



Spatial Data Infrastructures in Slovak Republic: State of play 2010



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Change matrix 2010 versus 2007

A concise graph is added to indicate changes of the various paragraphs compared to the previous report. Two colours are used: Green and Yellow indicating major and minimum changes respectively compared with the 2007 State of Play. This graph does not reflect the country situation. Merely it represents our findings/changes per section on our preparation of the desktop analysis



Executive summary

In the Slovak Republic, the Geodesy, Cartography and Cadastre Authority of the Slovak Republic has a mandate to work towards an NSDI for reference and core thematic data. Important efforts are going on to establish a modern cadastre which is to become part of the NSDI. The establishment of a mutual cooperation among the Geodesy, Cartography and Cadastre Authority and the Ministry of Defence represented by Topographic institute, is playing an important role. The Ministry of the Environment has a mandate to represent Slovak republic via INSPIRE expert group. Legally mandated organisations working under the Ministry of the Environment play an important role within the area of environmental thematic data. Production, handling and distribution of other datasets are in the process of being converted to digital environments. A geo-portal exists as a pilot project and a Cadastral Portal is running as well. Nevertheless there is a need to constantly improve the Internet presence. Rapid progress is being made in developing the legal framework in which an NSDI can flourish.

Over the last years, the sector of GCCA made reference pillars of the NSDI: set up the operation of the GeoPortal (www.geoportal.sk) with the overview of the maps and geographic information, set up the operation of the Cadastral Portal (www.katasterportal.sk), which allows providing information about real estate cadastre via Internet.

The environmental administrations are working in line with NSDI-principles. The most visible element is a metadata service based on the Catalogue of Data Sources model as well as providing environmental data via map services. At the same time the <http://geo.enviroportal.sk/aplikacie> provides a number of data and mapping applications.

Stakeholder involvement seems to be weakly developed although other public sector organizations produce and manage important geo-data. We can recognise some new initiatives supporting the establishment of the NSDI both from public and from private sector.

The private sector is offering some geo-services across the internet, mainly with respect to address finding and mapping.

The strongest points of the Slovakian SDI, is the availability of a lot of data with the corresponding metadata. Catalogue services make it possible to find the data, while several viewing services allow the users to view them. The weakest points remain the lack of clear coordinating mechanism, and the development of know-how and processes.

Last but not least the final text on the transposition status is published and is available at: http://inspire.enviroportal.sk/Upload/documents/3_2010.pdf.

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Abbreviations and acronyms

AIS-GCC	Automated Information System of Geodesy, Cartography and Cadastre
CDS	Catalogue of Data Sources
CGD	Central Geospatial Database
CLC	Corine Land Cover
CSD	Central Space Database
CSW	Catalogue Service
CT	Core Thematic Data
DTM	Digital Terrain Model version
ESDI	European Spatial Data Infrastructure
ETRS	European Terrestrial Reference System
GCCA	Geodesy, Cartography and Cadastre Authority of the Slovak Republic
GCI	Geodetic and Cartographic Institute Bratislava
GI	Geographical Information
GIS	Geographical Information System
GPS	Global Positioning System
IACS	International Association of Classification Societies
INSPIRE	INfrastructure for SPatial InfoRmation in Europe
ISO	International Organization for Standardization
ISS	Local Government Information System
JOG	Joint Operations Graphic
LASR	Landscape Atlas of Slovak Republic
LPIS	Land Parcel Identification System
MGI	Military Geographic Information
MOH	Ministry of Health
MOI	Ministry of Interior
MoE	Ministry of the Environment
MTA	Military Training Area
MTM	Military Topographic Map
NATO	North Atlantic Treaty Organization
NGII	National Geographic Information Infrastructure
NMA	National Mapping Agencies
NSDI	National Spatial Data Infrastructures
OGC	Open Geospatial Consortium
NSI	National Statistical Institute

ONC	Operational Navigation Chart
PD-GIS	Primary Database for the Geographic Information System
PHA	Public Health Authority
PSI	Policy and legislation on access to public sector information
PPP	Public-private partnerships
REF	Reference data
ROEP	Land Title Consolidation
SABE	Seamless Administrative Boundaries of Europe
SAGI	Slovak Association for Geoinformatics
SDI	Spatial Data Infrastructures
SEA	Slovak Environmental Agency
SR	Slovak Republic
SSCRI	Soil Science and Conservation Research Institute
TFC(L)	Transit Flying Chart (Low Level)
TI	Topographic Institute
TIBB	Topographic Institute in Banska Bystrica
TIS	Territorial Information System
TPC	Tactical Pilotage Chart
UENL	United European Levelling Network
URL	Universal Resource Locator
UTM	Universal Transverse Mercator
VMAP	Vector Smart Map
WGGIS	Working group for GIS
WCS	Web Coverage Service
WFS	Web Feature Service
WGS	World Geodetic System
WMS	Web Mapping Service
WPS	Web Processing Service
WRI	Water Research Institute

1 GENERAL INFORMATION

1.1 Method

This report is summarizing the state of play of SDI in the Slovak Republic, and reflects the degree to which the SDI situation is similar to the ideas set out in the INSPIRE position papers¹ and in the more recent INSPIRE scoping papers.

The 2002 report was based mainly on the analysis of web sites readily accessible and on documents presented during several workshops and conferences. Completing and correcting remarks have been provided by the Geodesy, Cartography and Cadastre Authority of the Slovak Republic (versions 2003, 2004 and 2005) and the Slovak Environmental Agency (version 2003, 2004, 2005). The version of 2005 has been compiled with the active support from the Slovak Authorities. The update for 2006 was based on information obtained from presentations at the workshop “*Preparing the National INSPIRE Information Days*” (organized by JRC for the new and candidate Member States). For the update of 2007 information was received from the Slovakian authorities regarding the data sets and services, the use of the infrastructure and the data sharing practices. The information was integrated in that version of the country report. For the 2007 update, the Slovak environmental agency in cooperation with portal GEOINFORMATIKA.SK launched a call for “INSPIRE@SK State of Play 2007 Update”. This call was published from 07.02.2008 till 15.02.2008 via following links:

http://www.sazp.sk/inspire/index.php?option=com_content&task=view&id=112&Itemid=31

<http://www.geoinformatika.sk/informatizacia/inspire-sk-state-of-play-2007.html>

Regarding the results of this call there has been collected answers from following respondents:

1. CEDA Slovakia, s.r.o. (CEDA Slovakia)
2. GEOINFORMATIKA.SK
3. Geodesy, Cartography and Cadastre Authority of SR (GCCA)
4. Ministry of Interior of SR (MOI)
5. Public Health Authority of SR (PHA)/ Ministry of Health of SR (MOH)
6. Slovak environmental agency (SEA) / Ministry of the environment of SR (MOE)

¹ INSPIRE position papers, final versions: RDM, ETC, DPLI, ASF, IST, IAS (latest version).

For the 2009 update, information was extracted from the survey reply, an extensive analysis of web sites and portals readily accessible and from documents and presentations available at various workshops and conferences. In this version obsolete information was removed, while a conclusion paragraph regarding the status of each indicator was added for each component.

1.2 The SDI-scene in the Slovak Republic

1.2.1 Background

At this time there are a number of large-scale, multi-interest GIS projects operational in Slovakia that are important building blocks for a true SDI. Although GIS and GI are widely used terms among the Slovak organizations, the term SDI does not appear to be commonly used. Some initiatives have a few SDI-like characteristics and to the extent possible or useful these organizations are referred to in this report as potential building blocks of an NSDI (e.g. the Geodesy, Cartography and Cadastre Authority of the Slovak Republic – through Geodetic and Cartographic Institute Bratislava, the Ministry of Agriculture, the Ministry of Defence through Geoportal GCCA SR, the Ministry of education, the Ministry of agriculture, the MoE – through Slovak Environmental Agency, the SAGI).

Awareness of the need for an NSDI is growing. The main promoter is the GCCA SR. It leads the Working group for GIS (WGGIS) in the state administration which is a committee of the Government council for informatics. At present it deals with the Object catalogue of PDGIS. An important role within INSPIRE is played by the Inter-ministerial co-ordination Group of the Ministry of the Environment of the Slovak republic with cooperation of GAAC representative. The Ministry of Environment is also playing an important role in the institutional process.

The central body of the state administration of the Slovak Republic responsible for the informatics is the Ministry of Transport, Posts and Telecommunications where a function of the mandatory of informatics was established in 2004. Within the framework of the eEurope+ initiative, the Ministry has developed two dossiers, which have been approved by the government in January 2004. The first one, the Strategy of the Slovak Information Society, defines the preferred areas and the strategic goals of the informatics in the Slovak Republic. The second one, the Action Plan, contains related tasks and projects of which the results were approved in 2005.

The Government of the Slovak Republic has developed and approved a dossier within the framework of the Lisbon Strategy in February 2005 in which the development of information technologies is highlighted.

Although, there is not yet an official NSDI and INSPIRE implementation strategy the Ministry of Environment is appointed to take the lead towards this implementation and a coordination body has been established (Planned Coordination Board) composed from representatives of LMO. Moreover, the Slovak Geodesy, the Ministry of Defence along

with the Slovak Environmental Agency are actively participating towards the INSPIRE implementation.

1.2.2 The GCCA

NSDI-related tasks and projects have been entrusted to the Geodesy, Cartography and Cadastre Authority of the Slovak Republic (GCCA) which is the central body of the state administration of the Slovak Republic responsible for Geodesy, Cartography and the Real Estate Cadastre (<http://www.skgeodesy.sk/>). The GCCA has established and directly controls the Geodetic and Cartographic Institute in Bratislava (GCI), the Cadastral Institute in Žilina and the Research Institute of Geodesy and Cartography in Bratislava. All these institutes have a nationwide area of competence. The specific tasks comprise:

- The technological securing of the development of the cadastre and providing the cadastral data via Internet in the framework of the Automated Information System of the Geodesy, Cartography and Cadastre (AIS-GCC);
- The legislative and technical assumptions for the creation of the Primary Data Base for the Geographic Information System (PD GIS);
- The creation of the 3-D digital terrain model as a localization base for GIS in the public administration in agreement with the standards and principles of the European Spatial Data Infrastructure (ESDI);
- To work out and issue the standards of the geo-referenced base for the National Spatial Data Infrastructure (NSDI) as well as for the objects catalogue of the GIS.

The PD-GIS will serve by 2010 as a base for the various thematic GIS and thus will be a part of the National Spatial Data Infrastructure.

The AIS GCC comprises many of the key elements of the SDI such as the geodetic control, the real estate cadastre, the PD-GIS, the standardization of geographical names and the maps of the administrative boundaries of the Slovak Republic.

Through the GCI, GCCA operates a geo-portal. Although the English version is still incomplete, the information, data as well as guidance of usage has significantly been upgraded. The Geodetic and Cartographic Institute of the GCCA is responsible for upgrade of the geo-portal (<http://www.geoportal.sk/gp/>). The Internet version contains metadata. And the e-commerce services have been incorporated.

Through the GCI, GCCA operates a Cadastral Portal (www.katasterportal.sk). Geo-portal and Cadastral Portal are operating separately. The English version has been incorporated. The publishing of the cadastral data through the Cadastral Portal is carried out technically by a private company. The Internet version contains data about 13 million plots of ground from all over Slovakia. The Map viewer can only operate under windows explorer. The e-commerce services are being incorporated. Since September 2007 the Cadastral

Information provides free the information on Land Information System. Similarly it allows users to file an electronic notice of intended application. The main users are government departments, the National Security Office, autonomous regions and municipalities, the Slovak Land Fund, police, fire and rescue corps, customs and tax authorities, lawyers, bailiffs, prosecutors and courts, Slovak Academy of Sciences and many other institutions - and surveyors, publishers of cartographic works or ordinary citizens.

In the Slovak Republic, the educational aspects regarding GI (and we can assume SDI) are felt to be important. Additionally, Slovak universities are very active in GI-research and education and several national seminars are organised regarding GI-technology and applications every year by the scientific associations. An example is the SAGI seminar on the topic of NGII and metadata systems.

1.2.3 Other actors

Despite the apparently dominating role of the GCCA in the preparation of an NSDI, other actors are clearly present on the GI-/SDI-scene and are potential participants in the future GCCA-lead NSDI.

The Slovak Environmental Agency (SEA) has been established within the Ministry of the Environment. The SEA covers the national territory and focuses environmental protection, development of environmental and sustainable development policy. Important activities from the view of the SDI include:

- Co-ordination of individual partial monitoring systems;
- Establishment of SDI within the environmental sector as an part of NSDI in SR;
- Creation of the Information System of SEA as a subsystem of the Integrated Environmental Information and Monitoring System of the SR;
- Development of methodologies for individual layers of the geographic information system within the framework of SEA's information system;
- Maintenance of the register of basic settlement units;
- Creation of the Territorial Information System (TIS) in co-operation with other legally mandated organizations in the SR;
- Professional supervision and co-ordination of the Integrated Environmental Monitoring and Information System of the SR in national as well as international context;
- Co-operation with the state administration bodies and professional organizations;

- Administration of Slovak Environmental CDS (Catalogue of Data Sources) – metadata service providing information about data sources which exist for the Slovak environmental sector;
- Development and administration of SEA map server;
- The project Corine Land Cover (CLC).

The environmental & SDI related information, including the Catalogue of Data Sources can be accessed in English via the Internet

- (SEA): http://www.sazp.sk/index_en.html or (TIS): <http://www.iszp.sk/isu>
- (CLC): <http://www.sazp.sk/slovak/struktura/ceev/DPZ/CLC2000/>

The Ministry of Agriculture manages a wide range of GIS-activities. The Soil Science and Conservation Research Institute (SSCRI) operate a geo-portal. It deals with:

- Soil Geographical Information System;
- Remote Sensing Soil Survey and Control;
- Soil Monitoring;
- Accredited Soil Analysis Performances.

The SSCRI is responsible for projects with EU-dimension like the LPIS - the Land Parcel Identification System and the control of area-based subsidies with Remote Sensing.

<http://www.podnemapy.sk/>

The Forest Management Institute also operates under the Ministry of Agriculture. It is responsible for the forestry section of the State's Information System.

<http://www.lesoprojekt.sk/english/default.htm>

Within **the Ministry of Defence**, the Topographic Institute in Banska Bystrica (TIBB) is responsible for designing, establishing and managing of the Land Military Information System. There is a close cooperation between TIBB and GCI in building CSD and PDGIS.

The Topographic Institute is a highly specialized institution of the Ministry of Defence that operates on a Slovak wide scale. Its mission is to collect process and provide information about a territory for the needs of the defence and security of the Slovak Republic. The main activities of the Topographic Institute include:

1. production, update and issue of the Military Topographic Map
2. implementation of international geodetic and cartographic standards

3. execution of special geodetic works for the needs of the Ministry of Defence
4. processing of “Military-geographic information” from the world crisis areas for special units being deployed within the peace-keeping operations of the UN
5. administration of the „Military information system of the territory“
6. processing and archiving of aerial photography
7. development and implementation of GIS technologies within the frame of the Ministry of Defence
8. archiving of cartographic products and results of geodetic and topographic works

<http://topu.army.sk/>

Local Government Information System (ISS) is a comprehensive software designed for municipal and local offices and offices of self-governing regions. The product covers all office agendas.

For the area of municipalities it offers:

- [CG ISS - Information System of Municipalities](#)
- [CG ISS Portal - Portal Information System of Municipalities](#)
- [CG GISAM - Geographic Information System of Municipalities](#)
- [CG GIS Portal - Portal solutions for Municipalities‘ GIS](#)
- [CG eGOV – eGovernment](#)

(<http://www.corageo.sk/index.php?id=121>)

Its uniqueness arises out of the employment of a single database which prevents multiple insertions of identical data. ISS solves the transfer of competencies within an office and enables maximum data employment and visualization by means of geographic applications. Portal solutions ensure data presentation and publication by means of state-of-the-art web technologies. ISS supports activities and employees to ensure more effective, faster and better office operation. This results in financial funds savings.

http://www.mesto.sk/projekt/mesto_eng.doc

The **Slovak Association for Geoinformatics** (SAGI) could serve as an example of a non-governmental organisation whose mission is to support the use and the development of the geographic information including GIS in the Slovak Republic. www.sagi.sk

- Web site with English version (NSI): www.statistics.sk

1.2.4 Major GI-projects

Slovak Republic through the GCCA participates in many projects of EuroGeographics, for example Seamless Administrative Boundaries of Europe (SABE), *EuroGlobalMap*, *EuroRegionalMap*, Europe EuroMapFinder / Metadata, *Information and Service System for European Coordinate Reference Systems and Pan-European Road Data Solution - EuroRoadS*.

GIS of the Tatra National Park, which includes the Study of the Actual and Potential Structure of Forest Stands in Tristarska Valley. Following layers were digitised from forest stands and forest types maps (scale 1: 10 000): forest stands, road network, hydrology, contours (20 m interval), forest types. Forest stands and forest type's layers were linked to database describing actual and potential (natural, optimal) forest structure. Digital terrain model and 3D view were created.

GIS Database of Bielowodska dolina- The GIS database is created to support the scientific objectives of the project "Integrated risk assessment and new pest management technology in ecosystems affected by forest decline and bark beetle outbreaks". The project is a part of EU INCO-Copernicus program. Coordinator of the project is F. Schlyter. The database is maintained by the Research Station of the Tatra National Park. A Digital Terrain Model and other GIS layers of information are now completed.

Digital technical map of Prešov – is an example of the Land Information Systems data gathering in the Slovak Republic. The administration of digital technical map covers 18 sq. km. The digital technical map serves as graphic database for land-orientated information systems and is continuously updated and distributed in both analogue and digital forms. A number of contracts have been executed (<http://www.pce.sk/zakazky/zakazky.htm>) such as:

1. Vector Map ZM 1 SR: 10,000
2. Price Map of Bardejov
3. Master Plan Bardejov
4. Digital Technical Map of Bardejov
5. Digital technical map of Presov
6. Digital map of the town of
7. Raster cadastral map of the city of Prešov
8. Administrative map of the Slovak Republic at scale 1:400 000
9. Planimetric map of the Slovak Republic at scale 1:250 000

10. Map of road network of the Slovak Republic

<http://www.pce.sk/>

Since the Geo-portal managed by the Geodesy, Cartography and Cadastre Authority of the Slovak Republic is the most visible element, the future NSDI in the Slovak Republic is described in Chapter 2 from the perspective of GCCA.

2 Details of the Slovak initiative

2.1 General information

The Geodesy, Cartography and Cadastre Authority (<http://www.skgeodesy.sk/>) is a central body of the state administration which provides for the building and updating of the Automated Information System of Geodesy, Cartography and Cadastre, which forms a part of the State Information System. It is also responsible for creating and editing the state map series for civil needs. As a central body it methodically manages the cadastral departments of regional authorities, and the cadastral departments of district authorities. It is responsible for creating a general database for a geographic information system.

The GCCA is implementing the national initiative for developing the National Spatial Data Infrastructure. In this respect, the GCCA promotes the shared use of the geo-information such as the relief, land use, land ownership, GI about traffic, municipal infrastructure networks and for the state of the environment.

The GCCA functions actively on international forums in co-operation with other European National Mapping Agencies (NMAs) in both mapping and real estate activities. The GCCA participates in the international work in mapping through EuroGeographics. The GCCA is also a member of the Working Party on Land Administration dealing with real estate systems which functions under the United Nations Economic Commission for Europe.

Work on a new cadastral system is fundamental for GCCA. Since 1993, a new type of the real estate cadastre is being built in a distributed way. The information system of the real estate cadastre at district level is administered by district cadastral registries and on central level by the Geodetic and Cartographic Institute Bratislava. The central database of the information system of the real estate cadastre is interlinked with district databases by the transmission network. The interlinking aims at the updating of the central database of the real estate cadastre information system in a one-week (gradually a one-day interval), the securing (backup) of district databases, the securing of unity, the data quality improvement using check runs, providing, accessing and publishing information on the Internet. Since February 2004 the Cadastral Portal is available on the Internet for authorised access holders.

2.2 Component 1: Coordination and organisational issues

In the year 2000, the Working Group for GIS in the Public Sector (WG GIS) was established in the framework of the Informatics Council of the Government SR. The Working Group for GIS takes over the coordination of the NSDI development. It consists of the representatives of the GCCA and its subordinate bodies as well as the representatives of the Ministry of Defence, the Ministry of the Environment, the Ministry of Agriculture, the Ministry of Interior, the Ministry of Transport, Posts and Telecommunications, the Ministry of Defence, the Statistical Office and others. It is a high-level co-operation between ministry departments and national institutions.

All the members belong to the key stakeholders in the area of GI. The WG GIS has a number of tasks: to analyze a wide range of existing thematic GIS-es, to act as official advisory board in GI related affairs, to promote wider use of GI and identify unnecessary overlapping activities, to foster the preparation of the proposals for the standards of the PD GIS. The WG GIS thus has a mandate to give recommendations and elaborate strategies concerning the implementation of the SDI, but not to make decisions that directly bind single stakeholders. The WG GIS proposals are submitted to the Informatics Council of the Slovak Government for approval.

There is no special budget foreseen for the coordination efforts of this body because its only mandate is to give recommendations and to make proposals.

The co-ordination of the SDI at the national level has several actors involved:

- the Informatics Council of the Government SR
- the Slovak Institute for Standardization which deals with GIS and SDI related technical standards
- the Geodesy, Cartography and Cadastre Authority of the SR
- the Ministry of the Environment SR
- the Ministry of Agriculture, coordinating the development of the Land Parcel Information System for IACS
- the Ministry of Defence

A lot of attention has been paid to creation of SDI awareness amongst the (potential) users. An impact analysis is under way (EU Phare project). Even if there is progress, lack of coordination is still one of the major barriers, more specifically, the absence of a coordination authority accepted by all the stakeholders.

Since 2003, with the advent of various IS connectivity via the Internet and intensive use of tools and systems-oriented network architecture starts and actual IST acquire specific dimensions. A significant shift in the actual implementation of the IST occurred after the implementation of the central role of geographic sub-system, which launched the practical deployment of IS, with direct involvement of the organization department of the Ministry in the design and operation of IS.

Territorial Information System (TIS) is a project focused on development and maintenance of spatial data infrastructure within the environmental sector of Slovak Republic. This spatial data infrastructure is following the INSPIRE recommendations and is build within the institutions, organizations and authorities under the Ministry of the environment of Slovak Republic.

The main aim of the project is to provide effective access for users to spatial data using available technology. This aim represents development and maintenance of spatial data infrastructure. This infrastructure should cover user's requirements, dynamically react on

technological development, legislative changes and implement harmonization and standardization issues.

IST is the know-how, infrastructure and geospatial data from the organization department of the Ministry, under the auspices of the operator of the Ministry of Environment and the administrator of the Slovak Environmental Agency.

List of organizations department of the Ministry involved in the development of IST / CGS:

Slovak Environmental Agency

Slovak Environmental Inspection

Slovak Museum of Nature Protection and Speleology

Slovak Institute hydrometeorologický

Slovak Water Management

Report on the Slovak Caves

State Geological Institute Dionyz Stur

State Nature Conservancy of the Slovak Republic

Water Research Institute

(<http://isu.enviroportal.sk/index.php/>).

2.2.1 Conclusions of Component 1

The Slovak SDI approach is truly national.. SDI building blocks have reached a significant level of operability. NSDI-related tasks and projects have been entrusted to the Geodesy, Cartography and Cadastre Authority of the Slovak Republic (GCCA) which is the central body of the state administration of the Slovak Republic responsible for Geodesy, Cartography and the Real Estate Cadastre. The establishment of a mutual cooperation among the Geodesy, Cartography and Cadastre Authority and the Ministry of Defence represented by Topographic institute, is playing an important role. The Ministry of the Environment has a mandate to represent Slovak republic via INSPIRE expert group.

Based on these conclusions we score the indicators as follows:

- The approach and territorial coverage of the SDI is truly national

- One or more components of the SDI have reached a significant level of operationality (4)
- The officially recognised or de facto coordinating body of the SDI is a NDP, i.e. a NMA or a comparable organisation
- The officially recognised or de facto coordinating body for the SDI is an organisation controlled by data users (No)
- An organisation of the type ‘national GI-association’ is involved in the coordination of the SDI (Not so clear)
- Producers and users of spatial data are participating in the SDI (No)
- Only public sector actors are participating in the SDI (Not so clear)

2.3 Component 2: Legal framework and funding

2.3.1 Legal framework

The legal framework on GI in Slovakia is determined by a number of different laws and decrees. The most important Acts include

1. Act No. 162/1995 on the Real Estate Cadastre and the Entries of Ownership and Other Rights to the Real Estates (The Cadastre Act) as amended by the Act No. 222/1996 Coll., the Act No. 255/2001 Coll., the Act No. 419/2002 Coll. and the Act No. 173/2004 Coll.
2. Act No. 215/1995 on Geodesy and Cartography as amended by the Act No. 423/2003 Coll and the Act 346/2007. In this Act, the Primary Database for Geographic Information System is considered to be the core geo-referenced data set for building the State Information System by the public authorities. In this legislation the following issues are dealt with: maintenance, liability, funding and the obligations imposed on users and producers. By the amendment of 2003, an institutional framework that brings together the government, the government institutions and the local administrations, was starting to be developed. In 2007, the Act was amended to implement the requirements of the PSI directive.
3. Decree of GCCA No. 79/1996 by which the Act No. 162/1995 on the Real Estate Cadastre and the Entries of Ownership and Other Rights to the Real Estates (The Cadastre Act) is executed as amended the Decree No. 72/1997 Coll. , the Decree No. 533/2001 Coll. and the Decree No. 467/2004 Coll.

4. Decree of GCCA 178/1996 by which the Act of the National Council of the Slovak Republic on Geodesy and Cartography is executed
5. Act No. 275/2006 on Information Systems of Public Administration.
6. The Act No. 205/2004 on collecting and disseminating environmental information and on amendment and supplementation of certain acts.
7. Act No. 3/2010 transposing the INSPIRE directive. The responsibility for the transposition was assigned to the Ministry of Environment by Decision 845/2007 of the Slovak government from 3 October 2007
8. Government decree of the Slovak Republic No. 540/2002 establishing the Cadastral Portal, which enables authorized access to land registry data via the Internet.

2.3.2 Public-private partnerships (PPPs)

PPPs are quite common practice in the Slovak Republic, especially in the sectors of building industry, architecture and others. In the GI-sector the PPPs are considered to be very useful in the development of an SDI.

In the Slovak Republic PPP has mainly been applied in the next areas:

- all geodetic surveys for a creation of survey sketches for the GCCA purposes,
- Land Title Consolidation (ROEP) for the GCCA purposes,
- Land Consolidation Project for the GCCA purposes and realization of the Land Consolidation for the purposes of the Ministry of Agriculture SR,
- aerial photos for the purposes of the Ministry of Agriculture SR – system IACS

A number of private companies have formed the Slovak Association for Geoinformatics (SAGI), of which the mission is to support the use and development of geographic information in Slovak Republic, including geographic information systems, remote sensing and related fields. ,

2.3.3 Policy and legislation on access to public sector information (PSI)

The right of access to PSI is implemented by the NC SR Act No. 211/2000 on the Free Access to Information of 2000, entering into force in January 2001. It sets broad rules on disclosure of information held by the public organisation.. Together with the Act, a Decree of the Ministry of Finance on Calculation Costs related to the providing of Free Access to Public Information has been implemented (ePSplus National Report Slovakia, http://www.epsplatform.eu/content/download/17719/225697/file/SlovakR_National_Me

[eting_Report_\(Final\).pdf, 2007](#)). This freedom of information legislation relates to the GI sector in general but it does not relate to the GI datasets and to the data from the Cadastre of the Real Estates, which cannot be obtained on the basis of the Free Access to Information law. The transposition of directive 2003/98/EC on re-use of PSI was transposed by an amendment of this Act in August 2005, and by an amendment to the Act on Geodesy and Cartography.

2.3.4 Legal protection of GI by intellectual property rights

Currently the Slovak Copyright Act is fully in line with the EU legislation. The Slovak Copyright Act (the NC SR Act No. 618/2003) based on the European Commission Database Directive 96/9/EC and Directive 2001/29/EC on copyright in the information society was implemented into Slovak legislation. Works of cartography in analogue or any other form are explicitly protected.

The strategy for the SDI does not contain specific copyright provisions. The Act on the Slovak Copyright, the Act on the Budgetary Regulation, the Act on the State Information System, and the Act on the Administrative Charges are applied in this case.

Most of the GI is accessible on the basis of a written contract. In the case of information supply via the Internet, a click-use license is considered to be a valid agreement.

2.3.5 Restricted access to GI further to the legal protection of privacy

Since the year 1998 the legal protection of privacy has been enacted in the SR legal framework (the NC SR Act No. 52/1998). The Act on the Protection of Personal Data was approved in July 2002 (the NC SR Act No. 428/2002). It limits the conditions of the collection, disclosure and use of the personal information by government agencies and private enterprises either in electronic or analogue form. It specifies the duties of access, the accuracy and the correction, security, and confidentiality on the data processor. The Act also created an Office for Personal Data Protection to supervise and enforce the Act.

The legal protection of privacy is incorporated into the Act on the Real Estate Cadastre and Entries for Ownership and Other Rights to the Real Estates and in the Act on Geodesy and Cartography. The specific provisions in relation to privacy contain forbiddance to publish the personal identification numbers on-line.

Directive 2002/58 on privacy and electronic communications has been transposed into national legislation (the Act No. 610/2003).

2.3.6 Licensing framework

The policy for sharing GI between public institutions was included in the amendment of the Act on Geodesy and Cartography.. However, there are still various approaches to licensing of data and services. Under the Act, the provider supplies natural or legal persons with datasets from the Automated Information System of the Geodesy, Cartography and Cadastre on the basis of a written contract. Neither the access to the

datasets nor the datasets should be provided to third persons. Private companies can join this framework under the conditions specified in the legal system.

For access to the Cadastral Portal, a difference is made between registered and non-registered users. The former can use data from the entire territory of the country, based on an agreement. Such use is intended for users such as state organs, bodies active in criminal proceedings, executors, notaries, tax offices etc. The latter users do not have to conclude an agreement, but can only search in the extent of one cadastral district (see <https://www.katasterportal.sk/kapor/faq.do>). This is in line with the policy of the Ministry of the Environment that environmentally oriented data created with state funds should be available without restrictions, upon registration and acceptance of copyright terms (Martin Tuchyna, Establishment of spatial data infrastructure within the environmental sector in Slovak Republic, 2006)

2.3.7 Funding model for the SDI and pricing policy

Funding

Funding of the SDI-activities of the GCCA is mainly provided by the state budget. Part of the SDI linked activities are based on partial cost recovery. The production and maintenance of the core datasets of the SDI are financed via a combined model of central government funding and cost recovery. The metadata service is financed via central government funding.

On the regional level, funding through the EU structural funds is pursued. On the local level the creation and the maintenance of the thematic GISs, which are based mainly on survey information of the cadastre of real estates, are funded by municipalities.

Since 1995, the GCCA has been involved in the Phare programme, a grant initiative of the European Union for the support of the economic transformation process. It has conducted projects on Land Administration and Cadastral Infrastructure and Strengthening the Efficiency of Cadastral Services.

Pricing

There are several laws that have an effect on the pricing policy with regard to GI, especially the Act on Free Access to Public Information public information in Slovakia, the Act on the Budgetary Regulation, the Act on the State Information System and the Act on the Administrative Charges. The above-mentioned acts define the basic rules and conditions for the provision of datasets owned by governmental bodies. In the case where these acts cannot be applied, the Act about Prices is valid. This Act about Prices prescribes the negotiation of prices.

With regard to pricing of GI-related PSI in general there is a marginal cost recovery policy. At present, metadata are provided free of charge as well as the core datasets for the state administration bodies.

2.3.8 Conclusions of Component 2

INSPIRE has been transposed into national legislation and the final text has been published. However, there is no strategic document, neither an implementation plan yet. PPPs are quite common practice in the Slovak Republic, especially in the sectors of building industry, architecture and others. In the GI-sector the PPPs are considered to be very useful in the development of an SDI. The policy for sharing GI between public institutions was included in the amendment of the Act on Geodesy and Cartography.. However, there are still various approaches to licensing of data and services. There are several laws that have an effect on the pricing policy with regard to GI. At the moment there is no direct funding for INSPIRE..

Based on these conclusions we score the indicators as follows:

- There is a legal instrument or framework determining the SDI-strategy or – development
- There are true PPP's or other co-financing mechanisms between public and private sector bodies with respect to the development and operation of the SDI-related projects
- There is a freedom of information (FOI) act which contains specific FOI legislation for the GI-sector (No)
- GI can specifically be protected by copyright
- Privacy laws are actively being taken into account by the holders of GI (In Preparation)
- There is a framework or policy for sharing GI between public institutions
- There are simplified and standardised licences for personal use (In Preparation)
- The long-term financial security of the SDI-initiative is secured (No)
- There is a pricing framework for trading, using and/or commercialising GI (In Preparation)

2.4 Component 3: Data for themes of the INSPIRE annexes

2.4.1 Scale and resolution: European, National, Regional, Local, Other

The published maps and derived geodatasets can be divided into:

- Large-scale maps 1:1.000 up to 1:5.000;
- Medium-scale maps 1:10.000 up to 1:200.000;
- Small-scale maps 1:250.000 up to 1:1.000.000.

With respect of its contents, the state map series is divided into the basic state map series and the thematic state map series. The GCCA is responsible for compilation, updating, and editing of the basic state map series and some thematic state map series.

Basic state map series representing the state territory in a coherent way, its basic content can be used in different ways and it is compiled in accordance with uniform rules.

The ministry of defence produces:

Analogue products

- Standard products
 - Topographic map 1 : 50,000 with reprinted UTM Grid
 - Topographic map 1 : 200,000 with reprinted UTM Grid
 - [Unified topographic map 1 : 50,000 \(UM50, Series M779\)](#)
 - Topographic map 1 : 25,000 (WGS 84), (in preparation)
 - Topographic map 1 : 100,000 (WGS 84), (in preparation)
 - [Topographic map 1 : 500,000 \(WGS 84\), \(in preparation\)](#)
 - [Topographic map 1 : 1,000,000 \(WGS 84\)](#)
 - JOG – Joint Operations Graphic – Ground 1 : 250,000 (Series 1501 - Ground)
- Aeronautical charts
 - [JOG – Joint Operations Graphic – Air 1 : 250,000 \(Series 1501 - Air\)](#),
 - [TFC\(L\) – Transit Flying Chart \(Low Level\) 2nd Series 1 : 250,000,](#)
 - [Aeronautical chart 1 : 500,000](#)

- Aerial chart TPC – Tactical Pilotage Chart (Topographic Institute(TI) is only a provider)
- Aerial chart ONC – Operational Navigation Chart (TI is only a provider)
- Orthophoto maps of Military Training Area (MTA)
 - Orthophoto maps of MTA Lešť 1 : 25,000
 - Orthophoto maps of MTA Záhorie 1 : 25,000
 - Atlas of orthophoto maps MTA Lešť 1 : 10,000
 - Atlas of orthophoto maps MTA Záhorie 1 : 10,000
 - [Atlas of orthophoto maps MTA Turecký vrch 1 : 10,000](#)
 - Atlas of orthophoto maps MTA Kamenica nad Cirochou 1 : 10,000

Digital products

- [VMAP Level1 – Vector Smart Map Level 1](#)
The Vector Smart Map Level 1 is a vector geographic database of the territory of the Slovak Republic at a scale of 1 : 250,000
- [DTM version 3 – Digital Terrain Model version 3](#)
DTM is continuous model of terrain generated from vectorized contour lines. Vertical Accuracy of DTM is estimated in interval +/-5m. Model was generated with TOPOGRID module of ArcInfo and it is hydrological correct.
- [CGD – Central Geospatial Database](#)
Central Geospatial Database is a global set of information about the territory of the Slovak Republic in digital form.

Geodetic products

- Map of geodetic data, (in preparation)
- Catalogue of coordinates of the Sun and the Polaris
- Catalogue of levelling points

Other products

- [MGI-Military Geographic Information](#)
The Military Geographic Information are designated for preparation of members of the Slovak Armed Forces deployed in foreign missions.
- Aerial photographs

Military Topographic Map (MTM)

The Topographic Institute has prepared a new edition of the new Military Topographic Map (MTM) processed in NATO standards, in new index and trim sizes of map sheets. The basic data source for production of MTM at scale of 1:25,000, 1:50,000 and 1:100,000 is utilization of the Central Geospatial Database. The basic sources for production of MTM at scale of 1:500,000 are JOG 1:250,000 (series 1501) and for production of MTM at scale of 1:1mil the basic data source is VMap Level 0.

(<http://topu.army.sk/en/index.htm>)

2.4.2 Data by resolution or scale range for the INSPIRE themes

Large-scale Maps & Geodatasets

Within this group are the maps at scales of 1:1.000, 1:2.000, 1:5.000 and other scales created for the purposes of the real estate cadastre. Within the framework of building a new cadastre, **the vector map** of stated documentations have been made and subsequently kept.

Medium-scale Maps & Geodatasets

The group of medium-scale maps is represented by a set of basic maps in S-JTSK and the Baltic Vertical Datum - after Adjustment. The map sheets are of a uniform format 630x470 mm. The cartographic symbol system and the method of their colour expression are harmonized.

- *The Basic Map of the Slovak Republic 1:10 000* has been made by updating the 1:10.000 topographic map published before 1971 in S-42. In its compilation current aerial photos were used. The first edition was published carried out in the period 1972-1986. From 1987, systematic revision of the map series has been done using aerial photos in a differentiated cycle depending on the territory significance.
- The raster sets of the Basic Map of the Slovak Republic 1:10.000 was made by scanning the map print base of planimetry, lettering, hydrography, canopy and altimetry from 2,820 map sheets of the territory of the Slovak Republic and in the year 2000 has been updated. Brand new maps are made by visualization of GIS data of the PD GIS.
- *The Basic Map of the Slovak Republic 1:25.000* has been derived from the Basic map of the Slovak Republic 1:10.000. The content of the maps are generalized during the cartographic processing. The first edition of the map started in 1973.
- *The Basic Map of the Slovak Republic 1:50.000* has been made by cartographic re-editing of the previous map series published in S-42. The first edition in 1970-1971, covered the whole territory of the Slovak Republic.

Regarding its wide use as a base for future basic and thematic state map series the map has been superseded regularly. The remake of the map to the Seamless Vector Map required annual updating of the most important features of the map content. The map is available as a colour copy from a plotter or in digital form.

- ***The Seamless Vector Map 50*** was completed as the spatial object-oriented database, which was created by vectorizing the scanned print bases of all 134 map sheets of the Basic map 1:50 000 in the Arc/Info environment. Individual features have been separated into 52 levels. In the year 2000, the layers of the boundaries of territory-administrative and territory-technical units were updated. Data is stored in nine basic thematic layers with lettering, type and attribute. Eight basic thematic layers are created in vector form. The item of lettering is attached in raster format. SVM50 layers display; forests, contours, water areas and streams, roads of all classes, built-up areas, boundaries of territorial units (cadastral districts, municipalities, districts, regions and others).

http://www.geoportal.sk/gp/index_en.html

- ***The Basic Map of the Slovak Republic 1:100.000*** is a downscaled version of the Basic map of the Slovak Republic 1:50 000. The first edition published in 1983 -1990. The map Revision is carried out according to requirements.
- ***The Basic Map of the Slovak Republic 1:200.000*** is a map derived from the Basic map of the Slovak Republic 1:50.000. The first edition was published in 1971 - 1972, and by 1997 two all-area revisions had been made.

Within the group of medium-scale maps, are also the maps of territorial units, published on the basis of chosen basic maps. They comprise:

- The District Map of the Slovak Republic edited and published on the basis of the Basic Map of the Slovak republic 1:50.000;
- The Region Map of the Slovak Republic 1:200.000 edited and published on the basis of the Basic Map of the Slovak Republic 1:200.000.
- ***MSR 10*** - the Map of the administrative division of the Slovak Republic. Was created from the map print base of the Basic map of the Slovak Republic 1:10.000. Vectorisation has been done in the GeoScan environment. The vector map is in line with the current administrative units of the Slovak Republic.

Small-scale Maps & Geodatasets

The group of the small-scale maps includes:

- The Basic Map of the Slovak Republic 1:500.000 and the Basic map of the Slovak Republic 1:1.000.000. Both maps are published as a 6-colour print;
- The territorial and administrative division of the State is projected on the administrative maps at scales of 1:250.000, 1:400.000 and 1:500.000 and the maps of the administrative division of the Slovak Republic at scales of 1:400.000 and 1:1.000.000.

The Primary Database for the Geographic Information System is being created as a spatial object-oriented database in ETRS 89 and EVRS 2000 with the level of detail corresponding to the Basic Map of the Slovak Republic 1:10.000, by evaluation of aerial survey photos using digital photogrammetry and filling up basic attribute database. In the year 2003 the creation of digital vector planimetric component of a map started. This reference data will form the core of the National Spatial Infrastructure.

Basic registers are the national information systems that identify the basic units of society (natural persons, corporations, administrative units, cadastral area, real estate units, and buildings including dwellings).

The use of the information system of the cadastre of real estates supports detailed mapping at large scales.

A digital model of the relief of Slovakia using vectorization of print bases of the altimetry component, part of the map 1:10.000 in cooperation with the TOPU was created.

Within the framework of international cooperation, the GCCA participates in activities with the EuroGeographics. The project “**Seamless Administrative Boundaries of Europe (SABE)**” as a vector database of administrative boundaries in Europe includes the boundaries of administrative units with identifiers, names and information on hierarchical level. The version of 1 May 2004 includes the territory of the Slovak Republic.

Within the framework of international cooperation, the GCCA participates in activities with EuroGeographics. The project “**EuroGlobalMap**” is a digital topographic dataset that covers Europe at the scale 1:1 Million. It is seamless and harmonised data and is produced in cooperation by the National Mapping and Cadastral Agencies of Europe, using official national databases. The version 2004 includes the territory of the Slovak Republic.

The high quality forestry maps - forest stand maps in scale 1:10.000, and updated simultaneously with forest management plan renewal every ten years, form the basis of Slovak forestry mapping. They contain basic geographical data, terrain lines, detailed recognition of forest road network and footpaths and further important data relevant to forestry practice. Contour (uncoloured) forestry maps serve as a basis for the creation of various special forestry maps.

Regarding the INSPIRE data themes requirements, there has been launched a survey for INSPIRE data themes availability, done via INSPIRE@SK website

(http://www.sazp.sk/inspire/index.php?option=com_content&task=view&id=96&Itemid=62).

According to the feedback and current situation in Slovakia, there has been identified 31 from 34 themes specified by INSPIRE. Two of the themes (Oceanographic geographical features, Sea regions) are not relevant for Slovakia and one theme (Area management/restriction/regulation zones and reporting units) still miss responsible authority clarification. There are also possible changes among the identified 31 themes depending on state of development data specification implementing rules and also depending on the results of transposition and implementation of INSPIRE in Slovakia.

The data under the GCCA responsibility are mentioned in the ANNEX I. Their metadata description is very poor, not according to the ISO 19115. Existing metadata are stored in different databases. In 2008, the Slovakian SDI is going to establish a geoportal and metadata system and to collect the metadata for discovery according to IR for metadata.

According to the current state of INSPIRE data specification; MOE expects requirements for responsibility for fourteen themes. Some of them are described by standardised metadata and most of them are ready for 1:50 000 scale resolution. Data are updated by organisations under the MOE.

MOI has announced, they are in a phase of internal identification of relevant spatial data.

PHA has provided a data specification for available datasets of Annex III Human health and safety theme.

From the commercial part of contributors there has been provided description of StreetNet SR data available via CEDA Slovakia. CEDA Slovakia is specialized in data capturing of road and street network with navigation attributes, collection of addresses, points of interests, geographical names and updating with other thematic layers (Administrative and Statistical units, Hydrography, Land cover and use, etc.). CEDA Slovakia is also a distributor of the Tele Atlas product called MultiNet – it is a seamless navigation database of Europe.

In the (<http://geo.enviroportal.sk/sluzby/metaudaje>) environmental portal all 34 themes are available. The Metainformation system is built under the INSPIRE directive, namely as INSPIRE metaúdajový profile and is based on ISO 19115, 19139 standards. A complete list will be presented in the updated report including the information provided by the country in 2010.

2.4.3 Geodetic reference systems and projections

Spatial referencing is done by the Coordinate System of Uniform Trigonometric Cadastral coordinates, but not according to ISO 19111. For every map scale display and mapping the Křovák's conformable conical projection in general position is currently used.

The Coordinate System of Uniform Trigonometric Cadastral Network is defined :

- By Bessel's ellipsoid with parameters $a = 6\,377\,397.155\,08$ m and $f = 1:299.152\,812\,853$ where "a" is the length of main semiaxis and "f" is the flattening;
- By Křovák's conformable conical projection in general position;
- By the point coordinate file of the Uniform Trigonometric Cadastral Network.

Since 1996 the European Terrestrial Reference System (ETRS89) was introduced by the decree No. 178/1996 of the Geodesy, Cartography and Cadastre Office of the Slovak Republic by which the Act of the National Council of the Slovak Republic about Geodesy and Cartography is executed. The ETRS89 is in line with the ISO 19111.

The European Terrestrial Reference System is defined:

- by an ellipsoid of Geodetic Reference System 1980 with constants $a = 6\,378\,137$ m, $GM = 3\,986\,005 \times 10^8 \text{ m}^3 \cdot \text{s}^{-2}$, $J_2 = 108\,263 \times 10^{-8}$ and $\omega = 7\,292\,115 \times 10^{-11} \text{ rad} \cdot \text{s}^{-1}$ where "a" is the length of the main semiaxis of the equipotential ellipsoid. "GM" is the geocentrical gravitational constant. "J₂" is the zonal geopotential coefficient of the second grade and "ω" is the angular velocity of the Earth's rotation, by European stations of the International Terrestrial Network of Reference Points.

For creating the Primary Database for GIS the European Terrestrial Reference System (ETRS89) is used.

There are algorithms available for conversion of coordinates from the Coordinate System of Uniform Trigonometric Cadastral Network to ETRS89.

State Levelling Network

Since 1997 the State Levelling Network is being built. Normal heights of the geodetic control points represented in the State Levelling Network of the 1st and 2nd order are determined in the European vertical reference network 2000 (European Vertical Reference System 2000 – EVRS 2000). In 2004, after summary adjustment the network will be registered in the United European Levelling Network (UELN).

Raster data are available in one of the following formats: CIT, TIFF or other formats which enables conversions (RLE, RLC, BMP, PCX).

2.4.4 Quality of the data

The quality of the reference data & core thematic data is tested by the internal procedures.

Update schedules vary with the datasets.

2.4.5 Interoperability

The GIS software being used by the GCCA for the Seamless Vector Map 1:50.000 and for the EuroGeographics' projects is mainly ArcGIS, ArcSDE, ArcView. For the Primary Database for GIS, Intergraph software is used. Geo-Portal of GCCA is providing OGC compliant WebMapServices via Minnesota Map Server. Within the Environmental area the solutions from main GI vendors as Intergraph, ESRI, Bentley, MapInfo are being used. The usage of some interoperability supporting elements can be recognised, like ESRI interoperability tools (Open GIS WMS, FMS services, GML exchange). SEA is providing OGC compliant WebMapServices via ArcIMS Map Server.

2.4.6 Language and culture

Metadata (data dictionary) is provided. The original language is Slovak, and it is occasionally translated into English. For some datasets the metadata is available only in Slovak.

2.4.7 Data Content

The text explanation for the attributes and for the data dictionary will be contained in the catalogue, which is still being developed.

2.4.8 Geographical names

In 1995, the creation of a computerised dataset on the standardised names of non-residential geographical objects was started. It contains the names of the objects named on the Basic map of the Slovak Republic 1:10.000 and 1:50.000, location according to a cadastral district, inclusion in a higher administrative unit, location to the map sheet of the Basic map of the Slovak Republic 1: 10.000, geographic coordinates, the date of standardisation, the previous form of a name with the period of validity, the feature of the object, and others. The database from the whole territory of the State will contain ca 70.000 names. The database was completed.

The geographical names are managed in Slovak language.

2.4.9 Conclusions of Component 3

Already from the previous SK's SoP report several Geodatasets existed which provide a basis for contributing to the coverage of pan-Europe for the INSPIRE-selected data themes and components while the geodetic reference system and projection systems are standardised, documented and interconvertable. The INSPIRE 2010 MR confirms the statement. 99 datasets have been reported. 29, 57 and 13 datasets for Annex I, Annex II and Annex III respectively. However, many themes are missing especially for Annex III. The quality of the reference data & core thematic data is tested by the internal procedures.. The main language used is Slovak while English translation is occasional.

Based on these conclusions we score the indicators as follows:

- Geodatasets exist which provide a basis for contributing to the coverage of pan-Europe for the INSPIRE-selected data themes and components (Partially)
- The geodetic reference system and projection systems are standardised, documented and interconvertable
- There is a documented data quality control procedure applied at the level of the SDI
- Concern for interoperability goes beyond conversion between different data formats (No)
- The national language is the operational language of the SDI
- English is used as secondary language (Partially)

2.5 Component 4: Metadata

2.5.1 Availability of metadata for the data

Metadata are available for most of the available data. They are either of the exploration or exploitation type and partially allow assessment of fitness for use. Environmental area is covered by CDS metadata service. (See 2.5.2).

2.5.2 Metadata catalogues availability + standard

The Slovak Republic is preparing for adoption the standard ISO 19115 Geographic Information -Data description for Metadata. This standard needs to be implemented. It is not clear whether this has been implemented yet, or not.

Metadata catalogue: http://geonet.sk/main_en.htm - the geoportal also gives information on SDI stakeholders and offers applications for integration and distribution of interoperable geographical information resources. A user can also register at this web site.

EnviroInfo: <http://enviroinfo.enviroportal.sk>

Geoportal: <http://www.geoportal.sk>

KatasterPortal: <http://www.katasterportal.sk>

EnviroGeoPortal: <http://geo.enviroportal.sk>

2.5.3 Dublin core metadata standards for GI-discovery

Not implemented.

2.5.4 Metadata implementation

The GCCA is responsible to coordinate and implement the metadata of the Primary Database for GIS, the Geodetic Control and the Cadastre Registries .

There is no standardised feature code-list within the metadata, There is no standardised thesaurus for use with the metadata, except usage of GEMET thesaurus used by CDS metadata service. There are no formalised update procedures for metadata.

2.5.5 Conclusions of Component 4

Metadata are produced for an important fraction of geodatasets of the themes of the INSPIRE annexes. The 2010 MR reveals that for the reported datasets of INSPIRE (72%, 21% and 38% of the data sets have metadata for the Annex I, II and III respectively). There is a Metadata catalogue accessed via the geoportal. Although The GCCA is responsible to coordinate and implement the metadata of the Primary Database for GIS, the Geodetic Control and the Cadastre Registries this is not yet applicable on the NSDI level..

Based on these conclusions we score the indicators as follows:

- Metadata are produced for a significant fraction of geodatasets of the themes of the INSPIRE annexes (Partially)
- One or more standardised metadata catalogues are available covering more than one data producing agency
- There is a coordinating authority for metadata implementation at the level of the SDI (Not so clear)

2.6 Component 5: Network Services

2.6.1 On-line access service for metadata: discovery services

The Geoportal GCCA is on-line available (<http://www.geoportal.sk/>). The GCCA Geoportal contains meta-information about documents, databases, vector spatial data and raster spatial data. Some of the reference and core thematic data and their metadata can be found there. There is an English version available, but updating is stagnating. It is freely accessible. It is possible to use the portal in JAVA and HTML format.

The choices of layers that can be downloaded as pdf are:

- State map series (e.g. 1:200000, 1:100000, 1:50000, 1:25000, 1:10000, 1:5000, 1:2880, 1:2000, 1:1000). Raster as (1:10000, 1:50000, 1:100000, 1:500000)
- Area boundaries (regions, district, municipality, cadastral district)
- Settlements
- Geodetic control
- Cadastral maps
- GIS layers
- Seamless vector map
- Digital models
- Orthophoto maps
- State administration scope
- Historic maps

The main metadata service for the Environmental sector in SR is CDS developed by SEA. CDS is on-line available (<http://www.iszp.sk/katalog/index.html>). The Slovak Environmental CDS contains meta-information about documents, projects, databases, vector spatial data and raster spatial data. Some of the reference and core thematic data and their metadata can be found there. There is an English version available and it is freely accessible.

The situation within the area of services wasn't very in 2007. Except some practical implementations there is still missing some wider growth of available services according the INSPIRE expectations.

Within the environmental sector (MOE), there has been established some new implementations of discovery, view, download and invoking services. During the year 2007 there were published WMS, WFS, WPS and CSW services in various levels of implementations. Most of the services provide data coverage for whole Slovak republic. The priority was focused on development of catalogue services (CSW) following metadata implementing rules expectations.

The geoportal (http://geonet.sk/main_en.htm) created the National Spatial Data Infrastructure (NSDI) project. NSDI is a set of elements which provide the functionality for the interoperability of geographical information sources.

The geographical information sources are made of:

- the geographical and spatial information (GI),
- the geographical information systems (GIS) and
- the information services:
 - integration of GI,
 - publication of GI,
 - finding of GI,
 - retrieval of GI,
 - visualization of GI,
 - geoprocessing and the creation of added value of GI.

The elements of NSDI are:

- metadata,
- spatial data and data services,
- network services and technologies,
- the rules of sharing, accessing and exploitation of data and services,
- coordinating and monitoring mechanisms, processes and procedures.

The Map Services of NIPI provide: WMS and WFS services.

The WMS, WFS map services were implemented within the frame of the project based on Open Geospatial Consortium, Inc. (OGC) specification.

WMS services included project

1. **Overview data of Slovak Republic**
<http://mapserver.geonet.sk/WMSKLIENT/mapy/SPH/wms.asp>
2. **Sample service of ZBGIS of ZVOLEN surroundings**
<http://mapserver.geonet.sk/WMSZVOLEN/wms.asp>
3. **Sample service of rasters of ZVOLEN surroundings**
<http://mapserver.geonet.sk/WMSZVOLENRAS/wms.asp>

The data are published in these coordinate systems:

1. EPSG:2065 - S-JTSK (projection)
2. EPSG:102067 – S-JTSK (projection)
3. EPSG:4818 - S-JTSK (projection)
4. EPSG:4326 - WGS-84 (geographic)
5. EPSG:2493 - S42; GaussKruger15E (projection)
6. EPSG:2494 - S42; GaussKruger21E (projection)
7. EPSG:28403 - S42; GaussKruger 3zone (projection)
8. EPSG:28404 - S42; GaussKruger 4zone (projection)
9. EPSG:32633 - UTM33; datum WGS84 (projection)
10. EPSG:32634 - UTM34; datum WGS84 (projection)
11. EPSG:4258 - ETRS89 (geographic)
12. EPSG:25833 - ETRS89 / UTM zone 33N (projection)
13. EPSG:25834 - ETRS89 / UTM zone 34N (projection)
14. EPSG:3045 - ETRS89/ETRS-TM 34 [UTM zone 33N] (projection)
15. EPSG:3046 - ETRS89/ETRS-TM 35 [UTM zone 34N] (projection)

Users can use [WMS client NIPi](#) to view these data.

WFS services included

1. **Editing the address points**
<http://mapserver.geonet.sk/nipiwfs1/request.aspx>

The data are published in these coordinate systems:

1. EPSG:2065 – S-JTSK (projection)

Users can use [WFS client NIPI](#) to view and edit data in a sample application "editing the address points".

Other special services implemented within the frame of WMS viewer: WMS client NIPI are **Search services and Transformation services**.

The Slovak Republic is yet to be established under the INSPIRE geo-portal, there are sectoral thematic portals established by the different organizations involved. Forthcoming national geo-portal will take into account the requirements of INSPIRE and OGC standards and will be linked to the European INSPIRE geo-portal.

An overview of services is given in the next table.

Services						
Service ²	Organisation responsible	Type of service ³	Metadata (N/Y/ISO) ⁴	Open for Public (Y/N)	Free/Not free ⁵ (Y/N)	
EnviroInfo Metadata catalogue http://enviroinfo.enviroportal.sk/en/article/news	MOE/SEA	Discovery	N	Y	Y	
eGeoPortál http://geo.enviroportal.sk/en/egeoportal	MOE/SEA	View (WMS, WFS)	N	Y	Y	
Analytical server of SEA (WCS) http://geo.sazp.sk	MOE/SEA	Download data via WCS	N	Y	Y	
Central geographical system of MOE http://atlas.sazp.sk/cgs_imk_all	MOE/SEA	Download data via WFS	N	N	N	
Analytical server of SEA / (WPS) http://geo.sazp.sk	MOE/SEA	Invoking services (Web processing service-visibility)	N	Y	Y	
Water framework directive - Map service http://zeus.shmu.sk/mapy/rsv/viewer.htm	MOE/SHMU	View	N	Y	Y	
Tele Atlas Map Insight http://mapinsight.teleatlas.com	Tele Atlas	Discovery, View	N	Y	Y	
CEDA BugReports SR http://momo.mmc.cz/ceda-bugreport_SK	CEDA Slovakia, s.r.o.	Discovery, View	N	N (only for clients)	Y	

² List the names/IDs and where possible the link (URL) of all the discover, view, download, transformation and invoking services that are part of your infrastructure

³ Indicate the type (discover, view, download, transformation and invoking services)

⁴ Indicate whether the service has no metadata (N), or metadata according to ISO 19119 (ISO).

⁵ Whether or not the service is free for use.

Mapa Európy.SK http://www.mapaeuro.py.sk/	Unknown	View	N	Y	Y
CENTROPE MAP http://map.centropemap.org/	Office of the Planungsgemeinschaft Ost (PGO)	View	Y	Y	Y
Freemap Slovakia http://www.freemap.sk	Freemap Slovakia	View	N	Y	Y
Turisticka Mapa. SK http://www.turistickamapa.sk	Hiking.SK	View	N	Y	Y
GIS Portal of Banská Bystrica http://www.uhabb.sk/webgis/ http://www.uhabb.sk/mapa/htdocs/bystrica.php	Útvar hlavného architekta mesta Banská Bystrica	View	N	Y	Y
GIS Portal of Žilina self governing region http://gis.zask.sk/FrontController?project=giszsk	Self governing region Žilina	View	N	Y	Y
SVM 50 Viewer http://www.arcgeo.sk/svm50karto/	ArcGEO Information Systems s.r.o	View	N	Y	Y
SVM 500Viewer http://www.arcgeo.sk/svm500arto/	ArcGEO Information Systems s.r.o	View	N	Y	Y
Bratislava's street search client http://ba.arcgeo.sk/	ArcGEO Information Systems s.r.o	View	N	Y	Y
Mapy.SK http://beta.mapy.atlas.sk/	Atlas. SK portal	View	N	Y	Y
Supernavigator.SK http://www.supernavigator.sk	Supernavigator.SK	View	N	Y	Y

	Mapy.zoznam.sk http://mapy.zoznam.sk	Zoznam.SK	View	N	Y	Y
	Google Maps http://maps.google.com/	Google	Discovery, View	N	Y	Y

2.6.2 On-line access service for data: download services

For cadastral data there is on-line access service in Slovak language only (<http://www.katasterportal.sk>).

The Cadastral Portal (<https://www.katasterportal.sk/kapor/>) was established on the basis of the government decree of the Slovak Republic No. 540/2002, in which land register data publication over the Internet have been enacted. The Cadastral Portal enables authorized access to land register data, obtain basic information instantly and without visit to the respective district cadastral registry, for the authorized subjects and allows to obtain summary and detailed information without complicated correspondence.

The Land register data publication over the Internet is supposed to bring enhanced database, improvement of property and legal relations transparency, drop of corruption in environment, increase of the credit of Slovak Republic abroad and the reduction of the workload of the district land registries and the Geodetic and Cartographic Institute in information service delivery.

The Cadastral Portal for not login users enables:

- searching via registered identifiers
- searching data via graphical interface
- searching for information on cadastral procedure/proceeding

Registered and login users can:

- generate PDF outputs referring to the user's selection
- searching information on cadastral procedure according to a period
- generate statistics on cadastral districts

Cadastral Portal is an application aimed primarily at the public and the application creator/producer is [Ness Technologies](#).

The Landscape Atlas of Slovak republic (LASR) has been developed by SEA. There is on-line web service providing access to 400 maps containing 700 GI layers covering main areas of interest. Reference scale is 1:50 000. LASR is accessible via Enviroportal (<http://www.enviroportal.sk/atlas/atlassr/index.html>). The English version is planned. No additional information has been found.

2.6.3 Inter-linkages of on-line access services for metadata and data

It is possible to combine published web map services from GCI (<http://www.geoportal.sk>) and SEA (<http://atlas.sazp.sk>) via INSPIRE GeoPortal

(<http://eu-geoportal.jrc.it/>), or via Intergraph OGC WMS Viewer (<http://www.wmsviewer.com>).

2.6.4 OpenSource software and access services

The map services, developed by SEA with JSHAPE Java GIS Solutions, can serve as an example of open source GIS web services usage. These web maps are in Slovak language and are on-line accessible (<http://www.sazp.sk/webgis/index.html>).

2.6.5 Availability of viewing services

www.geoportal.sk is the web maps service of the GCCA while the

Web mapping services that let the user browse city maps at various scales are provided by private companies and some municipalities, for example <http://mapy.zoznam.sk>, <http://mapy.atlas.sk>, <http://supernavigator.sk>

A service for cellular phone localisation has been established and provided by Orange Slovakia. The website in Slovak version : <http://www.orangeportal.sk/lbs/ff/index.jsp>

An example of geocoding service is a locator service for Bratislava provided by ArcGeo: http://www.arcgeo.sk/cms/front_content.php (English).

Another example of published GI data via webmap services (soil data and orthophoto) are available via Soil Science and Conservation Research Institute's application for soil maps: <http://www.podnemapy.sk/lpis/viewer.htm>.

The access to both of them is free of charge.

New viewers were recently developed applying WMS standards. In addition some WCS services exist as well.

Geoportal (<http://www.geoportal.sk>) - WMS

SEA MapServer (<http://enviroinfo.enviroportal.sk/>) – WMS, WCS

WF Directive viewer (<http://zeus.shmu.sk/mapy/rsv/viewer.htm>) – WMS, WCS

2.6.6 Availability of catalogue services to regulate access

Not available.

2.6.7 Availability of catalogue services that perform payment operations

Through the GCI, GCCA operates a Cadastral Portal (www.katasterportal.sk).

2.6.8 Availability of catalogue services to extract and send data to a user application

No such applications were identified.

2.6.9 SDI user applications

Example of usage published webmap services can be found on tourist server “Hiking.sk” (http://hiking.sk/mapa/hkart_0.html).

2.6.10 Availability of geo-processing services

Not available.

2.6.11 Conclusions of Component 5

The geoportal (http://geonet.sk/main_en.htm) is created by the National Spatial Data Infrastructure (NSDI) project. Inside the portal access services are available. The Monitoring Report states 7 discovery, 12 view, and 2 download services.

Based on these conclusions we score the indicators as follows:

- There are one or more discovery services making it possible to search for data and services through metadata
- There are one or more view services available for to visualise data from the themes of the INSPIRE annexes
- There are one ore more on-line download services enabling (parts of) copies of datasets
- There are one or more transformation services enabling spatial datasets to be transformed to achieve interoperability (No information found)
- There are middleware services allowing data services to be invoked (Not so clear)

2.7 Component 6: Thematic environmental data

The legal framework and funding principles (for reference & core thematic data) to thematic environmental data are the same as in the section 2.2. The reference data such as geodetic control, Primary Database for GIS,, Cadastral Registries and above all Seamless

Vector Map 1:50 000 created by GCCA are used for thematic environmental data creation and management.

MoE is responsible for management of production, handling and distribution of environmentally oriented datasets. The main stakeholders under the MoE responsible for environmental data are:

- Slovak Environmental agency
- Slovak Hydrometeorological Institute
- Slovak Water Management Enterprise
- Geological Survey of Slovak Republic
- State Nature Conservancy of the Slovak Republic
- Water Research Institute
- SSJ
- SMOPAJ

A metadata service, CDS-based, is available.

At the enviroportal (<http://enviroportal.sk/>) there are 115 different themes of information with about 154337 metadata.

Moreover, the Water Research Institute (WRI) provides comprehensive service and maintenance in the development and delivery of digital (GIS) or analogue (printed) map services. Water maps of Slovakia at scale 1: 50,000 can be purchased at WRI map service (http://www.vuvh.sk/index.php/en_US/uvod#morelink)

2.7.1 Conclusions of Component 6

At the enviroportal (<http://enviroportal.sk/>) there are 115 different themes of information with about 154337 metadata.

Based on the information provided on the previous paragraph we score the indicator as follows:

- Thematic environmental data are covered by the described SDI-initiative or there is an independent thematic environmental SDI

2.8 Standards

The GeoPortal GCCA implements OGC standards in UMN Mapserver application and the WMS options are operating.

Moreover, extensive reference on standards for information systems for public administration is presented at: <http://informatizacia.sk/standardy-is-vs/596c> (though not in English).

At the same time on the EnviroGeoPortal (<http://geo.enviroportal.sk/standardy>) the section on standards deals with the use of OGC WMS, OGC WFS, KML, GeoRSS, ISO/TC 211 standards.

2.8.1 Conclusions of Component 7

Based on the information provided on the previous paragraph we score the indicator as follows:

- The SDI-initiative is devoting significant attention to standardisation issues

2.9 Use and efficiency of SDI

An interesting example of use, efficiency and cross border collaboration is the Centrope Map project (<http://www.centropemap.org/>).

The four neighbouring countries of the Czech Republic, Slovak Republic, Hungary and Austria comprise a region with six million inhabitants that is diverse both culturally and economically. The project Centrope Map follows the approach of processing spatial referenced data via OGC conforming Web Map Services (WMS). This application provides a basis for an online tool to display geodata and allows integrating information from distributed servers (Austria, Czech Republic and Slovak Republic). In the long-term, the initiative aspires to achieve a distributed spatial data management with full interoperability of systems and formats, based on international standards and considering all regional stakeholders.

3 Annexes

3.1 List of SDI addresses / contacts for Slovak Republic

Table: SDI contact list			
	Web address	Organisationa l mailing address	Over-all contact person: tel./fax/e-mail address
National			
The Geodesy, Cartography and Cadastre Authority of the Slovak Republic	http://www.geodesy.gov.sk	Stromová 1, 837 86 Bratislava Slovakia	Mrs. Nadežda Nikšová niksova@geodesy.gov.sk
The Research Institute of Geodesy and Cartography in Bratislava	http://www.vugk.sk	Chlumeckého 4, 826 62 Bratislava Slovakia	Mr. Juraj Vališ Tel.: +421 2 43335085 E-mail: valis@vugk.sk
The Geodetic and Cartographic Institute Bratislava	http://www.gku.sk	Chlumeckého 4, 827 45 Bratislava Slovakia	Mr. Matej Klobušiak Tel.: +421 2 43415200 E-mail: klobusiak@gku.sk
The Statistical Office of the Slovak Republic	http://www.statistics.sk/	Miletičova 3, 824 67 Bratislava Slovakia	Tel: +421 2 50 236 111 Fax: +421 2 55 42 45 87 E-mail: info@statistics.skmailto:
The Slovak Environmental Agency	http://www.sazp.sk/index_en.html	Tajovského 28, 975 90, Banská Bystrica, Slovakia	Mr. Martin Tuchyňa Tel: +421 48 4132157 Fax: +421 48 4132160 Email: tuchyna@sazp.sk

3.2 List of references for Slovak Republic

Table: list of references used to compile the Country Report	
Web sites:	
The Geodesy, Cartography and Cadastre Authority of the Slovak Republic	http://www.geodesy.gov.sk
<u>Geoportal GCCA</u>	http://www.geoportal.sk/gp/index_en.html
<u>Cadastral Portal GCCA</u>	https://www.katasterportal.sk/kapor/SSL
<u>Seamless Vector Map 1:50 000</u>	http://www.geoportal.sk/gp/index_en.html
Map of the Administrative Dividing of the Slovak Republic	http://www.geoportal.sk
Ministry of the Environment	http://www.enviro.gov.sk
Slovak Environmental Agency	http://www.sazp.sk/index_en.html http://www.enviroportal.sk http://www.sazp.sk/slovak/struktura/ceev/DPZ/CORINE/english.html http://www.iszp.sk/isu http://www.iszp.sk/katalog/index.html http://www.sazp.sk/webmapy http://www.enviroportal.sk/atlassr
Soil Science and Conservation Research Institute	http://vupu.sk/frame.htm
The Forest Management Institute	http://www.lesoprojekt.sk/english/default.htm
Topographic Institute in Banska Bystrica	http://topu.army.sk
GIS of the Tatra National Park	http://www.geodata.sk/projects/tristarska/index.php
GIS Database of Bielovodska dolina	http://www.geodata.sk/bielovodska/index.html
Digital technical map of Prešov	http://www.pce.sk/
Orange Slovakia	http://www.orangeportal.sk/lbs/ff/index.jsp

	http://www.geogr.muni.cz/lgc/gis98/proceed/VAJSABL.htm
	http://www.privacyinternational.org/survey/phr2002/phr2002-part3.pdf
	http://geonet.sk/main_sk.htm
	http://www.centropemap.org/
Publications:	
	Nadežda Nikšová, Andrej Vojtičko, “ <i>Report on the Use of Geographical Information in the Geodesy, Cartography and Cadastre Authority of the Slovak Republic.</i> ” Meeting of the Workshop on GI/GIS matters for Phare Countries, Joint meeting with National Statistical Offices and National Mapping Agencies of the Phare Candidate Countries. Luxembourg, October 24, 2001
	Nadežda Nikšová, Andrej Vojtičko, : Building of the Primary Database of the Geographic Information System as a component of the National Spatial Infrastructure. Geodetic and cartographic horizon, 49/91, 2003, č. 7-8, s.124-129.
	Juraj Vališ: INSPIRE – A new initiative of EU. Bratislava, Collection of papers from 10. Slovak geodetic days. Bratislava, Scientific-Technical Society. Geodézia Bratislava 2002, s. 33 – 38.
	Tuchyňa, M. and Tóth, S., 2004. SDI Slovakia – State of Play Spring 2004. Presentation held at the INSPIRE for enlargement countries workshop, held at JRC, Ispra on 13-14 May 2004.
	Tuchyňa, M. 2004: Sharing, exchange and accessibility of spatial information within the environmental sector. Presentation held at the ITAPA congress, Bratislava 19.10.2004. (http://www.itapa.sk/index.php?ID=886)
	Tuchyňa, M. 2005: Establishment of SDI in Slovak environmental sector. Presentation held at LORIS conference, Hradec Kralove, 4-5.4.2005. (http://www.issc.cz/download/issc2005e.pdf)
	Vališ, J., Tuchyňa, M., 2005. INSPIRE and eGovernment. Presentation held at the EC JRC Enlargement Workshop, Prague, 28-29 April 2005.
	Tuchyňa, M., 2005. Establishment of SDI in Slovak environmental sector. SAGI NSDI Seminar, Technical University Zvolen, 19.05.2005. (http://www.sagi.sk/Default.aspx?tabid=35)
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	2003
	Nadežda Nikšová, Andrej Vojtičko, “ <i>Building of GIS Fundamental Base as an Element of the National Space Infrastructure.</i> ” Geodetický a kartografický obzor, 49/91, 2003, č. 7-8, s. 124 – 129.
	Klobušiak M., Lacena M., Čukan J., Smékalová M., Michalík L., Ofúkaný M., Tomko M.: GeoPortal GCCA SK base of NSDI SK accessible via OGC WMS [CD-ROM]. In / Collection from conference GIS Ostrava 2005, Ostrava, 2005, /ISSN 1213-2454. http://gis.vsb.cz/GIS_Ostrava/GIS_Ova_2005/Sbornik/cz/Referaty/klobusiak.pdf
	Ofúkaný M., Vojtičko A.: Informatics in the GCCA SK sector [CD-ROM]. In / Collection from conference GIS Ostrava 2005, Ostrava, 2005, /ISSN 1213-2454. http://gis.vsb.cz/GIS_Ostrava/GIS_Ova_2005/Sbornik/cz/Referaty/ofukany.pdf
	Tuchyňa, M. 2004. “Inspiration called INSPIRE”. Enviromagazín, 3/2004
	Tuchyňa, M. 2004. “Catalogue of data sources – metadata system of environmental sector”. Enviromagazín, 5/2004 http://www.enviromagazin.sk/enviro2004/enviro5/geograficke_informacne_systemy.html
	ePSplus National Report Slovakia, http://www.epsiplatform.eu/content/download/17719/225697/file/SlovakR_National_Meeting_Report_(Final).pdf , 2007)
	Martin Tuchyňa, Establishment of spatial data infrastructure within the environmental sector in Slovak Republic, Environmental Modelling & Software 21 (2006) 1572-1578
	Martin Tuchyňa and Juraj Valis. 2006. Country:Slovakia. Preparing the National INSPIRE InfoDays. E&I WS organized by IES-SDI Unit. Ispra, 14-15/09/06
	Martin Koška, MarekŽiačik, VladimírBenko, 2010. <i>Slovak Spatial Data Infrastructure building</i> INSPIRE Conference 2010 Krakow 24.6. 2010
	Pavol TARINA. 2009. eGovernment & Slovakia 2009. 7th Eastern European eGovernment Days Conference 2009: eGovernment & eBusiness Ecosystem & eJustice.Prague, Czech Republic – April 23, 2009.
	Katarina Leitmannova and Stefan Moyzes. 2009. INSPIRE Implementation in the Slovak Republic. INSPIRE ATLAS OF IMPLEMENTATION METHODS 29 & 30 April 2009.