particular by:

- the existence of common obligatory legislation on personal data protection, free access to information, privacy protection, electronic signature, copyrights, management of public information systems;
- general accessibility of information and communication technologies, including the geoinformation technologies.

## **II Basic concept of NGII**

The national geoinformation infrastructure of the Czech Republic can be described as a set of mutually related conditions that enable to ensure and make available a wide scale of geoinformation to a large group of the CR users - in a user-friendly way and with the help of modern geoinformation and communication technologies. This set of conditions may be divided into the following main NGII topics:

- 1) the existence of the NGII Programme document and its acceptance by public administration and autonomous professional unions;
- 2) the NGII development in connection with European and global GI initiatives;
- 3) co-ordination and cooperation of all the partners active in the field of geomatics and geoinformatics;
- 4) technical conditions for processing and distribution of geodata and geoinformation;

- 5) organizational, legislative, financial and other conditions for access to geodata and geoinformation;
- 6) basic data sets of geodata (core data);
- 7) awareness about existing geodata sets, their sources and access conditions;
- 8) standard transfer formats of geodata and their sets, standard description of data sets, terminology in geomatics and geoinformation;
- 9) qualification of professionals in the field of geomatics and geoinformatics;
- 10) skills of users from wide public for exploitation of new possibilities and access to geodata and geoinformation.

**The aims necessary to be met for particular NGII topics together with the projects and measures that should support the NGII development are specified in the following chapter.** (The institutions of suggested gestion are listed in alphabetical order).

### **III Main topics of the NGII**

#### **1 The existence of the NGII Programme document and its general acceptance by public administration and autonomous professional unions**

**State:** The NGII strategic document which would systematically define basic NGII elements and specify main NGII targets and instruments to their realization has not been set up yet in the Czech Republic. Formulation and acceptance of the NGII programme within the public administration sector, the bodies of professional autonomy, the academic sphere and the private sector, are rather necessary for development in geomatics and geoinformation. Therefore the proposal of the NGII Strategic Programme has been worked out by cooperating experts from the institutions involved in the association Nemoforum and now it is submitted to discussions and general acceptance.

**Aims:** To accept the NGII Programme at the level of the Governmental Council for State Information Policy (SIP), to identify it as an essential part and a pre-requisite for the state policy development and to prepare the conditions for its implementation.

**Measure 1.1: To submit the NGII Programme document for an endorsement to the Government Council for State Information Policy.** The suggested gestion: Nemoforum together with COSMC and Office for Public Information Systems.

**Measure 1.2: To decide about a successive incorporation of the projects specified in the NGII Programme document to the projects of the Action Plan of SIP.** The suggested gestion: The Government Council for SIP together with COSMC, Min. of Defence, Min. of Interior, Office for Public Information Systems.

## **2 The NGII development in connection with European and global GI initiatives**

**State:** Considering a territorial continuity and natural conditions overlapping the state frontiers, the necessity to respect the international link-ups to GI initiatives, objective solutions and data sources is evident. The relation to the European and global initiatives is important for learning from foreign experience and also for presentation of local achievements and results on the international forum. A number of our experts, institutions and professional organizations active in GI have already established international contacts that are still developing. Nevertheless, mutual awareness about the carried out activities is insufficient and there is a lack of co-ordination that can support a focused presentation of successfully reached steps and an active participation of the CR in international projects. It is necessary to provide and disseminate the information about the GI strategies from abroad as well as about international responses to our local results. The Czech Republic should strengthen the participation in global GI initiatives.

**Aims:** To ensure the co-ordinated development of international contacts in GI sector, to encourage the participation of Czech institutions, umbrella organizations and companies in the international projects and programmes. To present the results and achievements systematically, to promote foreign experiences and to utilise them.

**Measure 2.1: To use the Nemoforum structure (national group No 1 – National geoinformatics infrastructure) for improvement of co-ordination in international contacts within the geoinformation sphere and for raising the awareness about foreign and local projects, trends and initiatives.** The suggested gestion: Nemoforum.

## **3 Co-ordination and co-operation of the partners active in the field of geomatics and geoinformatics**

**State:** The association Nemoforum has been developing its activities since the year 1999. Nemoforum associates the public administration institutions and the autonomous professional unions and chambers representing the private sector, other professional associations and universities. The key issues of the Nemoforum activities are those connected with real estates, real estates market and the information on land and real estates. The preparation of the NGII strategic document belongs to the main objectives of Nemoforum, too. The association Nemoforum is assumed to include wider aspects of geomatics and geoinformatics into its future activities. Nemoforum is a suitable platform for the necessary co-ordination and collaboration between the public sphere and the private sector. It should be stressed out that one of the Nemoforum members – the Czech Association for Geoinformation – involves many partners from the field of GI and therefore helps to the cooperation within the private sector, with universities and individual experts from the public sphere. The association Nemoforum has developed to an important group of experts, professionals, providers and users suitable for formulation of strategies or terms of reference for the projects in the field of GI.

**Aims:** To continue the started cooperation among the public administration, universities and the private sector under the umbrella of the Nemoforum association and to spread out the Nemoforum activities into the GI sphere in general.

**Measure 3.1:** To aim the activities of the Nemoforum association at the evaluation of implementation the NGII programme and at the development of mutual cooperation of the public administration institutions, universities and the autonomous professional unions and chambers. The suggested gestion: Nemoforum.

**Measure 3.2:** To entrust Nemoforum with an interim evaluation of fulfilling the NGII programme and particular projects included in the Action Plan. To submit the results of evaluation according to the needs of the Action Plan SIP evaluation. The suggested gestion: The Government Council for SIP together with Office for Public Information Systems.

#### **4 Technical conditions for processing and distribution of geodata and geoinformation**

**State:** In the CR, a number of worldspread GI technologies are available at present, including the top ones. The impact of a wide range of the Czech original technologies is also very positive. Communication infrastructure and related technologies including the Internet are consequently more and more used and developed. The key issues in the sphere of technology have been already solved in the projects of the Action plan of State Information Policy realization. In the framework of the NGII it is necessary to ensure the technical conditions for a full use of spatial data, mainly in public administration and in the sphere of education.

**Aims:** To facilitate relevant technical conditions for effective work with geoinformation, above all in the public administration and education considering the needs for exploitation of geodata and geoinformation in the field of: (i) execution of public administration, (ii) public information services, (iii) education.

**Project 4.1:** To prepare a Conception of geodata and geoinformation use in public administration and education. The suggested gestion: Min. of Education, Min. of Interior, Office for Public Information Systems in co-operation with CAGI.

#### **5 Organizational, legislative, financial and other conditions for the access to geodata and geoinformation**

**State:** Geodata and geoinformation are available and accessible according to the decision of the subject that manages and provides them. The substantial part of the whole volume of geodata is concentrated in public administration and therefore the conditions for the access to public geodata and geoinformation are of crucial importance. That is also important from the point of view of keeping the laws on a free access to information and on personal data protection. These laws may evoke some adverse trends that do not contribute to clear understanding of such issues as, e.g.: the term "ownership" or "management" of geodata and

geoinformation, data of the “public administration in the whole” versus data of “particular public bodies”. This results in unclear and diverse approach of public administration bodies and municipalities to copyright within the public administration, fees for geodata and geoinformation, free access to data. The connected issue is the question how to distribute and charge geodata to be used for business purposes, for raising employment and general knowledge etc.

There are also some general problems as legal aspects of the responsibility for quality and reliability of data and the consequences arising from use of data, copyrights to geodata sets and map products derived from them, digital maps, data dissemination through the third person etc.

**Aims:** To ensure the necessary conditions for geodata and geoinformation providing and sharing, especially from the public administration sector, including general trade and copyright conditions.

**Project 5.1: To set out a methodic instruction (set of rules) for geodata and geoinformation access and trade.** The suggested gestion: CAGI together with COSMC, Min. of Finance, Min. of Culture, Office for Public Information Systems.

**Measure 5.2: To proclaim the rules for geodata and geoinformation access and trade for the public administration bodies in connection to their preparation (project 5.1).** The suggested gestion: The Government Council for SIP together with Min. of Finance, Office for Public Information Systems.

**Project 5.3: To identify the requirements for copyright law reflecting the needs of GI sphere, and their preparation for a new amendment of copyright law.** The suggested gestion: CAGI together with COSMC, Min. of Culture, Nemoforum, Office for Public Information Systems.

## **6 Basic data sets of geodata**

**State:** Data sets form an essential part of the NGII. Especially the geodata are important for data integration and they represent a common basic content of various thematic and application data sets used in geo-referenced decisive processes mainly inside but also outside the public administration. The effectiveness of setting up and utilising the related data sets will depend on existence, quality and accessibility of the core data. During the late 90s the activities aimed at installation of countrywide basic geodata sets have been started within the public administration sector (e.g. within the responsibility of the COSMC, Min. for Regional Development, Min. of Environment). These core data sets are similar to those being created in other European countries with developing geoinformation infrastructure. The launched projects should become the main platform for setting up the basic data sets which should be gradually extended according to users needs. The necessary part of institutionalisation and perspective existence of the particular data set as a basic NGII data set is providing of regular updating and consistent introduction of valid standards.

**Aims:** To specify the basic geodata sets. To ensure their institutionalisation and to create conditions for data accessibility and maintenance.

**Measure 6.1: To identify the basic geodata sets and to make an analysis of the present state.** The suggested gestion: COSMC, Nemoforum, Office for Public Information Systems.

**Project 6.2: The Fundamental Base of Geographic Data ZABAGED** (the project is already included among the Action Plan projects). Gestion: COSMC.

**Project 6.3: Orthophotographic Mapping of the territory** of the Czech Republic (the project is already included among the Action Plan projects). Gestion: COSMC, Min. of Defence, Min. of Agriculture.

**Project 6.4: Digital cadastral map** (the project is already included among the Action Plan projects). Gestion: COSMC.

**Project 6.5: The basic register of spatial identification and real estates** (the project is already included among the Action Plan projects). Gestion: COSMC.

## **7 Information about existing geodata sets, their sources and access conditions**

**State:** At present, there is no tool that would enable to find out quickly and unambiguously which geodata exist, where they are, how you can get them. The Czech Association for Geoinformation has developed the metainformation system about geodata data sets called MIDAS. This metainformation system can be used also for the search of public data, moreover in the field of non-spatial data (gestion of the Office for Public Information Systems). Some public administration bodies are building-up their own metainformation systems on the level of detail suitable for resort purposes, often available for wide public (Min. of Environment, Min. of Agriculture and others). The co-ordination in the development of these systems is step-by-step improving.

**Aims:** To support the development of the metainformation system MIDAS. Above all to ensure its complete and reliable data filling. To facilitate the combination of MIDAS with purpose-oriented metainformation systems or with systems of lower level of detail. To respect the future needs and responsibilities of the planned metainformation system of public data sets at the same time.

**Project 7.1: Development and maintenance of the MIDAS metainformation system about sources of geodata as a subproject of the public data metainformation system.** The suggested gestion: CAGI, Office for Public Information Systems.

## **8 Standard transfer formats of geodata and their sets, standard description of data sets, terminology in geomatics and geoinformatics**

**State:** The standard transfer data formats for the Digital cadastral map, Digital technical map of the city and for the spatial planning documentation already exist (the standards of the COSMC, Office for Public Information Systems and CAGI), some other application standards are being worked-out. The description of current geodata sets is not standardized. Some

kind of basic but not full description of data is contained in the existing metadata transfer standard of public administration data (Office for Public Information Systems and CAGI). A unique approach and understanding the current transfer standards is lacking and their feedback on European and global standards is missing. A new Czech national standard (CSN) for data transfer (a part of geoinformation standards adopted from CEN standards) provides a wider frame, but the implementation of European standards has not been settled yet. Similar standards should be set out for number of other geodata sets - all consistent with the above-mentioned CSN standards and with existing and still developing European and global standards, too. One of the obstacles is the unstable Czech terminology in geomatics and geoinformatics - there are several explanatory terminology vocabularies but not mutually consistent.

**Aims:** To define general and application standards for geodata transfer and description (on the level of CSN, public data standards or CAGI standards). To ensure the relationship with European and international standardisation activities. To publish a new explanatory terminology vocabulary from the sphere of geomatics and geoinformatics.

**Project 8.1: The definition of the sets of standards for the geodata transfer.** The suggested gestion: CAGI, COSMC together with Czech Standards Institute, Min. of Defence, Office for Public Information Systems, possibly with the other central bodies.

**Project 8.2: The preparation of further transfer formats on the background of the defined sets of transfer standards.** The suggested gestion: according to the suggested relevance.

**Project 8.3: The release of the explanatory terminology vocabulary from the sphere of geomatics and geoinformatics.** The suggested gestion: CAGI, Czech Standards Institute, COSMC.

## **9 Qualification of professionals in the field of geomatics and geoinformatics**

**State:** All of the educational institutions are exposed to a growing pressure for innovation of their teaching programmes due to a huge development of technologies and methods for collection, processing and distribution of geodata and geoinformation. The universities, the level of which plays a key role in the qualification of future professionals, have been introducing new study subjects dealing with the field of geomatics and geoinformatics in the last few years. Also in the connected traditional branches we can trace a shift to new disciplines supporting a qualified exploitation of geodata potential and appropriate technologies. It is necessary to ensure a technological background for the innovation of study programmes and to facilitate the conditions for employment of new teachers - professionals as lecturers of modern lessons. The possibilities for cooperation with the universities in other countries are increasing (for both students and teachers). The international programmes of distant learning and the continuing development of the European standard for professional competence in the field of GI may become the presumption for increase of the professional quality level according to European and international trends. It is necessary to support the continuing professional development in geoinformatics and geomatics, to introduce distant

forms of learning and to offer postgraduate training courses. These forms of education may appropriately reflect the interdisciplinary features of GI issues and meet the increasing demands of GI industry.

**Aims:** To support the increase of the professional level of the education in GI field according to fast technology development and to changing demands of professional practice together with relationship to international and global trends.

**Measure 9.1: To work out the recommendations for innovation of university study programmes in geomatics and geoinformatics with the consideration of the interdisciplinary features of these branches.** The suggested gestion: CAGI together with universities.

## **10 Skills of users from wide public for the exploitation of new possibilities and access to geodata and geoinformation**

**State:** With respect to the development of technologies, the range of tools for interdisciplinary access to all the processes connected with geodata and geoinformation is getting wider. Nevertheless, all these new possibilities have not been effectively utilised so far due to the lack of professionals who are able to formulate the application problem, to propose the technical solution and to manage its introduction into practice. The work with geodata and geoinformation is not an isolated activity of particular experts but it requires teamwork (maybe with the exception of gathering initial data). For practical use of geodata and geoinformation, the specialists should be aware of all the requirements, needs and limits of existing as well as potential users. On the other hand it is necessary to improve the general knowledge of public users about the possibilities and tools available in the GI sector.

The activities addressing the popularisation of GI have found a favourable response. The aim of these promotion activities is to strengthen interdisciplinary cooperation and encourage practical use of geoinformation (the competition "GEOaplication of the year", the education programme in GI for the employees in public administration; and the international interdisciplinary education project for basic and secondary schools GLOBE – Global Learning and Observation to Benefit the Environment). The success of these activities is nowadays mostly dependent on voluntary aid and support of non-governmental non-profit organisations. This is partly due to the fact that it is rather difficult to link these interdisciplinary activities and programmes to a particular governmental institution with responsibilities strictly defined by law.

**Aims:** To initiate and support the improvement of necessary skills of general public users for exploitation of new possibilities and access of geodata and geoinformation. To implement a different approach to address the following groups of users:

- (i) the potential professional users, e.g. from public administration, spatial planning and spatial development in general, traffic management - by promotion of activities and events, educational programmes for continuing development;
- (ii) the youth in schools – the education of teachers and the school projects for pupils and students;

(iii) the general public – popular publications, TV programmes video-programmes for schools etc.

**Project 10.1: The education programme of the public administration employees for the work with geoinformation.** The suggested gestion: CAGI together with Min. of Interior.

**Project 10.2: The project GLOBE on basic and secondary schools in the Czech Republic.** The suggested gestion: the association TEREZA together with CAGI, Min. of Education, Min. of Environment.

**Project 10.3: The instructive-educational programmes and other ways of promotion the importance of GI use.** The suggested gestion: CAGI together with the association TEREZA, Min. of Environment, Min. of Education.