INSPIRE
Infrastructure for Spatial Information in Europe

Member State Report: Slovak republic, 2013

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1   INSPIRE Reporting – Overview of requirements

There are five topics addressed in the Reporting chapter of the IR:

1.   Organisation, co-ordination and quality assurance

   The first part of this section is concerned with the way in which the contact point and co-ordinating structure for the infrastructure for spatial information are organised – the body responsible, its associated co-ordinating structure and some information about how this works. The second part offers the MS the opportunity to report on quality assurance processes within the infrastructure for spatial information (as required by Art 21 of the Directive).

2.   Contribution to the functioning and coordination of the infrastructure

   The second section asks for information about the stakeholders involved in the infrastructure for spatial information – including a description of their roles, how they co-operate, how they share data/services and how access is made to services via the INSPIRE geo-portal.

3.   Usage of the infrastructure for spatial information

   Having some or all of the various components of the infrastructure for spatial information in place is important, but equally important is if, or how much, the infrastructure is being used. This part of the report is intended to give MS the opportunity to comment and explain the results of the indicators on the usage of the different services, and to describe how spatial data and services are being used by public bodies and if possible (because it is recognised that this is difficult to observe) how they are being used by members of the general public. Because of the environmental emphasis of the Directive MS are particularly encouraged to find and describe examples of use within the field of environmental policy. The report should also describe examples of cross-border usage, efforts to improve cross-border consistency and examples of the use of transformation services.

4.   Data sharing arrangements

   Chapter 5 of the INSPIRE Directive is concerned with data sharing. It has not been possible to derive adequate indicators to monitor data sharing – the subject does not lend itself to quantitative methods in a way that would provide meaningful output. It is a major part of the Directive however and so this Chapter is dealt with, in terms of monitoring and reporting, by asking MS to describe data sharing arrangements in their 3 yearly reports. MS are required to provide an "*overview*" of data sharing arrangements i.e. not all such agreements have to be listed and described (which would be very difficult and extremely onerous) – but MS are encouraged to provide sufficient description to enable readers to understand the main type or types of agreement that are used – both for sharing of data between public bodies in the MS and between those public bodies and the institutions of the EU. An important section also required is a description of known barriers that may be inhibiting the sharing of spatial data and services, and what steps the MS are taking to overcome those barriers.

5.   Cost and benefit aspects

   Finally, the Directive requires MS to quantify the costs and benefits involved in the establishment and maintenance of the infrastructure for spatial information *that are directly attributable to the implementation of the Directive*. The report should attempt to estimate the costs and to provide examples of benefits as described in the IR. As with other aspects of the report MS are responsible for deciding the depth/level of reporting that they find appropriate to satisfy the IR and to provide a suitable level of information for stakeholders.

2   How to use this template

This template provides a structure Member States can use to collect and transmit the reporting information to the EC.

This template mainly reflects the list of elements required by the Commission Decision 2009/442/EC on monitoring and reporting. These are the mandatory elements. For every chapter the relevant article of the implementing rules on monitoring and reporting will be reported.

Also some optional features, not strictly required by the relevant legislation, are included. These features can either contain a suggestion on what elements can be grouped under a certain topic foreseen by the legislation or they can contain additional elements that enhance the readability of the document. These features are optional.

You have full rights to deliver this report in your own language, we will then translate it internally. Of course if the report will be already in English, or accompanied by its English translation, that will be welcome.

Disclaimer: This document will be publicly available as a 'non-paper', as it does not represent an official position of the Commission, and as such can not be invoked in the context of legal procedures.

3 Executive summary

Overall summary

When making an overall evaluation of the state of building and the subsequent operation of the National Spatial Information Infrastructure (NIPI) in the Slovak Republic it can be stated, three years after the adoption of national legislation transposing the INSPIRE Directive and implementation of the last INSPIRE Reporting, that the process of meeting the individual legislative requirements and technical recommendations has been initiated, while the individual targets defined by means of the INSPIRE Roadmap are being gradually achieved, taking account of certain national particularities. On the basis of development to date and respecting the identified recommendations and any potential risk factors, fulfilment of the specified targets and expectations can be anticipated in the form of an existing and functioning NIPI.

Legislative and organisational definition

The INSPIRE Directive is transposed into the Slovak legal code by special Act No 3/2010 on the national infrastructure for spatial information (NIPI Act), which came into force on 1.2.2010. In addition to the NIPI Act, Order No 352/2011 on the national infrastructure for spatial information was also adopted (NIPI Order), which implements certain provisions of the NIPI Act. The Ministry of Environment of the Slovak Republic (Environment Ministry), as the central body of national administration, was charged with sponsoring the transposition and implementation of the National Spatial Information Infrastructure (NIPI) in the Slovak Republic within the meaning of the INSPIRE Directive.

Implementation of coordination and raising awareness about INSPIRE

For securing and coordination of NIPI implementation and subsequent operation process a framework of coordination mechanisms was set up at the instigation of the Environment Ministry (NIPI Coordination Council (KR NIPI), NIPI Expert Group (ES NIPI). The organisation of specialised activities (workshops and conferences) aided the reciprocal exchange of relevant information at both international and national level. These mechanisms likewise facilitate the identification of areas requiring discussion and adoption of relevant measures to secure the associated legislative requirements and technological recommendations.

Involvement of stakeholders

Even though the overall involvement of stakeholders in the NIPI creation process and operation is still limited, the most important subjects, chiefly obligatory subjects, are represented, while there is an upward trend in the gradual identification of other stakeholders. This concerns particularly creators and providers of spatial data, services and their metadata. Information on processors, users of NIPI content and subjects creating added value in the form of new data, services and applications is available in limited form.

Usage of the NIPI

A prototype of the Geoportal was made available from 2010 to support implementation of the NIPI Act providing basic functions of search, display and validation of INSPIRE metadata and services. Simultaneously, during the last three years certain services and a web portal solution were made available and updated, providing various applications at the level of public administration, self-government and the private, tertiary and academic sector. However, the total volume of accessible data continues to be limited.

Sharing agreements

The issue of agreements defining conditions of sharing digital spatial content between stakeholders both at national level and vis-à-vis European Community institutions is an area requiring more attention and support. In practice a situation remains where the framework of contractual agreements is set up on an individual basis, reflecting ad hoc requirements with limited options for systemic coordination in greater scope. Currently, preparation of implementation proposals for a framework agreement for access by Community institutions and bodies, including obligatory subjects, to spatial information sets and services under harmonised conditions is underway.

Cost and benefit aspects

The identification of costs associated with the NIPI creation and operation is an area with limited information. In general, it can be stated that obligatory subjects are trying to secure the legislative requirements with very limited financial resources, often allocated for other purposes as well; therefore, it will be necessary to devote appropriate attention to this issue and assign it the relevant importance. In the case of identification of benefits, there is even less information available, since in

most cases stakeholders are unable to provide specific evidence of benefits in relation to the state of NIPI implementation, whether in quantitative or qualitative form.

4 Abbreviations and Acronyms

ES NIPI	NIPI Expert Group
ETRS89	The European Terrestrial Reference System
EU	European Union
GNSS	Global navigation satellite system
IC	INSPIRE Committee
ICPDR	The International Commission for the Protection of the Danube River
INSPIRE	Infrastructure for Spatial Information in the European Community
INSPIRE Directive	Directive 2007/2/EC
IOC TF	Initial Operational Capacity Task Force
IPI	Spatial information infrastructure
ISO/TC 211	International Organization for Standardization/Technical Committee 211
KR NIPI	NIPI Coordinating Council
MS	Member State
MO SR	Ministry of Defence of the Slovak Republic
MSCP	Member State Contact Point
MZ SR	Ministry of Health of the Slovak Republic
MŽP SR	Ministry of Environment of the Slovak Republic
NIPI	National spatial information infrastructure
NLC	National Forestry Centre
NCP	National Contact Point
KR NIPI	NIPI Coordinating Council
PÚ SR	Slovak Monument Authority
RA	Register of addresses
RPI	Spatial Information Register
RPSI	INSPIRE Departmental Working Group (Environment Ministry)
SAGI	Slovak Geo-information Association
SAŽP	Slovak Environmental Agency
SDI	Spatial Data Infrastructure
SSC	Slovak Roads Administration
SKPOS	Slovak Spatial Observation Service
ŠGÚDŠ	Dionýz Štúr National Geological Institute
ÚGKK SR	Slovak Geodesy, Cartography and Cadastre Authority
ÚVZ SR	Slovak Public Health Authority
VÚPOP	Soil Science and Protection Research Institute
VÚVH	Water Management Research Institute
WFD	Water Framework Directive

5 Introduction

- **Background**

The creation and use of information of a spatial character has a long tradition in Slovakia, while its exchange and potential for creating added value reflect developments in the area of legislation, geoinformation technologies and the requirements of actual practice. The concept of harmonised rules for exchange of spatial information was already know in Slovakia at the end of the 20th century, when the requirement, particularly in the area of land planning, for access to uniform reference and thematic map documentation providing input for planning processes from national to local level was identified. Significant areas with similar requirements included the geodesy and cartography sector and components of national security and defence. With the arrival of the INSPIRE initiative there was a significant shift of harmonisation activities in the area of spatial information exchange in Slovakia as well. A key momentum were the basic INSPIRE principles, which defined rules for access to and sharing of digital spatial information and services for the objectives of Community environmental policy and policy or activities having an environmental impact by means of the concept of spatial information infrastructure (IPI). Their use is closely related to fulfilment of tasks in the public interest at Community level and the public sector level of European Union Member States. INSPIRE details 5 areas (components), of which the first three are predominantly technological and material in character:

- Metadata providing a description of spatial data and services.
- Data specifications defining the structure of spatial data and requirements for their quality and display.
- Network services allowing search functions in spatial data, their display, storage of their copies, transformation for achieving interoperability and starting up spatial data services.

Other components are devoted to the issue of:

- Sharing and access for Community bodies and institution of the Member States on NIPI content by means of harmonised conditions.
- Monitoring and reporting facilitating monitoring of development in NIPI introduction and implementation, as well as assessment of aspects concerning associated costs and benefits.

Implementation of individual NIPI implementation should occur at all levels, with elimination of additional costs and investments, which, under current conditions, entails considerable challenges from the local level up to the national level. Despite this, implementation of INSPIRE in connection with other associated international and national activities represents a unique opportunity to increase the scope, quality and potential of utilising digital spatial information on a national scale.

- **Method used to compile the report**

A basic information source for preparation of reporting was information acquired by means of a questionnaire accessible from the INSPIRE@SK website [1]. Information on the accessibility of the questionnaire was also distributed to stakeholders through KR NIPI representatives. The content of a questionnaire partially reflected the structure of the report template, above all in areas requiring the feedback of stakeholders. Apart from the information stated, the report also included or took account of information from INSPIRE monitoring,[2] INSPIRE State of play reports[3], resources published by the websites of the institutions of stakeholders, as well as projects and initiatives devoted to the issue in question. The assessment of input information and its subsequent transformation into the draft report was accomplished through the capacities of the INSPIRE National Contact Point represented by the Slovak Environment Agency (SAŽP). The draft was published for review on the INSPIRE@SK website.[4] before final sending to the European Commission.

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[1] http://inspire.enviroportal.sk/clanky/inspire-monitoring-a-reporting-2013
[2] http://inspire.jrc.ec.europa.eu/index.cfm/pageid/182
[3] http://inspire.jrc.ec.europa.eu/index.cfm/pageid/6/list/4
[4] http://inspire.enviroportal.sk/clanky/pripomienkovanie-navrhu-sk-inspire-reportu-2013

6   Co-ordination and quality assurance (Art. 12)

6.1   Coordination (Art. 12.1.)

6.1.1   Member State contact point

Art. 12.1. (a) the name, contact information, role and responsibilities of the Member State contact point;

Name and contact information

Member State Contact Point	
Name of the public authority	Slovenská agentúra životného prostredia (Slovak Environment Agency - SAŽP)
Contact information:	
Mailing address	Tajovského 28, Banská Bystrica
Telephone number	+421 48 4374 133
Telefax number	+421 48 4133 635
Email address	marek.ziacik@sazp.sk
Organisation's website URL	www.sazp.sk
Contact person (if available)	Ing. Marek Žiačik
Telephone number	+421 48 4374 133
Email address	martin.tuchyňa@sazp.sk
Contact person - substitute (if available)	Ing. Martin Tuchyňa, PhD.
Telephone number	+421 48 4374 138
Email address	martin.tuchyna@sazp.sk

Role and responsibilities

The task of sponsorship of the INSPIRE Directive[5] in the Slovak Republic was delegated by Slovak Government Resolution No 745 of 3.10.2007 to the Ministry of Environment of the Slovak Republic (Environment Ministry). Transposition was accomplished by the NIPI Act[6], which came into force on 1.2.2010. The executive professional organisation performing the National Contact Point (NCP) function for the Environment Ministry is the Slovak Environment Agency.

The Slovak Environmental Agency (SAŽP) is an executive, professional organisation of the Environment Ministry with national sphere of activity focused on care for the environment and landscape formation in accordance with sustainable development. The SAŽP was established by a decision of the Slovak Environment Minister of 17 May 1993.

The SAŽP is involved in the process of implementing the INSPIRE Directive based on a mandate of the Environment Ministry and also performs other tasks through authorised subjects:
- Member State Contact Point
- INSPIRE Committee Member
- IOC Task Force Member

In addition to these tasks, the SAŽP provides support for the technical and content implementation of the INSPIRE Directive at the departmental level of the Environment Ministry and actively creates solutions applicable also to the national level.

6.1.2   The coordination structure

Art. 12.1.

(b) the name, contact information, role and responsibilities, organisation chart of the coordinating structure supporting the contact point of the Member State

(c) a description of the relationship with third parties;

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[5] http://skr.sk/abL
[6] http://inspire.enviroportal.sk/transpozcia/zakon-o-nipi

(d) an overview of the working practices and procedures of the coordinating body;
(e) comments on the monitoring and reporting process.

Name and contact information

Coordinating structure supporting the MSCP	
Name of the coordination structure	Koordinačná rada NIPI (NIPI Coordinating Council)
Contact information:	Ministerstvo životného prostredia SR
Mailing address	Nám. Ľ.Štúra 1, 812 35 Bratislava
Telephone number	
Telefax number	
Email address	
Organisation's website URL	www.enviro.gov.sk
Contact person (if available)	Ing. Ondrej Kliment
Telephone number	+421 02 5956 2454
Email address	ondrej.kliment@enviro.gov.sk
Contact person - substitute (if available)	Mgr. Miroslava Takács Snopková
Telephone number	+421 02 5956 2374
Email address	miroslava.takacs_snopkova@enviro.gov.sk
Date and period of mandate	

Role and responsibilities

The coordinating body for building infrastructure is the KR NIPI, composed of representatives of individual central bodies of national administration and self-government, pursuant to the NIPI Act. The KR NIPI is established by decision of the Environment Minister. Its main task is coordination of the activity of obligatory subjects in the application of the NIPI Act. Members are appointed and recalled by the Environment Minister.

Representation on the KR NIPI:

Representation	Function on the KR NIPI
Slovak Ministry of the Environment	KR NIPI Chairperson
Slovak Environmental Agency	KR NIPI Deputy Chairperson
Slovak Environmental Agency	KR NIPI Secretary
Slovak Ministry of Interior	KR NIPI Member
Slovak Ministry of Finance	KR NIPI Member
Slovak Ministry of Agriculture and Rural Development	KR NIPI Member
Slovak Ministry of Defence	KR NIPI Member
Slovak Ministry of Culture	KR NIPI Member
Slovak Ministry of Economic Affairs	KR NIPI Member
Slovak Ministry of Health	KR NIPI Member
Slovak Ministry of Transport, Construction and Regional Development	KR NIPI Member
Slovak Minister of Education, Science, Research and Sport	KR NIPI Member
Slovak Statistics Office	KR NIPI Member
Slovak Geodesy, Cartography and Cadastre Authority	KR NIPI Member

Slovak Association of Towns and Municipalities	KR NIPI Member

Organisation chart

Implementation of the coordination process consists of a set of communication and organisational instruments ensuring the exchange of information from the EU to national and lower levels and vice versa.
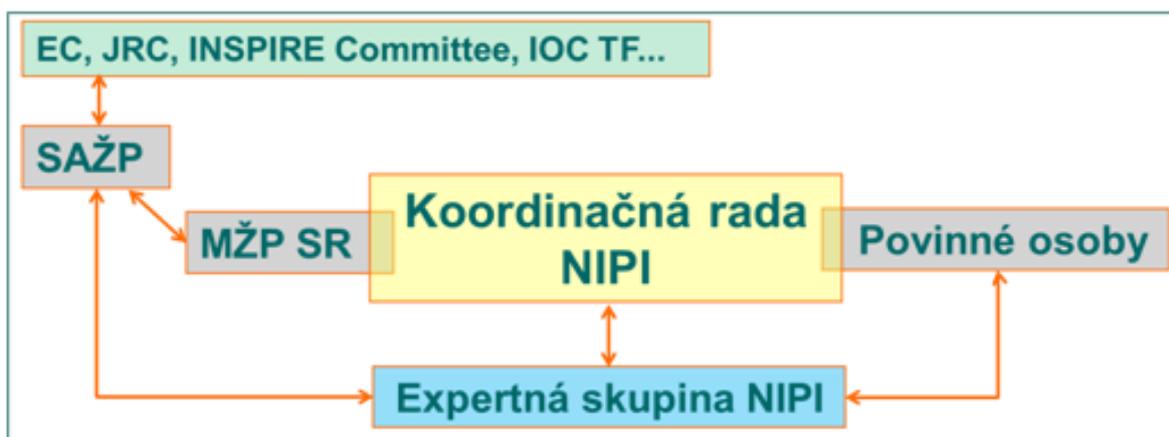
Figure 1. Organisational scheme of the NIPI coordination mechanism in Slovakia

Key to chart:
SAŽP   *Slovak Environment Agency*
MŽP SR   *Slovak Environment Ministry*
Koordinačná rada NIPI   *NIPI Coordinating Council*
Povinné osoby   *Obligatory subjects*
Expertná skupina NIPI   *NIPI Expert Group*

Relation with third parties

In accordance with the NIPI Act a third party is any subject other than an obligatory subject. Representatives of third parties are subjects performing the creation, administration, update or provision of spatial information and services in the name of obligatory subjects in accordance with the mandate or creating and providing digital spatial content falling under any of themes defined in the annexes to the Act. The relationship with third parties is arranged by the NIPI Act. Where required, third party representatives are invited to sessions of the KR NIPI or ES NIPI.

Overview of working practices and procedures

The working procedures and procedural code of the NIPI Coordination Council are part of the Decision on its establishment, which is approved by the Environment Minister. KR NIPI activities are documented by minutes of meetings, accessible through the website INSPIRE@SK.
In addition to KR NIPI activities there are other coordination bodies and communication platforms directly or indirectly affected the NIPI creation and operation process.

- ES NIPI
- INSPIRE Departmental Working Group (Environment Ministry) (RPSI)
- Commission for the standardisation of public administration information systems and associated working groups[7]
- Web INSPIRE@SK

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[7] http://www.informatizacia.sk/komisia-pre-standardizaciu-isvs/615s

6.1.3 Comments on the monitoring and reporting process

The process of monitoring and reporting information for this report took place in the Slovak Republic by means of communication with central bodies of national administration, professional organisations set up by them and the chief representatives of self-government. An on-line reporting tool developed by the Slovak Environment Agency was used for collecting information. This report is the second report on the INSPIRE Directive transposition and implementation process in Slovakia.

The Report's approval process is set out in the document on the Proposed procedure for securing fulfilment of reporting obligations resulting from membership of the Slovak Republic in the European Union, approved by the working meeting of the Environment Ministry of 9.9.2004. In the case where the report is used as information from the Member State on transposition of the relevant EU regulation into the national legal code (Part 2.1 (a)) and information (report) on the implementation of measures, the state of individual areas according to the specified indicators, etc. (re-assessment) [Part 2.1 (c)], the draft report is approved through signature of the approval form by the director general of the materially relevant section of the Environment Ministry. According to this document the monitoring report and reporting report will be submitted to the relevant director general of the section and, after signing, sent according to the requirements stipulated by the European Commission.

6.2 Quality Assurance (Art. 12.2.)

Currently quality assurance is defined at national level by the existing legislative framework for individual NIPI components. Achievement of the required quality of administered data sets and services is secured at the level of activities of individual organisations contributing to infrastructure. Information on the quality of data and services is available by means of metadata. The Validator[8] available through the Geoportal for supporting implementation of the NIPI Act can be used for testing metadata, search and display functions. The Slovak Geodesy, Cartography and Cadastre Authority (ÚGKK SR) made a tool for creation and validation of metadata according to INSPIRE and its own profile by means of the Metadata Editor[9] available on the departmental Geoportal. Even though requirements for achieving minimum quality are among important aspects, the priority NIPI implementation process continues to be the endeavour to make the widest spectrum of spatial data and services available, since their scope and availability at national level remains considerably limited. Despite this, it will necessary to pay the issue of quality assurance appropriate attention, above all, in terms of recommendations and identification of associated benefits.

6.2.1 Quality assurance procedures

Art. 12.2. (a) a description of quality assurance procedures, including the maintenance of the infrastructure for spatial information

Quality assurance procedures are implemented in Slovakia by individual subjects at different levels and in different ways:

- The actual monitoring and reporting process is provided by a legislatively defined tool allowing a description and subsequent assessment of the qualitative aspects of NIPI creation and operation.
- A significant contribution to increasing the quality of processes associated with implementation of individual NIPI components is the application of standards on the basis of the geoinformation standards (ISO/TC 211 series of 191xx standards, OGC standards, CEN / TC 287, standards at national level).
- Important NIPI quality aspects include also the precision of the georeferencing of spatial data in national and European geodetic systems. Within this context it is necessary to take steps focused on implementation of binding coordinate systems with a focus on improving the positional precision of individual spatial data sets. The quality of geometry and localisation of newly gathered spatial data is ensured by the ÚGKK SR using the SKPOS localisation service[10] (real-time GNSS positioning service) directly in the ETRS89 system. Precise and current spatial data from one source covering the whole republic should be secured for the NIPI, which should be provided by the national mapping and cadastral institution. Use of these reference data should ensure the consistency of NIPI data within the meaning of Section 5 (3) of Act No 3/2019 on the NIPI.

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[8] http://geoportal.sazp.sk/web/guest/validate/metadata
[9] http://www.geoportal.sk/sk/sluzby/metaudajovy-editor/
[10] http://www.geoportal.sk/sk/skpos-2.html

- Other measures include ensuring the currency and regular maintenance of data for creating new data sets and services, for creation and cataloguing metadata and their standardisation.
- Processes focused on increasing quality at the internal level of individual stakeholders (e.g. ISO Quality Management Systems, Environmental Management System and similar).[11].
- In the case of the National Forestry Centre the quality of most spatial data depends on the quality of mapping for forestry care programmes (former forest management plans), which are mapped to the 5th class of accuracy. Annually 1/10 of the area of Slovak forested land is updated. Maintenance of spatial data sets is more or less controlled by requirements for the forest management information system. Some data sets are examined at the level of topology of objects and the quality of the attributive component, while several are used for visualisation or cartographic output only.
- There is no specific software available at the VÚVH for automatic data quality control. Despite this, staff responsible for the creation and update of individual data sets check their quality with internal capacities. Existing software and hardware equipment is upgraded accorded to currently available financial resources and the overall economic situation.
- In the case of ŠGÚDŠ all data are JTSK. The quality of spatial data is ensured by consistency, coverage throughout Slovakia and the purity of topology.

These measures were implemented in the scope of the activities of individual organisations according to their current professional demands and requirements.

6.2.2 Analysis of quality assurance problems

Art. 12.2. (b) an analysis of quality assurance problems related to the development of the infrastructure for spatial information, taking into account the general and specific indicators

The most significant problems associated with ensuring the required quality include the low level of awareness of associated requirements and recommendations for individual INSPIRE technological components (metadata, spatial data, services) , the capacity limitations of individual obligatory subjects. When building their own infrastructure most organisations continue to use procedures and rules reflecting their requirements and those of their partners. In the vast majority of cases INSPIRE data and services, including metadata, are created in parallel with existing data structures and full transformation of existing structures and procedures to a form respecting INSPIRE requirements only occurs to a limited extent. Other identified problems associated with securing the required quality include:

- Various processors of thematic data use reference localisation data from various sources and of varied quality.
- Reference data are not provided in sufficient scope by online services.
- Quality control according to ISO 19113 and 19114 standards.
- Direct collection of updated data from the cadastre by the care of national monuments information system.
- Lack of financial and manpower resources.
- Securing of correct topology and the attributive component usable for more advanced analysis particularly for processing forest track and watercourse layers.
- In view of the financial situation the VÚVH does not currently have sufficient staffing capacity or automated software for quality control. Data quality is secured by individual workers, who process data sets personally. Quality assurance is not organised sufficiently at central level. Relationships between providers of spatial data sets or spatial data services or even third parties are not sorted out.
- Data collection occurred at ŠGÚDŠ over a long time period when changes in procedures and technology were already occurring during collection. Quality control within the meaning of the ISO 19113 and 19114 standards is not performed neither is regular updating.

6.2.3 Measures taken to improve the quality assurance

Art. 12.2. (c) a description of the measures taken to improve the quality assurance of the infrastructure

Measures implemented to improve the quality assurance of individual NIPI components include:

Organisational

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[11] http://www.sazp.sk/public/index/go.php?id=1034

- Securing coordination and methodological guidance of infrastructure building by means of KR NIPI activities.
- Organisation of sessions and specialised workshops of the NIPI Expert Group.
- Participation at meetings and in activities organised by the European Commission on the issue of the quality of spatial data and services and publication of relevant information (IOC TF, INSPIRE Annex I, II and III testing and consultation on legislative and technological documents).
- Control of application of the NIPI Act through the Slovak Environmental Inspectorate.
- The Slovak Ministry of Culture prepared a framework project for creation of GIS for the culture department.
- The RPSI was set up at the Environment Ministry. Its members are VÚVH employees and its main objective is to ensure implementation of the INSPIRE Directive in Slovakia. It is informed every year in the scope of planning tasks of the lack of coordination and lack of investment into building infrastructure.
- Ensuring the regular updating of data.

Technological
- Starting operation of the Validator available through the Geoportal for supporting NIPI Act implementation.
- Compliance with international standards for metadata, spatial data files and sets, network services and spatial data services.
- Use of new technologies allowing fulfilment of qualitative requirements (Cashing).
- Regular updating of software and hardware, testing services.
- Creation of new and transformation of existing data, services and pertinent metadata.
- Use of unified transformation parameters for transformation from national to international systems.
- Updating of reference data in an appropriate cycle.
- Representation of Slovakia in the scope of activities focused on testing and consulting INSPIRE data specifications[12]
- Participation of scientific research activities focused on improving the quality of INSPIRE data, service and metadata content and functionality (Geonet.Sk[13], Agile Persistent SDI Test Bed[14])

6.2.4 Quality certification mechanisms

Art. 12.2. (d) where a certification mechanism has been established, a description of that mechanism

To the current period a definition of the framework defining the function and competence of the unified certification mechanism for ensuring the quality of spatial data and services has not occurred in Slovakia. Individual obligatory subjects have implemented measures to ensure quality with their own mechanisms on the basis of ISO 9001 standards or through their own quality control systems.

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[12] http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2/list/an23
[13] http://www.geonet.sk/
[14] http://sdi-testbed.eu/

7 Functioning and coordination of the infrastructure (Art.13)

7.1 General overview description of the SDI

- Vision / policy / strategy (where applicable, reference could be given to existing documents, as well as a short summary within the report)

The main objective of building infrastructure is creation of conditions for harmonised formation, maintenance and effective, unified use of spatial data and services. Their accessibility at national level (with regard to the regional and local level) and connection to European infrastructure provides basic preconditions for use of NIPI for spatial localisation, visualisation, support for decision-making processes and not least generates potential to create added value in the form of the creation of new spatial data, services and applications.

Apart from the basic legislative framework (NIPI Act and NIPI Order), amendment or initiation of amendment of other related legislative documents has also occurred in the reporting period (e.g. Act No 215/1995 on geodesy and cartography[15], Act No 50/1976 on land planning and the building code, as amended (the Building Act))[16]. An important component of harmonisation activities at national level was also the endeavour to link the NIPI issue to eGovernment activities, in the scope of which the concept of the Spatial Information Register (RPI) and Register of Addresses (RA) as two basic registers at national level was proposed through the National Conception of Public Administration Informatisation.[17] The Spatial Information Register should contain a uniform and data consistent source of the spatial data of obligatory subjects, forming a component of the spatial information infrastructure defined by the INSPIRE Directive. The Central Register of Addresses will provide addresses according to a defined standard harmonising individual components of an address provided by several subjects. While the RA is currently already in the implementation phase, in the case of the RPI the Feasibility Study has not been finalised and preparation of a call for a national project for submission of an application for a non-repayable financial contribution has not occurred.

Despite the abovementioned activities many strategic documents, whether at national, departmental or lower level, indicate a requirement for their updating, above all, in connection with changes in the area of legislation, standards, technological development and user requirements.

As was stated in the overall summary, the current NIPI is in the stage of gradual implementation, respecting the individual phases proposed by the INSPIRE Roadmap[18]. The most distinct section of specific outputs is notable chiefly at national level by means of domain-oriented infrastructures. These infrastructures are operated most frequently at departmental levels through subordinate institutions or third parties. Implementations at regional and local level are also gradually taking place, but their number continues to be limited and many solutions often fail to consider the requirements of the standards by means of which they could contribute to the NIPI and simultaneously use its potential.

7.2 INSPIRE Stakeholders

Art. 13 (a) an overview of the various stakeholders contributing to the implementation of the infrastructure for spatial information according to the following typology: users, data producers, service providers, coordinating bodies. Stakeholders contributing to the implementation of the SDI could be classified according to the following typology: users, data producers, service providers, coordinating bodies)

The community of subjects affected by spatial data infrastructure in Slovakia is marked by its specific scope and partial heterogeneity, but also gradual expansion to include new subjects in connection with increasing awareness and the rising demand for geospatial information. The most frequently represented group are representatives of obligatory subjects defined by the NIPI Act as subjects who are obliged to take part in the process of creating and operating national spatial information infrastructure and who are required to gather, store, provide and disseminate its components individually. Other stakeholders are representatives of public administration, self-government and the private, tertiary and academic sector, including the professional and general public.

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[15] http://www.zakonypreludi.sk/zz/1995-215
[16] http://www.zakonypreludi.sk/zz/1976-50
[17] http://www.informatizacia.sk/narodna-koncepcia-informatizacie-verejnej-spravy
[18] http://inspire.jrc.ec.europa.eu/index.cfm/pageid/44

Coordination authorities:
The chief coordination authority of the INSPIRE issue at national level is the Environment Ministry and KR NIPI, which acts through its members at the level of individual departments such as the ES NIPI, which provides room for exchanging information, a discussion platform, professional advice and expertise for resolving specific technical matters. The Environment Ministry delegates part of these activities to the SAŽP as its professional organisation.

Data producers:
Spatial data, services and appurtenant metadata are created in Slovakia by different organisations and subjects – obligatory subjects. The identification and approval of the list of obligatory subjects continues to be one of the tasks of the NIPI Coordination Council. The keeping and updating of this list will be within the Environment Ministry's competence. Most spatial data defined in the annexes to the NIPI Act are created according to the competence of individual departments by means of either directly subordinate organisations or through third parties. Part of the data is created in the private or tertiary sector. There are, however, other areas whose sponsorship remains open (e.g. energy sources or some parts defined by the theme of Production and industrial equipment).

Service providers:
Their function is to provide space and options for publishing and sharing data and services in the scope of infrastructure. In most cases they are subjects creating data, but there are also examples of institutions providing hosting and publication services for data producers without the capacity and technology for providing data by means of services or these activities are not among their supporting/priority tasks.

Users:
In the broadest sense of the word an infrastructure user is anyone with the resources for its use. Very often this category includes subjects from the preceding groups, but most subjects represent digital spatial content consumers, while in some cases, aside from "passive" use of this content, there is also "active" creation of new information of added value, whether through new information (Creation of Regional Territorial Systems of Economic Stability[19]), or services used in information systems (Environmental Burden Information System[20]) or in the form of specialised applications[21].

7.3 Role of the various stakeholders

Art. 13 (b) a description of the role of the various stakeholders in the development and maintenance of the infrastructure for spatial information, including their role in the coordination of tasks, in the provision of data and metadata, and in the management, development and hosting of services

Coordination organisations:
Their role is to direct the building of infrastructure in terms of coordination and methodology. The activity in individual coordination structures is based on the identification of themes requiring discussion, the distribution of any identified tasks to relevant subjects, cooperation in their fulfilment, assessment of results, submission of possible solutions, consolidation of opinions and positions while seeking scope for achieving consensus allowing fulfilment of the NIPI objectives and visions.

Data producers:
Their role is the creation, updating and processing of sets of spatial data and relevant metadata for individual areas, the creation of services, possibly application or geoportal solutions, sharing of data by means of agreements and their use in the area of the environment and policy or activities that could have an environmental impact.

Service providers:
In the scope of their activities they offer other involved organisations space and solutions for transformation, sharing of data and services in the scope of specialised applications, geoportal solutions, metadata catalogues or other services.

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[19] http://www.enviroportal.sk/agendy/ochrana-prirody/dokumenty-uzemneho-systemu-ekologickej-stability
[20] http://envirozataze.enviroportal.sk/PriestoroveUdaje.aspx
[21] http://geo.enviroportal.sk/aplikacie

Users:
The main function and expectation of users is to use the potential which the spatial information infrastructure brings and to confirm its justification and purpose by use of the available content and functionality. Direct indicators are and should continue to be specific cases of using spatial data and services in areas such as the creation, harmonisation and implementation of legislation, various areas of support for decision-making processes, crisis management, application practice, but also science and research. The broad group of users can to a certain extent also include subjects from the above categories, since use of spatial data is hard to define in detail in view of the extensive options for use. Despite this, in future, above all after the broader introduction of spatial data services and implementation of the remaining INSPIRE themes, activities should be initiated aiding more detailed monitoring of the user community, including its activities. This process could improve identification of specific NIPI benefits, provide more substantial feedback to creators and users of digital spatial content and raise awareness among existing, but also potentially new users on the value of such data and services, and possibilities of their further use.

7.4 Measures taken to facilitate sharing

Art. 13 (c) a general description of the main measures taken to facilitate the sharing of spatial data sets and services between public authorities and a description of how sharing has improved as a result

The Slovak Republic does not yet have at its disposal a single harmonised definition of access to data and services made available through the NIPI. The current situation is defined by the legislation in force and established procedures, business models and a case-by case approach to problem solving. Generally, the issue of access to and sharing of digital spatial content and functionality remains one of the most open areas, since the approaches and interpretations of the INSPIRE targets and visions in the existing legal and factual framework are quite varied. Measures focused on improving the options for sharing spatial data files and services can be thus categorised into several areas. Implementation of some has been initiated and for others implementation of associated activities will be required as soon as possible:

Measures at the planning level:
- Identification of the justification of the National IPI Development Plan.
- Updating the National Conception of Public Administration Informatisation.
- Updating of departmental Information System Development Plans.
- Integration of the planning level to the legislative and practical level.

Legislative measures:
- Assess the results of the revision process of the INSPIRE Directive during 2014.
- Identification of the need to amend the NIPI Act and Order.
- Cooperation and coordination in the creation and updating of associated legislation (e.g. the Act on geodesics and the Cadastre, Act on public administration information systems, Act on free access to information, Copyright Act etc.)
- Active participation in the creation and amendment of existing regulations and standards (e.g. Order on standards for public administration information systems).

Coordination measures:
- Implementation of KR NIPI activities – both in coordination and executive terms.
- Fulfilment of EX NIPI activities and, if required, component working groups.

Measures affecting access and sharing of spatial data and services
- Identification of the legislative framework and practical implementations usable in Slovakia.
- Proposed models of harmonised access and sharing in Slovakia
- Selection of the most suitable model(s) and subsequent practical implementation (if required, into legislation).

7.5 Stakeholder cooperation

Art.13 (d) a description of how stakeholders cooperate

This could for example include the description of:

- Written framework for cooperation
- Working groups (list of active working groups)
- News letters, other publications (references)
- Description of the National geoportal (including URL), and where relevant regional or thematic portals

- Written framework for cooperation
Forms of cooperation in areas related to spatial information infrastructure will take various forms. In general, these forms can be divided into several categories:
According to geographical scope:
- Local
- Regional
- National
- International

According to purpose:
- Public interest/objective
- Academic research and development
- Commercial potential

- Working groups (list of active working groups)
The establishment of joint working groups, forums and initiatives creates important space for initiating discussion for identification of areas requiring attention/solutions, searching for suitable options for implementation and mutually raising awareness and professional qualifications.
In this respect there is currently very limited scope in Slovakia, since, apart from the mentioned platforms – the KR and ES NIPI, there are only some groups or initiatives of similar orientation with varied levels and intensity of activity:
- Slovak Geo-information Association (SAGI)[22]
- Environment Ministry INSPIRE Departmental Working Group (RPSI)
- Working Group for Spatial Identification Standards (PS2)[23]
- Technical Commission no. 89 – Geodesy and Cartography[24]

- News letters, other publications (references)
- INSPIRE@SK[25]
- Geoinformatika.SK[26]
- Slovak Journal of Civil Engineering[27]

7.6 Access to services through the INSPIRE Geoportal

Art.13 (e) a description of the access to the services through the Inspire geo-portal, as referred to in Article 15(2) of Directive 2007/2/EC

The main access point to the NIPI for Slovakia through the INSPIRE Geoportal[28] is the search service of the Geoportal prototype:
- **http://geo.enviroportal.sk/catalog-server/CSWStartup?**
Most spatial data and services published for Slovakia, including their description by means of metadata, are available by means of the Metacatalogue of the Geoportal prototype:
- **http://geoportal.sazp.sk/web/guest/catalogue-client**

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[22] http://www.sagi.sk
[23] http://www.informatizacia.sk/ps2---priestorova-identifikacia/3181s
[24] http://medzdok.sutn.gov.sk/sutn/tnk/details.php?cislo_tnk=89
[25] http://inspire.enviroportal.sk/
[26] http://www.geoinformatika.sk/
[27] http://www.svf.stuba.sk/generate_page.php?page_id=2075
[28] http://inspire-geoportal.ec.europa.eu/

8 Usage of the infrastructure for spatial information (Art.14)

8.1 Use of spatial data services in the SDI

Art.14 (a) the use of the spatial data services of the infrastructure for spatial information, taking into account the general and specific indicators

This could include an explanation of how this information was collected, and how it should be interpreted/understood.

Use of spatial data services is limited by the fact that the relevant implementing regulations are currently in the preparation phase at EU level[29]. Currently network services are being implemented in Slovakia as a priority, while it will be important to intensively monitor their relationship to spatial data services and the potential benefits their legislative and technological definition brings into practice. A more detailed description of existing spatial data services (thus services not falling within the framework of INSPIRE network services) is a component of the list of data sets and services.

The state of implementation of INSPIRE network services is pursued by the process of their definition in the form of implementing regulations and guideline recommendations and their level of deployment is gradually increasing.
Services with the highest level of implementation include the display and search services. There are several pilot implementations of download and processing services[30], though they require harmonisation with INSPIRE specific requirements.
Several organisations share data by means of services, currently harmonisation with the INSPIRE requirements is underway.
In addition to the access points referred to in Chapter 7.6 stakeholders provide access to spatial data and services by means of their own access points in the form of client interfaces and service end points. From data acquired through reporting and published information, this concerns mainly search and display services. Organisations under the Environment Ministry with a high level of publication and use of network services include: the SAŽP[31], Dionýz Štúr National Geological Institute (ŠGÚDŠ)[32] (Annex 3). From data acquired from reporting and published information other subjects actively using the potential of services include the Slovak Geodesy, Cartography and Cadastre Authority and organisations within its sphere providing the services of search (e.g. the Search Service of the ÚGKK Geoportal[33]), display (ZBGIS Map Client[34]), or specialised applications (the Cadastral Portal[35]). The ÚGKK SR has also made a service for conversion of various data formats available by means of services of the departmental Geoportal[36]. Other examples of institutions and applications using the services are the Soil Science and Conservation Research Institute (the Soil Portal[37]), National Forestry Centre (National Forestry Centre Map Server[38]), or Slovak Monument Authority (PÚ SR), which is a beneficiary of project under the OPIS2 - National Project: Digitisation of the national monuments inventory. One of the techniques of digitising the inventory is geodesic survey. Data acquired by this technique are also surveyed with GNSS technology.
Another significant segment contributing to the creation and subsequent operation of the NIPI is the private sector which, chiefly through third parties in the form of subcontracts, secures a section of the activities within the competence of representatives of obligatory subjects.

Other identified possibilities of using the services of:
- the WMS base map

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[29] http://inspire.jrc.ec.europa.eu/index.cfm/pageid/761/list/2
[30] http://geo.sazp.sk/
[31] http://geo.enviroportal.sk/
[32] http://www.geology.sk/new/sk/sub/ms/uvod
[33] http://www.geoportal.sk/sk/sluzby/vyhladavacia-sluzba/
[34] http://www.geoportal.sk/sk/mapovy-klient-zbgis/
[35] http://www.katasterportal.sk/
[36] http://www.geoportal.sk/sk/sluzby/konverzna-sluzba/
[37] http://www.podnemapy.sk/
[38] http://lvu.nlcsk.org/uvod/

- the WMS geodetic bases
- Cadastral Portal services
- NLC services used relatively often by university students in forestry fields, in the scope of institutions such as the Forestry Geographical Information System[39] and Hunting Geographical Information System[40] applications. Statistics on the use of web applications are available. However, the application do not use INSPIRE-compatible services.
- At the current time the VÚVH uses a single solution, which is http://maps.geop.sazp.sk/web/ , operated by SAŽP, where publicly available information on managed data sets will be provided.

A more detailed description of the use of network services is part of the list of data sets and services.

8.2 Use of the spatial datasets

Art.14 (b) the use of spatial data sets corresponding to the themes listed in Annexes I, II and III to Directive 2007/2/EC by public authorities, with particular attention to examples in the field of environmental policy and/or policies and activities which may have an impact on the environment (air and emission policies, waste related policies, inland-coastal-marine policies, biodiversity related policies, horizontal policies such as public access to environmental information, environmental liability, environmental and strategic impact assessments,…) – 'greening' of the Common Agricultural Policy, energy and transport policies, security policies with an environmental dimension (for example maritime security).

Examples could cover the use made for:
    a) the implementation of measures and programmes as laid down in various elements of the EU environmental acquis;
    b) the monitoring of such measures, the monitoring of pressures, the state-of-the-environment, impact assessments.

Examples could demonstrate the added value of INSPIRE measures with regard to use of the spatial datasets for policies above. Examples could also provide a state-of-play of progress achieved and problems still outstanding. In this respect, examples could be provided of multi-purpose use of spatial data sets collected for a particular policy which may have an impact on the environment (for example Land-parcel Information / cross-compliance – LPIS related to agricultural subsidies contains real-world spatial data covered by INSPIRE – land-use/cover etc.)

In terms of using the INSPIRE harmonised spatial data sets there are currently few cases of their specific use in the structure defined by data specifications. This situation reflects the timeframe of the INSPIRE Roadmap, where, in the case of themes defined in Annex I to the NIPI Act, the spatial data sets have not been created or significantly restructured and likewise the number of applications and cases where the required data were in larger scope in the INSPIRE structure are very limited. A significant portion of data was thus created through specific projects (NatureSDI+[41], HlanData[42]) or voluntary international initiatives (INSPIRE Biodiversity MashUp[43]). Organisations from the Environment Ministry (Slovak Environment Agency, Slovak State Nature Conservancy, Dionýz Štúr National Geological Institute, Slovak Hydrometeorological Institute, Slovak Hydrometeorological Institute, Water Management Research Institute, Water Management Construction) have contributed to the greatest extent in the environment field, within the scope of the geospatial potential in structures established thus far, whether by means of services or direct sharing of data. The Slovak Environment Inspectorate plays an important role in the area of monitoring implementation of the NIPI Act. The mentioned institutions also include regional departments of specialised state environment administration. Important subjects from other departments and areas include the Slovak Geodesy, Cartography and Cadastre Authority, Geodesy and Cartography Institute, Geodesy and Cartography Research Institute, National Forestry Centre, Slovak Roads Administration, Soil Science and Conservation Research Institute, Slovak Public Health Authority on behalf of the Slovak Ministry of Health, Slovak Monument Authority etc. Among third parties it is, above all, use of orthophotograph maps, whose general availability through display services for the whole territory of Slovakia is limited, although at the time of preparing this reporting activities were underway to radically change this situation.

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[39] http://lvu.nlcsk.org/lgis
[40] http://lvu.nlcsk.org/polovgis/
[41] http://www.nature-sdi.eu/
[42] http://www.hlandata.eu/
[43] http://inspire-forum.jrc.ec.europa.eu/pg/forum/topic/31790/new-mashup-link/

Currently attention is focused by priority on the preparation of implementation of implementing regulations for the interoperability of spatial data sets and services consisting of the themes defined in Annex II and III to the NIPI Act. Slovakia has actively been involved in the process of testing and consulting proposals of selected data specifications (Buildings, Bio-geographical Regions, Habitats and Biotopes, Species Distribution). No less important was the active participation by means of the SK representation in the Thematic Working Groups for individual themes (TWG Bio-geographical Regions, Habitats and Biotopes, Species Distribution, Energy Resources).

Other options for using spatial data sets identified by means of the reporting process include also:

- Determination of strategies and approaches in the area of development, protection and support of the health of the population.
- Search and monitoring of health determinants with a focus on determining regional differences with subsequent planned measures.
- Use of data from heterogeneous sources for the national monuments database (CKOK – region and district number, ICZUJ – basic territorial unit identification number, PARCC – parcel number).

8.3 Use of the SDI by the general public

Art.14 (c) if available, evidence showing the use of the infrastructure for spatial information by the general public (where possible with clear reference to applicable EU policies such as public access to environmental information, in the context of dissemination to – consultation of – the public as required in various environmental legal acts.

Records of data usage by the public are not kept even at the level of individual departments or national level. Experience indicates that the most common usage of data is by obligatory subjects reciprocally, in terms of the orientation towards the general public, it is chiefly usage for educational purposes.

8.4 Cross-border usage

Art.14 (d) examples of cross-border use and efforts made to improve cross-border consistency of spatial data sets corresponding to the themes listed in Annexes I, II and III to Directive 2007/2/EC. Examples with regard to policies requiring cross-border collaboration and information exchange are of particular interest (floods, marine strategy directive, water framework and daughter directives, etc.)

Examples of using NIPI potential in the scope of cross-border cooperation help to improve the quality and consistency of data on both sides of the border in question in various forms:

- Through specific projects in which each of the parties involved provides their spatial data sets and files, or services, which are adapted for joint use in the scope of meeting project objectives:
  - CENTROPE Map[44]
  - Slovakian-Hungarian Joint Commission for Environmental Protection and Nature Conservation[45],.
  - GS Soil – soil classification according to WRB[46]).
  - The PÚ SR is the co-resolver of the HEREIN[47] and CARARE[48]projects, a component of which is providing digital content according to the EU joint rules, in particular EUROPEANA..
- Another example of cross-border cooperation is the 1st theme from Annex I, i.e. reference systems, where implementation of ETRS-89 and EVRS is secured on the basis of international cooperation in international alignments.
- Currently the gap in consistent spatial data for EU institutions and organisations (chiefly EUROSTAT) is filled by the EuroGeographics association (association of national mapping and land registry authorities) – the ÚGKK is collaborating in the creation of the EuroDEM, EuroBoundaryMap, EuroRegionalMap and EuroGlobalMap (ensuring cross-border data

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[44] http://www.centropemap.org/
[45] http://www.huskenv.org/
[46] http://gssoil-portal.eu/ingrid-portal/
[47] http://www.coe.int/t/dg4/cultureheritage/heritage/Herein/Default_en.asp
[48] http://www.carare.eu/

consistency) products. EuroGeographics plans to publish these data in the scope of the relevant INSPIRE themes.

- The VÚVH participates in activities set up by the ICPDR, for which it has provided datasets and relevant metadata in the format prescribed by the ICPDR. Datasets and metadata were also provided in the prescribed uniform format for the purposes of implementing WFD Directive 2000/60/EC, and data reported to the ICPDR, European Commission and handover protocols available at the VÚVH.
- The VÚVH was also provided with datasets and metadata in the prescribed uniform format for the purposes of implementing WFD 2000/60/EC. Some of the datasets concerning border areas were harmonised on the basis of a bilateral agreement with the neighbouring state for the ICPDR and requirements under the WFD 2000/60/EC. Harmonised elements thematically correspond to Annex I Part 8. Hydrography and Annex III Environmental monitoring facilities and Area management/restriction/regulation zones and reporting units.
- Cooperation of the ŠGÚDŠ in the scope of international projects with neighbouring states and the Slovak Republic for the resolution of spatial data communication in the scope of individual border regions. Specifically: Polish Geological Institute, the Czech Geological Survey, the Geological Survey of Austria, Hungarian Geological Survey.

8.5 Use of transformation services

Art.14 (e) how transformation services are used to achieve data interoperability

Use of transformation services was implemented in Slovakia at the level of transformation of coordinate systems (GKÚ Geoportal[49]). The transformation of data models is implemented off line. The CARARE project also includes the MINT portals[50] and MORE repository[51], which serve for the transformation of data and metadata into a common form usable for the EUROPEANA portal.

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[49] http://www.geoportal.sk/sk/sluzby/transformacna-sluzba/
[50] http://www.carare.eu/eng/Resources/CARARE-Documentation/MINT
[51] http://www.carare.eu/eng/Resources/CARARE-Documentation/MORE

9 Data sharing arrangements (Art.15)

As was already stated in Chapter 7.4 the issue of harmonising conditions of access to and sharing of digital spatial content and functionality in Slovakia remains an unresolved area, and there is no general licensing framework or relevant data policy.

The situation at the moment continues to be one where in most cases exchange of spatial data or usage of associated services on the principle of individual agreements and licences occurs between institutions, in most cases with non-harmonised structure and content. In rare cases there are attempts at coordinated solutions to issues (e.g. at departmental levels, where managing authorities (e.g. ministries) try to define common conditions for subordinate organisations and communicate in a consolidated way with other departments and partners). Forms of access and data exchange are at different levels ranging from completely free, through barter exchanges to exchanges for payment.

9.1   Data sharing arrangements between public authorities

Art.15 (a) requests an overview of data sharing arrangements that have been, or are being, created between public authorities inside the country.

In order to facilitate correct understanding of the report, the overview and examples should at least cover the following two items:
- Overview and examples of existing or being created data sharing arrangements that provide open and free data access, without any further restrictions or conditions for use and free of charge for commercial and non-commercial use?
- Overview and examples of existing or being created types of data sharing arrangements, such as framework agreements, one time licences, using widely known licensing schema, etc.?

Additionally, answers to the following questions would be helpful:
- Is there a need for a specific legislative basis to provide open spatial data? What is already adopted or planned to adopt?
- Are licenses available in electronic and machine-readable forms?

Until the NIPI Act came into force the sharing of data was arranged by agreements between individual institutions. For example, the agreement between the Environment Ministry and Defence Ministry, the agreement between the Interior Ministry and Defence Ministry, the agreement between the Environment Ministry and Geodesy, Cartography and Cadastre Authority, and others.

After the act and regulation came into force attempts were made to initiate discussion on the most suitable model of harmonised access and sharing of spatial data and services in Slovakia. These activities will need to be intensified, since it is necessary to specify the conditions and method in which NIPI content will be made accessible outside the Slovak Republic (above for EU institutions), but also at cross-border, international level and internally (at national, department, regional and local level).

The initial framework (defined by the INSPIRE Directive, Directive on the re-use of public sector information, Commission Regulation (EU) No 268/2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the access to spatial data sets and services of the Member States by Community institutions and bodies under harmonised conditions, and other guidelines and documents) will require harmonisation with the framework of related national legislation. Equally, it will be necessary to follow development in associated global initiatives (Global spatial data licensing framework[52], or the Creative Common[53]).

Examples of existing agreements:
- VÚPOP: Agreement with the SSC[54] ,
- ÚGKK SR: Agreements on sharing reference data exist between the ÚGKK and institutions of public administration, above all, data from the land register, SKPOS, the state map series and ZBGIS. The main drawback is, however, the form of their provision, which is offline. Existing

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[52] http://www.gsdi.org/standingcomm/legal
[53] http://creativecommons.org/
[54] http://www.crz.gov.sk/index.php?ID=603&doc=861478&potv=1

- agreements clearly show the need to provide current reference data from one source by online services.
- A precondition for inclusion in CARARE and HEREIN projects was the signing of agreements on data sharing.
- NLC: No cooperation is known at the level of more complex spatial infrastructure. The existing annual exchange of data with the National Conservancy and 4x annually with the land registry. Cooperation with the VÚPOP is planned.
- Agreement on cooperation between the Slovak Environment Ministry and Slovak Defence Ministry.
- Within the department of the Environment Ministry any data necessary for resolution of departmental functions must be provided by departmental organisations free-of-charge. Requesters from other departments are provided with data on the basis of operatively concluded interdepartmental agreements with the Environment Ministry.

9.2 Data sharing arrangements between public authorities and Community institutions and bodies

Art.15 (b) requests an overview of data sharing arrangements that have been, or are being, created between public authorities and Community institutions and bodies, including examples of data sharing arrangements for a particular spatial data set.

In order to facilitate correct understanding of the report, the overview of data sharing arrangements between public authorities and Community institutions and bodies should include answers to the following three questions, including examples of particular spatial data set and services, or categories of spatial data set and services, for example based on the annexes of the INSPIRE Directive:
- Can any spatial data sets and services be accessed by the Community institutions and bodies without any arrangement?
- Which arrangements provide free and open access to spatial data sets and services to the Community institutions and bodies?
- Which arrangements require payment from the Community institutions and bodies that use the spatial data sets and services (Article 17(3) of INSPIRE Directive[55])?

Commission Regulation (EU) No 26/2010[56] – on spatial data sets and services – provides additional context to access under harmonised conditions. The Guidance on the Regulation[57] suggests an INSPIRE licence model. Please indicate how the INSPIRE license could be implemented with regard to the legislative system and the existing or being created licenses in the country.

No request by Community institutions for information from the NIPI has been communicated through the MSCP aside from digital spatial information and services provided by Slovakia through reporting mechanisms for individual policies (E.g. WFD, Natura 2000 etc.), or by special requests within certain projects.

9.3 Barriers to the sharing and the actions taken to overcome them

Art.15 (c) requests a list of barriers to the sharing of spatial data sets and services between public authorities and between public authorities and the Community institutions and bodies, as well as a description of the actions which are taken to overcome those barriers.

Commission Regulation (EU) No 26/2010 – on spatial data sets and services – again provides additional context. It requests an overview of procedure to provide the conditions applicable to the Community institutions and bodies in compliance with this Regulation in metadata element 8.1, referred to in part B of the Annex to Commission Regulation (EC) No 1205/2008[58] (procedure for updating metadata for spatial

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[55] DIRECTIVE 2007/2/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)
[56] COMMISSION REGULATION (EU) No 268/2010 of 29 March 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the access to spatial data sets and services of the Member States by Community institutions and bodies under harmonised conditions
[57] Guidance on the 'Regulation on access to spatial data sets and services of the Member States by Community institutions and bodies under harmonised conditions';
[58] COMMISSION REGULATION (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata

data sets and services). We strongly encourage providing related information in this section of the country report.

In addition to the above, we recommend including an overview of other ways how and where the Community institutions and bodies can access up-to-date information on data sharing arrangements between public authorities and Community institutions and bodies.

Identified barriers affecting the sharing of information and services include:

- **Technical barriers:** Limited technical possibilities, the quality and mutual compatibility of data, demanding data conversion, absence of a wide spectrum of network services. Since online services are currently very limited, the effective exchange of data online is not possible. In the scope of building e-Government provision of reference data from the geodesy, cartography and cadastre branch by online services is expected from 2013.

- **Legislative organisational barriers:** Based on the heterogeneous interpretation of associated legislation. Relationships between providers of spatial datasets or spatial data services or even third parties are also not resolved at central level.

- **Capacity options:** Many of the stakeholders, particularly public sector organisations, face serious problems for the creation, maintenance and further raising of the expert potential of their own capacities. The high fluctuation in specialists brings problems with maintaining system solutions in the medium- and long-term. Although a broad scale of activities can be secured through the resources of third parties by way of subcontracts, it is very important to maintain enough professional capacity among institutions of the public sector for identification of key requirements and suitable measures required for performing the relevant tasks while considering the public interest.

10 Cost / Benefit aspects (Art.16)

10.1 Costs resulting from implementing INSPIRE Directive

Art.16 (a) requires an estimate of the costs resulting from the implementation of Directive 2007/2/EC for the period 2010-2012.

In order to facilitate correct understanding of the report, please indicate what is included in the estimation of costs (e.g. hardware, software, staff time) and how you have approached the estimation (e.g. indicate what proportion of the costs are attributed to INSPIRE or related initiatives such as eGovernment).

Please indicate either monetary costs (e.g. on hardware or staff) and/or staff time (days, months) related to the items listed below.

Information connected with the identification of real and potential costs associated with INSPIRE implementation can be divided into two basic categories:
- Information concerning costs identified during implementation of INSPIRE in Slovakia so far.
- Information on estimates of additional costs whose allocation is a precondition for successful INSPIRE implementation within the meaning of legislative requirements:

Information on costs which stakeholders have expended so far is limited, since only in three cases were summary costs indicated and without closer specification of the period for which they were identified. The actual identification of specific costs is a complex task since some costs arose in connection with activities that only partially secured INSPIRE requirements and some costs cannot be explicitly quantified. Based on the above, the requirement to identify harmonised criteria under which it will be possible to acquire more objective data comparable at both national and EU level emerges.
Costs were identified in the following scope from information available from partial reports:

Department	Institution	Period	Sum in € including VAT
ÚGKK SR			9 400 000.00 €
MŽP SR	VÚVH		18 548.57 €
MŽP SR	SAŽP	Qualified estimate for associated tasks in the plan of main tasks for the 2000 – 2012 period	300 000.00 €
TOTAL			**9 718 548.00 €**

In the area of qualified estimates of costs associated with NIPI building a calculation of expected costs enumerated during preparation of materials for the draft RPI project to the extent of 12 000 000 € can be used. This sum would cover the creation of a comprehensive solution to the issue of metadata, spatial data and services at national level, apart from the actual collection costs (for data which does not currently exist, nevertheless, in the event of their creation, they will thematically fall under INSPIRE), or updating and processing of relevant data. In rough terms a solution would be found, which would allow all obligatory subjects to meet NIPI creation and operation requirements, even if they did not have their own technological capacity for creation and updating of metadata and services outside of data under their administration. Simultaneously, operation of a register of obligatory subjects, register of agreements on sharing data and services by means of uniform user accessibility – the National Geoportal – would be ensured. The solution would also allow administration of national and domain profiles (metadata and data models).

Expenditure type	Activity type	Item	Sum in € including VAT
	Support activities	Training and promotion	89 600.00 €
		Project management	683 200.00 €
	Main activities	Analysis of the solution	616 000.00 €
		Collection of user requirements	246 400.00 €
		Solution proposal and architecture	728 000.00 €
		Solution development	5 488 000.00 €
		Preparation of data specifications	1 456 000.00 €
		Testing and development of testing instruments	280 000.00 €
		Introduction and debugging the solution	313 600.00 €
		Solution integration	235 200.00 €
		Infrastructure consolidation	89 600.00 €
		IT security solution	89 600.00 €
		Data migration	78 400.00 €
		Services in total	**10 393 600.00 €**
Software	Main activities	Software licences in total	828 800.00 €
	Software in total	**740 000.00 €**	
Hardware	Main activities	Technical and security provision of servers	168 000.00 €
		Firewall and Load balancing	28 000.00 €
		Servers and accessories	246 400.00 €
		Storage infrastructure	106 400.00 €
		Backup infrastructure	78 400.00 €
	Hardware in total	**560 000,00 €**	
		TOTAL	**11 849 600.00 €**

IT Infrastructure (Hardware and core software components)
Total costs for HW and SW are estimated at 1.3 million €
- Set up costs (one-off costs) – during the first two years – 800 000€
- Maintenance costs (recurrent yearly costs) – during the next 12 years 12 000€

Metadata for data and services falling under INSPIRE Directive and that are indicated in the Monitoring Tables.
Total costs for creation and administration of metadata represent about a 15th of the total costs for NIPI creation, thus about 800 000€

- Set up costs (one-off costs) in total during the first two years 400 000€
  - Software (adapting software, creating new software, setting catalogues) – 200 000€
  - Production – 200 000€
    - Creation of metadata for discovery 37 000€
    - Creation of metadata for evaluation and use (new metadata elements required by Data Specifications Implementing Rules)137 000€

- ▪ Testing for compliance 23 000€
- ▪ Participation of national experts into INSPIRE development process 30 000€

- • Maintenance costs (recurrent yearly costs) during the next 12 years 200 000€
  - o Software (adapting software, creating new software, setting catalogues) 100 000€
  - o Production 100 000€
    - ▪ Maintenance of metadata for discovery MD 20 000 €
    - ▪ Maintenance of MD for evaluation and use 50 000€
    - ▪ Testing for compliance 30 000€

Data interoperability/harmonisation for data falling under INSPIRE Directive and that are indicated in the Monitoring Tables

Costs for securing interoperability of spatial data sets are composed of several components, including costs for the analysis of requirements emerging from the INSPIRE Directive, implementing regulations and Slovak legislation. Expansion of requirements of implementing regulations for interoperability into "National Data Specifications" is under consideration, whereby user requirements for data content should, in particular, be considered, while maintaining the obligatory requirements under INSPIRE implementing regulations.

Total costs would thus represent ca. 2 000 000€

- • Set up costs (one-off costs) – in the first two years – 1 500 000€
  - o Development (mapping of concepts, setting up tables, setting up registries) - 500 000€
  - o Software (adapting software, creating new software) for data transformation – 800 000€
  - o Production – 200 000€
    - ▪ Creation of INSPIRE compliant dataset and related support services 160 000€
    - ▪ Testing for compliance – 20 000€
    - ▪ Participation of national experts into INSPIRE development process – 20 000€

- • Maintenance costs (recurrent yearly costs) – during the next twelve years – 500 000€
  - o Software for data transformation including maintenance of registries- 300 000€
  - o Production - 200 000€
    - ▪ Maintenance of INSPIRE compliant dataset and related support services - 180 000€
    - ▪ Testing for compliance – 20 000€
    - ▪ Maintaining coherence cross domains that evolve

Network services falling under INSPIRE Directive and that are indicated in the Monitoring Tables

In the scope of the proposed solution the creation of network services would be included under costs for constructing the National Geoportal. Many obligatory subjects have already started creating network services at their own cost; total costs estimated for the creation of network services are around 2 500 000€

- • Set up costs (one-off costs) - 1 800 000€

  - o Development Software (adapting software, creating new software) for network services (Discovery, view, Transformation, Download, Invoke) - 1 200 000€
  - o Production: - 100 000€
    - ▪ Set up of INSPIRE compliant services – 80 000€
    - ▪ Testing for compliance - 10 000€
    - ▪ Participation of national experts into INSPIRE development process – 10 000€

- • Maintenance (recurrent yearly costs) of INSPIRE compliant network service- 600 000€

Monitoring and reporting

An effective tool for collecting data for creating reports and monitoring forms was already created during the first reporting. Of course, its maintenance and further development is counted on. Costs are estimated at ca. 50 000€

Development: refining of tools e.g. online tools, registries etc.- 30 000€

Production: Collection of monitoring data and filling of templates by stakeholders – 10 000€

Reporting: Coordination activities to collect examples of good practice and as well as difficulties in implementation, cost and benefit consideration, assessment together with stakeholders – 10 000€

Coordination and horizontal measures
Costs connected with coordination of the NIPI creation process are estimated at ca. 383 000€

Setting up coordination structures, national contact point activities- 100 000€

Activities that relate to the data and service sharing obligations – 100 000€

Supporting activities: 183 000€
- Training and education organised by different stakeholders in the public and private sectors.
- Development of Guidance document to support implementation of INSPIRE and use.
- Participation in INSPIRE-related workshops/seminars/standardisation activities.
- Coordinating mechanisms at different levels of government.
- Outreach, Counselling and Support.
- Awareness rising in the private sector and at different levels of government.

Other costs for services (above all, programming and software), testing, connected with promotion and training and others are connected with NIPI creation. The total sum estimated for creation and administration of infrastructure for the nearest fifteen years is 12 000 000€.

10.2 Benefits observed

With the current state of INSPIRE implementation in Slovakia most obligatory subjects define the expected benefits on a very general level only or have no relevant information. From information available there are, above all, clear expectations at the level of increased accessibility of reference data and other thematic data and services, their consolidation, development and the supplementation of current infrastructure and similar.

In choosing the examples, the following may be worth considering:

1) Choose examples that have quantitative measures (e.g. increase in data use, more data sharing, savings in time and money, better policy outcomes, etc.).
    a. Based on previous analyses the following quantifiable benefits can be expected over the next 15 years:
        1. Time saving for infrastructure uses – ca. 1 300 000€
        2. Saving on administrative fees – ca. 500 000€
2) Distinguish between:
    o Core benefits for public authorities in improving environmental policies and policies that affect the environment (primary objective of INSPIRE)
        i. Availability of reference and quality data for the work of state and public administration workers
        ii. Reduction of the burden and personnel costs of public and state administration
    o Broader side effects of implementing the Directive (e.g. benefits of increased interoperability across environmental information systems, and between environmental and other sectoral policies (e.g. agriculture, transport, regional policy, etc.).
        i. Data available to the general public
        ii. Simplified solution to life situations
        iii. Reduction of the tax burden on citizens
3) Identify who are the main beneficiaries (public administrations, business and citizens).
    a. The chief beneficiary of benefits will be the citizen

4) Cross border examples could include reporting on data sharing arrangements with neighbouring countries.
    a. No cases of cross-border data sharing were identified in the background materials collected from obligatory subjects in preparation for this report. The Slovak Environment Agency was involved in several cross-border projects focused on data sharing, e.g. HLANDATA, SK – BG Biodiversity mash-up, SK – AT EIA etc.
5) Consider whether any undesired side effects of implementing INSPIRE are also worth reporting.
No cases of undesirable effects were identified.

In the case of alternative options for identifying benefits, the priority benefits expected at the Slovak level include:

1) Implementation
- Gains in effectiveness at the level of accessibility of spatial data and services, their easier use and sharing:
   i. Time savings for internal demands and processes
   ii. Time savings for the provision of NIPI content to the public
   iii. Cost reductions in the integration of data
   iv. More possibilities for the reuse of data (reduction of the need to create new data)
- Greater motivation for staff performing tasks (by way of improved ability to flexibly react to work requirements and identification of the increase in opportunities for further professional development)

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2) Effectiveness
- Cutting down on administrative burden (after the implementation phase)
- Increased accessibility of NIPI content and user comfort for its users
- Improvement of internal institutional cooperation
- Improvement of collaboration between institutions from local to international level

3) Broader benefits
- Increased transparency and responsibility
- Improvement of the level of participation by the public
- Increased potential for innovation by means of creating new services and applications above NIPI
- Increased potential for using the capacity of SMEs for creating added value
- Increase of the level of social inclusion.

11 Conclusions

The Slovak Republic completed transposition of INSPIRE into national legislation and initiated the first steps in the area of NIPI implementation within the three-year monitored period. These steps consisted above all in setting the framework for coordinating NIPI creation and implementation, raising awareness, creation and making accessible metadata, search and display services, operation of a Geoportal prototype to support implementation of the NIPI Act, but also in the area of active participation in the creation of legislative and technological documentation at EU level (testing, consultation, participation in TWGs). When implementing these steps it was necessary to overcome not insignificant obstacles and challenges in the form of seeking a suitable organisational framework, influenced by frequent changes in the nominations of representatives of stakeholders, problems associated with limited technological support for relevant legislation and technical documentation, the absence of adequate financial resources and limited professional capacities able to secure fulfilment of national requirements and recommendations.

Based on existing experience it will therefore be necessary to pay greater attention to existing NIPI elements, but also to ensure implementation of absent components in accordance with the INSPIRE Roadmap, and also with related activities (eGoverment[59], ISA[60], Digital Agenda 2020[61], Copernicus[62], etc.). In the area of improving existing NIPI components there should, in the case of coordination, be extensive engagement of stakeholders and representatives of NIPI users and potential added value creators (private, academic, tertiary sector) by means of which it will possible to better identify new areas for using NIPI potential. Similarly, it will be necessary to secure the updating of metadata for data and services harmonised with INSPIRE requirements and to secure qualitative parameters and the performance of existing services. Key tasks in the area of absent NIPI components should include the accessibility of single reference basis, including data for the themes Orthoimagery and Elevation as a basis for creating thematic content harmonised according to relevant themes in the annexes of the NIPI Act. No less important will be the initiation of activities in the area of harmonising Slovak spatial data and service access and sharing for EU bodies and institutions, and for requirements at national level. The implementation of data specifications, remaining network services and spatial data services brings the requirement of building the Spatial Information Register, including a fully functioning version of the National Geoportal. It will be no less important to secure qualitative requirements for spatial data and services, tools allowing their monitoring, testing and validation in terms of relevant requirements and recommendations. The issue of certification authorities, identification of benefits and possible forms of using INSPIRE potential remains unresolved and their solution will require close monitoring in cooperation with the European Commission and Member States in the scope of the next phase of INSPIRE implementation and operation.

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[59] https://www.slovensko.sk
[60] http://ec.europa.eu/isa/
[61] http://ec.europa.eu/digital-agenda/
[62] http://copernicus.eu/

Annexes

11.1 List of organisations – names and contact details

List of subjects involved in the preparation of SK INSPIRE Reporting 2013:

Organisation	Address	Contact person	Email
NLC	T. G. Masaryka 22, 960 92 Zvolen		
PÚ SR	Cesta na Červený most 6 814 06 Bratislava,		
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ŠGÚDŠ	Mlynská dolina 1, 817 04 Bratislava		
TOPÚ	Topografický ústav plukovníka Jána Lipského	kpt. Ing. Ján MAREJKA, kpt. Ing. Miroslav ANTAL	jan.marejka@mil.sk miroslav.antal2@mil.sk
ÚGKK SR	Chlumeckého 2, P.O.Box 57 820 12 Bratislava 212		
ÚVZ SR	Trnavská cesta 52, 826 45 Bratislava		
VÚPOP	Gagarinova 10 ,827 13 Bratislava		
VÚVH	Nábrežie arm. gen. L. Svobodu 5, 812 49 Bratislava 1		

11.2 List of references for the compilation of the report

List of documents:

Provider	Document name	Type	Date
NLC	INSPIRE 2013 reporting form	email	9.5.2013
PÚ SR	INSPIRE 2013 reporting form	email	9.5.2013
SAŽP	INSPIRE Country Report	rtf	10.5.2013
ŠGÚDŠ	INSPIRE 2013 reporting form	email	13.5.2013
TOPÚ	Opinion of the draft INSPIRE 2013 reporting	email	31.5.2013
ÚGKK SR	INSPIRE 2013 reporting form	email	9.5.2013
ÚVZ SR	INSPIRE 2013 reporting form	email	3.5.2013
VÚPOP	INSPIRE 2013 reporting form	email	30.4.2013
VÚVH	INSPIRE 2013 reporting form	email	12.5.2013

List of websites:

Operator	Websites
NLC	http://www.nlcsk.org/
PÚ SR	http://www.pamiatky.sk
SAŽP	http://www.sazp.sk
ŠGÚDŠ	http://www.geology.sk
TOPÚ	http://topu.mil.sk
ÚGKK SR	http://www.skgeodesy.sk
ÚVZ SR	http://www.uvzsr.sk/
VÚPOP	http://www.vupop.sk/
VÚVH	http://www.vuvh.sk/