Spatial Data Infrastructures in *Slovenia:* State of play 2010

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8.1	2008-05-12	Danny Vandenbroucke, Ludo Engelen (SADL)	Integration results survey
8.2	2008-07-28	Danny Vandenbroucke (SADL)	Metadata and final changes
9.0	2010-03-25	Dimitrios Biliouris (SADL)	Review of the 2009 update
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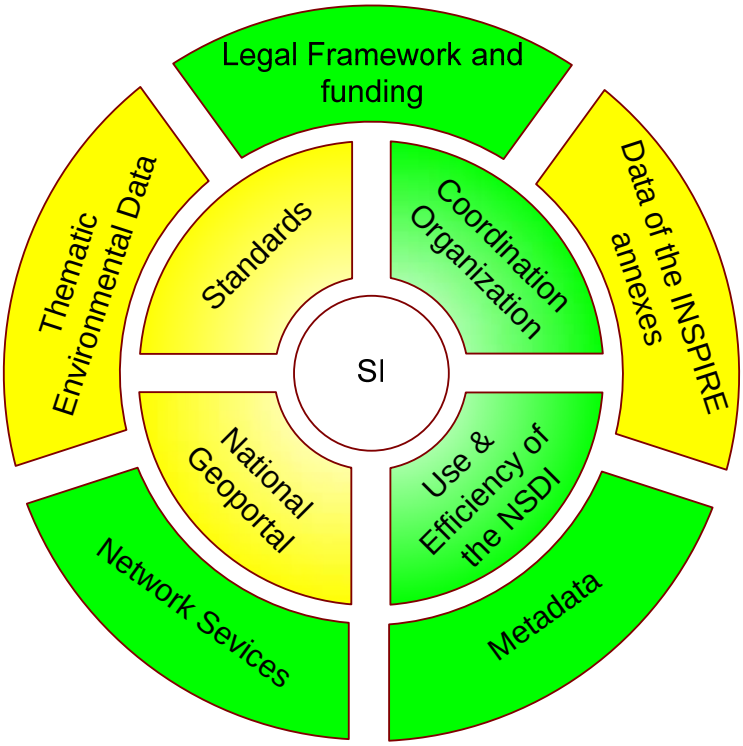
Change matrix 2010 versus 2007

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 Slovenia, a far reaching NSDI is being built in a centralized top-down approach. There is no clear legislation in place concerning the NSDI but the NMA (Survey and Mapping Authority of the Republic of Slovenia – SMA), operating under the Ministry of Environment and Spatial Planning (MESP), has a de facto mandate to coordinate the elaboration of the NSDI. This mandate results from legal acts on geodesy and cadastre mainly. A Centre for Geo-Information has been set up within SMA to deal with the executive work for the NSDI.

The development of the NSDI is connected to the e-government initiatives. The Spatial Planning Act defines that state and municipalities shall maintain a spatial data system to monitor the spatial planning and management situation. The Minister of the Environment laid down in 2004 detailed instructions for the contents and the manner of maintaining the spatial data system, the connectibility of the data, and the conditions for computer access to databases and the availability of data.

Several NSDI-components are in place or under development:

- Reference datasets at various scale levels;
- A comprehensive, standardised metadata catalogue and access service covering geodatasets from a large number of data producers, including SMA;
- A pricing policy catering for non-commercial and commercial re-use of the data;
- An agreement for sharing data within the public sector;
- An ambitious program to provide more and more advanced spatial data services in line with the GSDI and INSPIRE guidelines.

Apart from the SMA-lead NSDI, metadata about thematic environmental datasets are being offered on the internet.

Although, Slovenia does not have an INSPIRE implementation plan yet it is planned to prepare a governmental operational program or plan after the INSPIRE transposition law will be official published (Act transposing the INSPIRE directive Zakon o infrastrukturi za prostorske Official Gazette February 2010, entry into force 20 February 2010). In this document mostly organizational issues will be defined but also some technological aspects will be covered.

The SMA was in 2009 nominated as responsible body for directive INSPIRE implementation process with the following mission.

The result is that Slovenia has progressed a lot in producing GI and in making it available and accessible for a wide user audience with a number of services and available data.

User participation in and user satisfaction regarding the NSDI-initiative could not be assessed.

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Abbreviations and acronyms

CBZK	Cadastral Central Database (only in Slovenian language)
CDS	Catalogue of Data Sources)
CEPP	Central Register of Spatial Data
CESM	Surveying and Mapping Authority of the Republic of Slovenia
CT	Core Thematic Data
EARS	Environmental Agency of the Republic of Slovenia
EEA	European Environmental Agency
FIR	Further Investigation Required
GEABIOS	Geo Enabled and Better Internet Oriented Services
GI	Geographical Information
GIC	GeoInformation Centre
GIS	Geographical Information System
GML	Geography Markup Language
GPS	Global Positioning System
GSDI	Global Spatial Data Infrastructure
IBRD	International Bank for Reconstruction and Development
INSPIRE	INfrastructure for SPatial InfoRmation in Europe
IPI	Infrastruktura za Prostorske Informacije - Infrastructure for Spatial Information
MESP	Ministry of Environment, Spatial Planning and Energy
NATO	North Atlantic Treaty Organization
NMA	National Mapping Agency
NSDI	National Spatial Data Infrastructures
NTM	National Topographic Maps
OGC	Open Geospatial Consortium
PPP	Public-private partnerships
PSI	Policy and legislation on access to public sector information
REF	Reference data
SDI	Spatial Data Infrastructures
SEA	Slovene Environmental Agency
SGII	Slovenian Geoinformation Infrastructure
SMA	Surveying and Mapping Authority of Slovenia
SNSDC	Slovenian National Spatial Data Catalogue
STANAG	Standardization Agreement
UN/ECE	United Nations Economic Commission for Europe
UTM	Universal Transverse Mercator

WPLA	Working Party on Land Administration
WFS	Web Feature Service
WGS	World Geodetic System

1 GENERAL INFORMATION

1.1 Method

This report is summarizing the review of the SDI in Slovenia, and reflects the degree to which the SDI situation in Slovenia is similar to the ideas set out in the INSPIRE position papers[1] and the more recent INSPIRE scoping documents.

The 2002 report was based mainly on the analysis of web sites readily accessible and on documents presented on several workshops and conferences.

The report had been completed based on written comments provided by Ms. Azman from the Geo-Information Centre and from Mr. Simon Vrecar from IGEA, a major Geo-ICT consultancy company in Slovenia (March 2004). The 2005 update was based on the input received from Mr. Tomaž Petek and Mrs. Irena Rejec-Brancelj (Environmental Agency). 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 Slovenian authorities regarding the data sets and services, the use of the infrastructure and the data sharing practices. The information was integrated in the current version of the country report. The questionnaires were filled in by Surveying and Mapping Authority of the Republic of Slovenia and Slovenian Environmental Agency only.

For the 2009 update the survey questionnaire was used, along with various web sources and workshop presentations. In this version obsolete information was removed, while a conclusion paragraph regarding the status of each indicator was added for each component.

1.2 Overview of specific SDI-initiatives

A large awareness and political commitment exists in Slovenia with respect to the strategic role of GI. Slovenia has already developed a clear legal and technical framework for a NSDI as part of a broader national information infrastructure. It has also made large progress in implementing key components which include coordination, core data and metadata.

The situation seems to be rather 'simple'. There is one major actor for developing the Slovenian SDI, i.e. the former Geo-Information Centre becoming part of the Surveying and Mapping Authority of Slovenia (SMA) which is a body within the Ministry of Environment and Spatial Planning (MESP)[2]. In addition, the Environmental Agency of the Republic of Slovenia (EARS) which also belongs to the MESP, is an other key player in the development of the Slovenian SDI, with focus on environmental data and

[1] INSPIRE position papers, final versions: RDM, ETC, DPLI, ASF, IST, IAS (latest version).
[2] Former Ministry of Environment, Spatial Planning and Energy (MESP)

applications. Moreover, the Statistical office, the ministry of Agriculture, Forestry and Food along with the Ministry for Public Authority contribute to the Geodata of Slovenia. There are no autonomous regional initiatives yet. All GI activities at the local level are carried out by the municipalities and the 12 regional geodetic administrations with several branch offices under supervision of the central government.

Private companies play a specific role in data acquisition, application development and consultancy. The first aspect is covered and regulated by the Geodetic Activities Act. Some technical and development tasks in the field of topography and cartography are carried out by the Ministry of Defence in co-operation with the SMA of Slovenia.

Official name for the SDI in Slovenia is IPI (**I**nfrastruktura za **P**rostorske **I**nformacije - Infrastructure for Spatial Information, defined in Spatial Infrastructure Information Act.

Besides the activities of the SMA which can be seen as leading towards an operational SDI, there are some separate projects and/or networks being built. One example is the setting up of the Slovenian seismic, water and meteorological network of the Geophysical Survey of Slovenia (also part of the EARS). Furthermore, an E-Governance strategy for effective public administration exists for the period 2006-2010 (SEP 2010). In the beginning of the year 2010 also the Action Plan of e-business in Public Administration form 2010 – 2015 was adopted.

2 Details of the Slovenian GeoInformation Infrastructure

2.1 General Information

Official address:

- Surveying and Mapping Authority of the Republic of Slovenia (SMA)

  Zemljemerska ulica 12, 1000 Ljubljana, Slovenija

  Telephone: +386-1-4784800

  Fax: +386-1-4784909 or +386-1-4784834
- Ministry of environment and spatial planning (MESP)

  Spatial Planning Directorate

  Dunajska 48, 1000 Ljubljana, Slovenija

  Telephone: +386 1 478 7431

  Fax: +386 1 478 7426

The SMA deals with geodesy and is as such responsible for the construction and update of the geodetic reference systems, definition of the state boundary and the internal country division, accreditation of geodetic service providers and for related international co-operation. It is also responsible for the land cadastre and the register of buildings, the register of spatial units (addresses), topographical databases and maps. Hence, its main 'traditional task is to ensure the existence and quality of spatial data for all official needs for the territory of Slovenia. . In addition it has the legal task to disseminate data, produce and manage data catalogues and supervise copyright issues.

The SMA is a member of EuroGeographics. Since 1996, it has been a member of the European association for real estate management (UN/ECE WPLA - Working Party on Land Administration) within the United Nations Economic Commission for Europe. SMA's representative is the chairman of this association. In the current four-year period, SMA is chairing the UN regional European group for the standardization of geographical names (East-Central and South-East Europe Linguistic Geographical Division of the United Nations Standardization of Geographical Names).

The MESP deals with reform of the standards and organizational aspects of spatial planning embraces and establishes new rules, especially in relation to the system of spatial planning documents and their contents, recognition and introduction of market instruments in the area of spatial planning, new roles in spatial planning for local communities and respecting private property as one of the basic constitutional categories. The new normative arrangement will enable greater flexibility of spatial documents and greater public participation in adopting decisions on the use of space, establish the foundations of a spatial planning information system and newly regulate the activities of spatial planning.

The Surveying and Mapping Authority of the Republic of Slovenia comprises the Main office, the Real estate office, the Mass real estate valuation office, the Geodesy office and twelve regional surveying and mapping administrations. These have been set up for the reasons of streamlined operation and the increased accessibility of administrative and professional tasks and services implemented by the Surveying and Mapping Authority of the Republic of Slovenia.

The offices in cooperation with the regional surveying and mapping administrations implement the following joint tasks:

- they prepare the national land survey service annual program and the report on its implementation;
- they organize the work of the regional surveying and mapping authorities, monitor their work, and ensure the uniform implementation of the national land survey service assignments;
- they direct the implementation of development assignments pertaining to surveying and mapping activities;
- they draft regulations in the field of surveying and mapping activities;
- they provide for the implementation of international obligations of national land survey service.

The main Spatial data providers in Slovenia are:

- Ministry of environment and spatial planning (http://www.mop.gov.si)
- Surveying and Mapping Authority (SMA) (http://www.gu.gov.si)
- Environmental Agency of Slovenia (EAS) (http://www.arso.gov.si/)
- Statistical office of Slovenia (http://www.surs.si)
- Ministry of Agriculture, Forestry and Food (http://www.mkgp.gov.si/)
- Ministry of Public Administration (http://www.mju.gov.si)
- Other Ministries and governmental agencies, as well as local communities and utility companies
- Private sector / commercial data service providers

2.2 Component 1: Coordination and organizational issues

The first steps in the development of the Slovenian SDI were taken within the Ministry of Environment, Spatial Planning and Energy (MESP) and its bodies, but a lot of parallel activities were running in other institutions and organizations. This Ministry has a particularly important role as most of the key providers of GI depend from it. This includes the "Surveying and Mapping Authority (SMA)" (http://www.gov.si/gu). The Ministry also includes the "Spatial Planning Directorate" which is responsible for the development and control of spatial plans, and the "Environmental Agency". Among the

other government ministries and agencies the most important with respect to GI is the "Statistical Office of the Republic of Slovenia" and Ministry for public authorities.

SMA is responsible for reference data, the Environmental Agency is responsible to provide high-quality environmental data, analyses and expert foundations for decision making, and MESP is responsible for data about spatial planning, such as land use data

The "GeoInformation Centre" (GIC) of the MESP has been established at SMA in 1991 with the following mission:

- to regulate and co-ordinate GI policy at a national level, and co-operate with other national and international organizations with respect to GI-related standardization, legislation, policy, and legal and organizational aspects of data exchange and distribution,
- to develop user services including users requirements analysis, translation of requirements in terms of information processing, technical advice, linking information users and providers and quality support (preparation of quality manual, quality assurance, quality audits);
- to develop metadata services, remote access to metadata catalogues, and data provision through a distributed data warehouse systems;
- to raise awareness of importance of an IT infrastructure, including human resources management, research and development, provision of tools, training, and data integration.
- In 2001 the Geoinformation centre became part of the Surveying and Mapping Authority with the same tasks and responsibilities.

Slovenia does not have an INSPIRE implementation plan but it is planned to prepare a governmental operational program or plan after the INSPIRE transposition law will be official published. In this document mostly organizational issues will be defined but also some technological aspects will be covered.

The SMA was in 2009 nominated as responsible body for directive INSPIRE implementation process with the following mission:

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- to develop metadata services, remote access to metadata catalogues, and data provision through a distributed data warehouse systems;
- to raise awareness of importance of an GI infrastructure, including human resources management, research and development, provision of tools, training, and data integration,
- to stimulate the use of GI and metadata which are available via the geoportal.

(Ažman and Petek 2009).

2.2.1 Conclusions of Component 1

The Slovenian SDI approach is truly national.. SDI building blocks have reached a significant level of operationality. The first steps in the development of the Slovenian SDI were taken within the Ministry of Environment, Spatial Planning and Energy (MESP) and its bodies, but a lot of parallel activities were running in other institutions and organizations. This Ministry has a particularly important role as most of the key providers of GI depend from it. This includes the "Surveying and Mapping Authority (SMA)". The SMA was in 2009 nominated as responsible body for directive INSPIRE implementation process. The Private sector / commercial data service providers are also involved in the NSDI.

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 (5)
- 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 (No)
- 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 present legal framework and legal background for geodetic data, access to geodetic data and pricing policy for geodetic data in Slovenia is based on following acts and regulations:

- Strategy of e-business in public administration in Slovenia 2001 – 2004 (Official Gazette 2001);
- Action Plan of e-business in public administration in Slovenia 2010 – 2015
- Act of electronic commerce and electronic signature (Official Gazette 2000);
- Geodetic activities Act (Official Gazette 2000): this Act defines the surveying and mapping activity and determine conditions to implement this activity. It also defines the geodetic service as a part of the surveying and mapping activity being implemented in public interest, determine geodetic service duties, manage the organization and implementation of geodetic service duties, geodetic data issuing and application, and inspection control.
- Act of administrative taxes (ZUT) (Official Gazette 2000);
- Recording of Real Estate Act (ZEN) (Official Gazette 2008), substituting the Recording of Real Estate, State Boundary and Spatial Units Act and the Land Cadastre. This Act provides uniform registration of real estate and quality data on real estate, which are the basis for the space economy, land policy administration, real estate taxation, keeping records of substantial rights on real estate, for the spatial definition of data, and other purposes.
    - Rules on the terms and conditions and method of computer access to the Land Cadastre, Building Cadastre and Register of Spatial Units ;
- Act of Spatial Planning (ZUREP 2003): this act regulates the spatial planning and the enforcement of implementation measures for the planned spatial arrangements, and ensures the building land development and the maintenance of a spatial data system. A spatial data system is defined in chapter 5 of the Spatial Planning Act: “the system of preparing, collecting, and maintaining data banks in the field of spatial planning and other matters of spatial planning and management”. The Act states that the state and the municipalities shall maintain a spatial data system to monitor the spatial planning and management situation. The spatial data system shall contain databases referred to in this Act, and other databases related to spatial planning and management provided by law or by a local community ordinance. The spatial data system shall be based on mutually comparable and interrelated geodetic data, records, and other data bases, harmonized with the statistical data banks.
- Act transposing the INSPIRE directive (Zakon o infrastrukturi za prostorske Official Gazette February 2010, entry into force 20 February 2010)

The development of the NSDI is connected to the e-government initiatives. The distribution environment is part of the state information infrastructure (e.g. licences within e-government-developed services like micro-payment), and the issues in data sharing between government bodies cover different databases, such as the registry of citizens, registry of spatial units, the registry of tax payers, the land registry, the business registry. (http://sdi.jrc.it/ws/inspire_days/presentations/13Azman&Petek_Slovenia.pdf).

2.3.2 Public-private partnerships (PPPs)

The Slovenian GI-initiative counts upon the active involvement of all main GI-actors. Private companies play a specific role in data acquisition, application development and consultancy. The private sector is cooperating with the public sector mostly as a performer of budget (state or local) funded projects. (http://sdi.jrc.it/ws/inspire_days/presentations/13Azman&Petek_Slovenia.pdf).

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

The right of each person to acquire information held by a public body is laid down by article 39 of the Constitution of the Republic of Slovenia. The main content of the constitutional provision could be described as the right of individuals to get informed about the work of public sector bodies and by this means exercising control over the transparency of their work, thus assuring public control on their decision making processes. To implement the constitutional right to access, the Slovenian Parliament adopted the Access to public sector information Act which entered into force on the 22nd of March 2003 This Act imposes the obligation on public bodies to provide all public sector information, held by a particular public body, on the internet. Each public body is obliged to establish a catalogue of public sector information administered by the public body which is the main framework for the provision of public sector information.

The law was substantially amended in July 2005 to implement the EU Directives on Re-use of Public Sector Information (2003/98/EC) and Access to Environmental Information (2003/4/ES). The amendment also created the public interest test and gave the Commission the power to review information to see if it has been improperly classified. The Act was further executed with regard to the re-use of PSI by the 2005 Decree on the provision and re-use of public information (Official Gazette, No. 76/052)

Under the Spatial Planning Act of 2003, everyone has the right, in compliance with the law and upon payment of an official charge, to access and to obtain data from the databases falling under this legislation. The Governmental departments and local community bodies are not obliged to pay such access charge. Access to the databases is not recorded. In accordance with and under conditions provided by the regulations on keeping records of real estate, it is also possible to access or obtain data from the land register and the cadastral buildings register, records of the state border and the register of spatial units linked to the data in the databases.

For the purpose of preparing spatial planning documents, for administrative procedures, and maintaining databases, the spatial planning stakeholders shall have the right to access and obtain all data on real estate and their owners, including personal data, kept in the land cadastre, the cadastre of buildings, and the land register. These rights also include the right to obtain data from the records on the state border and the register of spatial units, including computer access to such data.

2.3.4 Legal protection of GI by intellectual property rights

The Copyright and Related Rights Act dates from 30 March 1995 (O.G. RS, No. 21/95) and has been in force since 29 April 1995. Cartographic and photographic works are in particular considered as copyright works (article 5).

According to article 8 of the Copyright Act copyright protection shall not be afforded to official legislative, administrative and judicial texts.

Articles 141.a to 141.f provide for special legal protection of databases. Article 141.a stipulates that "the protection of a database or its contents shall apply irrespective of their protection by copyright or by other rights".

Additional provisions on the authorship of geodetic data are included in the proposed Geodetic Activities Act.

The Copyright Act was amended on 1 May 2004 in order to incorporate the regulations of the 2001 Directive on copyright in the information society.

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

In 2004, the Personal Data Protection Act replaced the Law on Personal Data Protection of 1999. Both laws are based on Directive 95/46/EC. The 2004 Act was amended once more with regard to the status of the Information Commissioner. Personal data must be processed lawfully and fairly and they must be adequate and in their extent appropriate in relation to the purposes for which they are collected and further processed.

Directive 2002/58 on privacy and electronic communications has been transposed into Slovenian law.

2.3.6 Licensing framework

For ordering data with the SMA, the standardized order form must be filled out. The data may be handed over directly to the user or sent by post following remittance of payment. The general terms and conditions can be found on the website (http://e-prostor.gov.si/index.php?id=8). The user can use the data for the purpose for which they are obtained and notify the SMA of any changes to the purpose of the use. The user must state the source and a reference date. In case of publishing on the Internet, only derived products may be published that cannot be re-engineered to the original product.

Access can also be obtained via the PROSTOR portal (http://e-prostor.gov.si). Free access to view cartographic and real estate data is available, and registered users can get access to all geodetic data in a user-adapted multipurpose distribution system. A distinction is made between use for public or private purposes by public bodies, for the owners of properties and for re-use. The latter can be for an 'ungainful' purpose, for a free of charge 'gainful' purpose, and for a 'gainful' purpose that be charged for (Irena Ažman and Tomaž Petek, Spatial Data Infrastructure at the Surveying and Mapping Authority in Slovenia, http://www.gsdi.org/gsdi11/papers/pdf/246.pdf).

2.3.7 Funding model for SDI and pricing policy

Funding

The SMA is funded primarily from the state budget. Most activities about metadata and the Slovenian SDI were funded on MESP budgets. Some activities were supported by a loan of the International Bank for Reconstruction and Development (IBRD).

Co-financing from data users (cost recovery) is relatively small in extent (and does not play a crucial role in the realisation of the national geodetic service annual programme). In compliance with the Republic of Slovenia Budget Implementation Act, it is possible to use the income derived from own activities for covering material costs, and the costs of administering and issuing data and products.

Pricing

Based on the PSI legislation, Slovenia has adopted a unique pricing and charging policy based on the intended purpose of the re-user. The public body may charge for the PSI re-use for commercial purposes, except in cases of re-use for the purpose of providing information, ensuring the freedom of expression, and re-use of information for purposes of culture and art and media's re-use of information (Kristina Kotnik Šumah, State of Play: PSI Re-use in Slovenia, http://www.epsiplatform.eu/content/download/54905/756213/version/2/file/ePSIplatform+Topic+Report++No+6+Slovenia.pdf).

All data and products produced by the geodetic service of the SMA are public and accessible by all users for their own use against the payment of material costs. Terms and conditions of use of geodetic data, Price list of material expenses for issuing geodetic data and Price list for re-use of geodetic data for gainful purposes for data collections kept by the national geodetic service, renewed in February 2010, and are available on the website of the SMA (http://www.gu.gov.si/en/delovnapodrocja_gu/podatki_gu/#c12821). For any use but the 'gainful use' that can be charged for, only the costs of the material for the dissemination can be charged. For 'gainful use', the users pay for the data and the material costs (Irena Ažman and Tomaž Petek, Spatial Data Infrastructure at the Surveying and Mapping Authority in Slovenia, http://www.gsdi.org/gsdi11/papers/pdf/246.pdf).

2.3.8 Conclusions of Component 2

The present legal framework and legal background for geodetic data, access to geodetic data and pricing policy for geodetic data in Slovenia is based on a number of acts and regulations. For instance: The Action Plan of e-business in public administration in Slovenia 2010 – 2015 and the Act transposing the INSPIRE directive (Zakon o infrastrukturi za prostorske Official Gazette February 2010, entry into force 20 February 2010). Slovenia does not have an INSPIRE implementation plan but it is planned to prepare a governmental operational program or plan after the INSPIRE transposition law will be official published. The SMA is funded primarily from the state budget. Based on the PSI legislation, Slovenia has adopted a unique pricing and charging policy based on the intended purpose of the re-user..

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 (Not so clear)
- There is a freedom of information (FOI) act which contains specific FOI legislation for the GI-sector (No Information found)
- GI can specifically be protected by copyright
- Privacy laws are actively being taken into account by the holders of GI ((No Information found)
- There is a framework or policy for sharing GI between public institutions
- There are simplified and standardised licences for personal use
- The long-term financial security of the SDI-initiative is secured (No)
- There is a pricing framework for trading, using and/or commercialising GI

2.4 Component 3: Data for themes of the INSPIRE annexes

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

The SMA covers all scale levels for its analogue and digital data products.

A vector database of topographic data of homogeneous accuracy and details appropriate for the 1:5000 scale is divided by objects into four areas (buildings, traffic, land cover, hydrography). The whole territory is also covered with topographic maps: basic (scale 1:5.000), national (scales 1:25.000 and 1:50.000), they are in analogue and digital form. National general maps (scales from 1:250.000 to 1: 1.000.000) are available in printed form, digital vector form and raster form (Ažman and Petek, 2009)

2.4.2 Data by resolution or scale range for the INSPIRE themes

Regarding the three INSPIRE annexes addressing the 34 spatial data themes, Slovenia is providing discovery and view services for some of them (SMA, EARS) including metadata while a number of them can be also downloaded. 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

Surveying and Mapping Authority of the Republic of Slovenia is responsible for the establishment, maintenance and management of the national coordinate system.

National coordinate system is divided into two components, namely horizontal and height component.

Currently there are in Slovenia:

- Vertical National Coordinate System
- Horizontal National Coordinate System (D48/GK)
- Horizontal National Coordinate System (D96/TM)

(http://e-prostor.gov.si/index.php?id=104)

The national coordinate system valid for maps and databases, has the following characteristics:

Name: D48

Spheroid (ellipsoid): Bessel (1841), a = 6 377 397,155 m, e = 1/299,15281285

The spheroid touches the geoid in point Hermannskogel with astronomic coordinates (Ergebnisse 1900):

φ = 48° 16´ 15,29"
λ = 33° 57´ 41,06"E Ferro or
λ = 16° 17´ 55,04" E Greenwich
H = 558.66 m.

The geodetic network is oriented with side Hermannskogel - Hundesheimer Berg

α = 107° 31´ 41,70½.

Projection: Slovene Gauss-Krueger conformal transversal cylindrical projection

Latitude of origin	0° 00´ 00"	
Longitude of origin	15° 00´ 00"	E of Greenwich
Central meridian	15° 00´ 00"	E of Greenwich
False easting	+ 500 000 m	
False northing	- 5 000 000 m	
Modulation factor	0,9999	
Projection zone width	3° 15’	

1.3 Transformation parameters from D48 (Bessel) to ETRS89(WGS84):

X0 = 438,7669 m

Y0 = 126,6093 m

Z0 = 457,9380 m

a = - 0° 0’ 4,323931’’

b = - 0° 0’ 4,107600’’

g = 0° 0’ 12,245081’’

scale: -16,5199 ppm

The national topographic maps (scale 1:25.000 – 1:50.000) should apply with the NATO standards (STANAG) which requires the Universal Transverse Mercator projection using the WGS 84 reference ellipsoid.

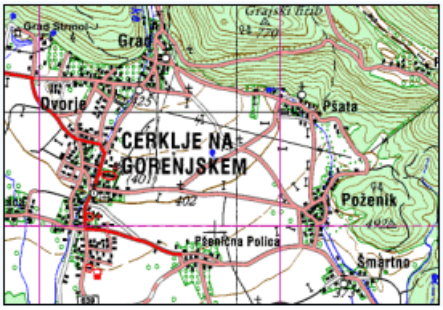
In order to make it possible to prepare military as well as national topographic maps and digital data, UTM projection and WGS 84 ellipsoid is used for producing all the data at scale 1:25.000 and smaller.

On the http://e-prostor.gov.si/index.php?id=299 portal there is a free online service that allows transformation of coordinates between coordinate systems ETRS89 (D96/TM) and D48/GK (SiTra).

2.4.4 Quality of the data

Reference and core thematic data produced by SMA are of high quality and accuracy. The Register of Spatial Units and attribute data of Land Cadastre are maintained on a daily basis. Some more details are provided below.

- ***Geodetic reference system***, the parameters required to convert from national reference system to ETRS89 are defined
- ***Land cadastre*** - Descriptive data on parcels of land (parcel parts) which include the number of a parcel of land, the parcel area, the land use type, data on the owner have been unified and are kept and updated in a digital form for the entire country. They are kept in a central database and are updated daily. Slovenia was entirely covered by digital cadastral plans from the end of the year 2002.
- ***Register of buildings*** - it refers to the basic records on buildings and on their parts. It represents the technical basis for recording legal relationships to buildings and to their parts.
- ***Basic topographic maps*** (1:5000, 1:10000) – for lack of funds, no updating of the entire store can be ensured – despite the great demand, certain sheets are 30 years old, a new concept of updating has been produced. The name of the project is ***Digital Topographic Database*** - the project of finding the methodological and technological solution for the establishment and maintenance of a digital topographic database.
- ***National topographic maps*** (1: 25000, 1:50000) Map at scale 1:25.000 was produced by applying the conventional method. The new map at scale 1:50.000 was produced digitally by applying contemporary techniques and available in printed, raster and vector form. The military maps should comply with the NATO standards (STANAG), which require the UTM (Universal Transverse Mercator) projection on the WGS 84 (World Geodetic System) reference ellipsoid..



- ***National general maps*** - national general maps that are most frequently used are produced at the scales of 1:250000, 1:500000, 1:750000 and 1:1000000. They are digitally produced and available in printed, raster and vector form.
- ***Generalized cartographic database*** - four groups of objects have been digitised (roads, hydrography, railways, contour lines) from scanned map originals of the systemic topographic maps for the entire territory of the country. Because of its structure and content it can be included among elements of a topographic base of medium accuracy.

- ***Geographical names***, The Register of Geographical Names includes names that have a certain temporally, historically, ethnologically or socially established identity; Slovenia has approximately 200000 geographical names. The register comprises three levels of detail: 1:5.000, 1:25.000 and 1:250.000.
- ***Orthophoto maps***; Slovenia is entirely covered by orthophoto maps since 2001, they are in colour, produced with the 0,5 m graphic element and maintained approximately in a three year cycle.
- ***Digital elevation model*** - it was made by the radar interferrometric techniques in 2000. It was worked out by using the European Space Agency's radar surveys taken by the ERS-1 and ERS-2 satellites.

- ***Register of spatial units*** contains data on house numbers (500.000), streets, settlements, municipalities, administrative units, voting units, school localities, local communities, village communities and city district communities, as well as other types of units. Attributes and geometry are stored in relational database (Oracle) since 1995.

2.4.5 Interoperability

- Oracle and Oracle Spatial are mentioned as the software tools to store and manage the geometry and attributes at SMA.
- No information is available about dominating GIS-software used by users
- XML is used for transfer of data.

2.4.6 Language and culture

Metadata are provided in the Slovenian and English language (for the latter only the discovery metadata). Accompanying documents (web, etc.) are provided in the same languages.

2.4.7 Data Content

There is text explanation for the Data Dictionary and attribute values.

2.4.8 Geographical names

SMA has modernized the Register of Geographical Names. An application for managing the register and an Intranet application designed for reviewing the register data have been made. The phase of data acquisition from the maps at the 1:5,000, 1:25,000, 1:250,000 scales was completed in 2000. Then data maintenance has started. The register includes graphic data on single inscriptions on maps.

2.4.9 Character sets

Windows CP1250

2.4.10 Conclusions of Component 3

Already from the previous SI's SoP report 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. 77 data sets have been reported. 33, 5 and 39 for Annex I, Annex II and Annex III respectively while most of the themes are being covered. Reference and core thematic data produced by SMA are of high quality and accuracy. However no documented procedure is described. Metadata are provided in the Slovenian and English language.

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
- 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 (Not so clear)
- Concern for interoperability goes beyond conversion between different data formats (No Information found)
- The national language is the operational language of the SDI
- English is used as secondary language

2.5 Component 4: Metadata

The Slovenian Metadata system is called the Central Register of Spatial Data (CEPP) and is developed and maintained within the former GeoInformation Centre of the SMA.

2.5.1 Availability

Metadata are available for all the geodatasets managed by the SMA and for datasets provided by other partners of the SDI (private and other). The Central Register of Spatial Data (CEPP) is a list of existing digital spatial data in Slovenia. In it users can see the metadata provided by the Surveying and Mapping Authority of the Republic of Slovenia (http://prostor.gov.si/cepp/)

The list of available metadata is:

Metadata title

- Aerodrome locations
- Architectural identity - architectural provinces, regions
- Areas of dispersed construction
- Basins
- Bicycle network 1:250000, 1:50000
- CORINE land cover Slovenia 1995, 2000
- Club aerodrome, runway
- Cross-country skiing trail
- DATA ON BUILDINGS
- DIGITAL NATIONAL GENERAL MAP 1:1 000 000
- DIGITAL NATIONAL GENERAL MAP 1:500 000
- DIGITAL ORTHOPHOTO
- DTK 25 SCANS
- Educational forest trail
- Electric power lines
- Electric power stations
- Energy-yielding, metallic and non-metallic minerals
- Farmland
- Fishing district
- Flight paths
- GENERALISED CARTOGRAPHIC BASE 25 - hydrography

- GENERALISED CARTOGRAPHIC BASE M 1:25000- railways
- GENERALISED CARTOGRAPHIC BASE M 1:25000- roads
- GENERALISED CARTOGRAPHIC BASE M 1:25000- terrain
- GEODETIC POINTS
- Gas mains network
- General vulnerability of aquifers
- Golf course
- Harbour, port, marina
- Horticultural park, botanical gardens
- Important basin areas in relation to inversion layer surface
- Important cultural monuments
- Important groundwater
- LAND CADASTER -points (LAND CADASTRE POINTS)
- LAND CADASTRE - Digital cadastral maps
- LAND CADASTRE - Land Cadastre Areas
- LAND CADASTRE - textual data
- Lake for boating
- Local supply centres
- Locations of analytical monitoring and alarm system stations
- Locations of water sources
- Marine quay for sports boats
- Memorial park
- Mountaineering and mountain climbing rock face
- NATIONAL TOPOGRAPHIC MAP AT 1 : 50 000 SCALE
- NATIONAL TOPOGRAPHIC MAP AT 1:5 000 SCALE - DTK5
- Natural heritage natural monuments (rivers) – park areas
- Natural outdoor skating rink
- PK250 and PK 750 SCANS
- Petroleum pipeline network
- Picnic areas, picnic fires
- Preferential protection of cultural heritage
- Private camping sites
- Protective forests

- Provincial types -greater provincial units, regions, subunits, units
- Public camping sites
- Quality and sanitation of water
- REGISTER OF GEOGRAPHICAL NAMES
- REGISTER OF SPATIAL UNITS
- Railway network 1:50000
- Refineries and terminals for liquid and gaseous fuel
- Regions important to the development of tourism
- Regions supplied by trunk water mains
- Regulated swimming area along rivers/lakes/sea
- Riding centre
- River for kayaking
- Road network 1:250000, 1:50000
- Rock climbing
- Sanitation of polluted air
- Ski slopes for alpine skiing
- Sledding slopes
- Special purpose forests
- TK 50 SCANS, TTN 10 SCANS, TTN 5 SCANS
- Tour skiing trail
- Transformer stations
- Treatment plants
- Unregulated swimming areas along rivers/lakes/sea
- Urban and suburban woods
- Urban network
- Water reservoirs
- Water reservoirs for land reclamation
- Water supply
- Water-deficient regions
- Zoological gardens, paddock for viewing and hunting wildlife

The users can browse the portal either by Spatial extent, Administrators, Classification, Organization or time extent.

Moreover, EARS Metadata portal allows searching and browsing of metadata descriptions managed by the Agency for the Environment (http://gis.arso.gov.si/mpportal/). In the portal users can search metadata on Infrastructure, Air, Stations, Nature and Land, Environment and water (only in Slovenian).

The metadata contains all necessary information about content, purpose, usage, quality, distribution and all other information to select and use the datasets. The metadata allow users to discover and explore datasets. However, we had not the opportunity to explore the metadata themselves, therefore we do not know whether all datasets are described completely. Discovery metadata are translated in English.

2.5.2 Metadata catalogues availability + standard

The SNSDC (Slovenian National Spatial Data Catalogue) complies with the CEN/TC 287 prEN287009 metadata standard and is extended with some additional fields and a thesaurus. The EEA (European Environmental Agency) CDS (Catalogue of Data Sources) with some restrictions is integrated into SNSDC.

The updating preserved the basic structure of the metadata description in CESM (elements in accordance with the current CENT TC/287 specification) but the access to the database changed and is now based on a three-level structure. The overview of the metadata contents is friendlier, clearer and more easily understandable for an individual user. It is divided into three levels:

- brief overview – it contains only the informative data on the dataset with the clear graphic representation; the content elements presented are those specified by the Dublin Core specification.
- basic overview – all key content elements as recognized by the ISO TC211 - metadata specification ISO 19115 are presented.
- detailed overview – all the metadata content elements according to the CEN/TC287 standard are presented.

Metadata system: http://prostor.gov.si/cepp_ang/index.jsp

2.5.3 Dublin core metadata standards for GI-discovery

The ‘short’ view on the metadata covers the Dublin Core elements.

2.5.4 Metadata implementation

The ‘de facto’ coordinating body is the Surveying and Mapping Authority. The SMA is not only describing its own datasets, but coordinates the metadata efforts of other Institutes and even private organizations. It is not clear whether there exists a feature code-list and thesaurus, nor whether there are formal update requirements for metadata.

Providers of metadata have two options to update the changes in the central metadata catalogue (SNSDC). Both are supported by the so-called MPedit metadata maintenance tool:

- Update the metadata description and send the file in exchange format (pmp – internal MPedit; XML – external) to the catalogue administrator;
- Connect to catalogue (access with username & password and restricted to granted metadata records) and import changes.

2.5.5 Conclusions of Component 4

Metadata are produced for a significant fraction of geodatasets of the themes of the INSPIRE annexes. The 2010 MR reveals that for the reported datasets of INSPIRE (97%, 100% and 79% of the data sets have metadata for each of the three Annexes respectively). Metadata are available for all the geodatasets managed by the SMA and for datasets provided by other partners of the SDI (private and other). The Central Register of Spatial Data (CEPP) is a list of existing digital spatial data in Slovenia (http://prostor.gov.si/cepp/). The Slovenian Metadata system is developed and maintained within the former GeoInformation Centre of the SMA..

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
- 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

2.6 Component 5: Network Services

The Survey and mapping Authority developed a model of user services that will include at the end: the metadata catalogue, the information layers, a series of services and meta-information on the services, a data ordering mechanism and related pricing policy. Although at the moment there is no official INSPIRE geo-portal in Slovenia, it is planned to be established as a single entry point to data and services, for INSPIRE and NSDI. Currently the portal of Surveying and mapping authority of the Republic of Slovenia (http://e-prostor.gov.si/) serves this purpose.

WFS EARS allow the export of spatial data in Shp or. GML format (version 2.0). For the operation of applications users must loaded Java software. A number of other services are listed at: http://gis.arso.gov.si/ (Slovenian)

The next table gives an overview of the available services.

Services

Service[3]	Organisation responsible	Type of service[4]	Metadata (N/Y/ISO)[5]	Open for Public (Y/N)	Free/Not free[6] (Y/N)
Services according to the definition in the Directive (operation which may be performed, by invoking a computer application, on the spatial datasets or on related metadata)					
Discovering Geodetic Data (discovering metadata) URL: http://e-prostor.gov.si/index.php?id=7 English: http://prostor.gov.si/cepp_ang/index.jsp	SMA SI	Discovery	N	Y	Y
Access to Cartographic Data (Map viewer) URL: http://prostor.gov.si/iokno/iokno.jsp English: http://prostor.gov.si/iokno_ang/iokno.jsp	SMA SI	View	N	Y	Y
Access to Personal Real Estate Data URL: http://prostor.gov.si	SMA SI	View	N	Y (for owners only)	Y
Access to Real Estate Data (Land Cadastre, Building Cadastre, register of Spatial Units, Real Estate Market Register) URL: http://prostor.gov.si	SMA SI	View	N	Y	Y
Access to geodetic data for registered users URL: http://prostor.gov.si	SMA SI	View, Download for some data	N	N	free for public authorities, fees for

[3] 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
[4] Indicate the type (discover, view, download, transformation and invoking services)
[5] Indicate whether the service has no metadata (N), or metadata according to ISO 19119 (ISO).
[6] Whether or not the service is free for use.

					commercial users
Access to some free data URL: http://e-prostor.gov.si/index.php?id=263&no_cache=1&tx_simpltabs_pi1[tab]=561#tabs	SMA SI	Download	N	Y	free for non-commercial use
Access to samples of data URL: http://e-prostor.gov.si/index.php?id=263&no_cache=1&tx_simpltabs_pi1[tab]=433#tabs	SMA SI	Download	N	Y	Y
Services as part of functionality that is provided by an entity through interfaces (in the meaning of non-human-interactive applications that run on servers and interact with applications via an interface)[7]					
Access to Land Cadastre attribute data (WFS)	SMA SI	Download	N	N	free for public authorities
Access to Building Cadastre attribute data (WFS)	SMA SI	Download	N	N	free for public authorities
Access to addresses data (WFS)	SMA SI	Download	N	N	free for public authorities
Access to attribute and graphic data of Consolidated Cadastre of Public Infrastructure (WFS)	SMA SI	Download	N	N	free for public authorities
Access to attribute (WFS) and graphic (WMS) data of Real Estate Market register	SMA SI	Download	N	N	Y
Environmental dataset (WFS) - http://gis.arso.gov.si/wfs?STORE=ARSOGIS	EARS	discover,	Partly	Y	Y

[7] These services are available only for public authority's application systems

		download,			
Environmental dataset (WFS User Interface – for download) - http://gis.arso.gov.si/arsogrs/arso_wfsclientui.jsp					
Environmental atlas - http://gis.arso.gov.si/atlasokolja	EARS	view	N	Y	Y
Metadata portal - http://gis.arso.gov.si/mpportal/	EARS	view, download	N	Y	Y
National Meteorological Service of Slovenia: http://meteo.arso.gov.si/met/en/					
GERKI	MKGP				

2.6.1 On-line access service for metadata: discovery services

The homepage (portal) is at http://www.gu.gov.si . The metadata service is accessible through a link on CEPP (Centralna Evidence Prostorskih Podatkov – Eng).

There is an English and Slovenian version of the application. The application gives access to metadata about 407 geodatasets classified in 43 thematic groups of 110 data providers. The metadata can be browsed by organization, by provider, by classification, by 'last update or by dataset. There is one entrance of the system – recommended by the system – that is called 'best metadata' which could indicate that not all datasets are described in detail. (for metadata themes see section 2.5.1 and 2.5.2).

2.6.2 On-line access service for data: download services

There is not yet one overall access service for all the reference data and core thematic data. Nevertheless, several sub-portals of the website are under development and will host in the future specific services for different user groups.

One sub-portal aims for electronic access of the land cadastral central database (only in Slovenian language) by users of administrative bodies. It is called CBZK. The users are able to query the cadastral information regarding any parcel in the database: 5 million land parcels, 1 million land owners, 10.000 spatial administrative units, 500.000 house numbers. The information in this database is updated daily. All the administrative units use this access for official purposes for decision-making in administrative matters or executing of tasks under their authority. The system includes a security system to protect personal data. The established possibility of a direct view in the data most recently registered in the Land Cadastre written part has significantly shortened some phases of the administrative procedures

PREGIZ is the Intranet designed application based on Public Key Infrastructure that enables access to all relevant geo-data to enable effective Real Estate Management.

Geodetic Institute of Slovenia (*http://prostor.gov.si/*)

The portal http://e-prostor.gov.si/ contains currently information and data about

- Aerial photography
- Elevation
- National coordinate system
- Records of the border
- The record of the property market
- Building Cadastre
- Orthophoto

- Register of spatial units
- Register of Geographical Names
- Topographic maps and data
- Consolidated cadastre of public infrastructure
- Cadastre

Free access to cartographic data is available to all users, allowing them to search for a location and a display of this location on the selected cartographic basis (orthophoto, a basic topographic map, national topographic maps, etc.) free of charge. It is possible to search a location in two ways – using an address or a geographical name. This, for example, makes it possible to obtain an image and a location of a building on an orthophoto map by supplying its address. This service is available at http://prostor.gov.si/iokno/iokno.jsp.

Access for registered users (http://prostor.gov.si) enables access to all the geodetic data in the multi-purpose, user-adapted distribution system. This service of access to geodetic data enables browsing by attributes and graphics in all databases that are included in the system. In addition to searching for data, the graphic section of the browser also offers the user all standard spatial functions (navigation, enlargement, reduction, shifting, choice of scale, distance measurements, choice of image quality, choice of object, etc.). In accordance with the legislation it is also possible to obtain data on the owner of real estate (land parcel or a building) on the basis of providing a real estate identifier. The browser displays the selected data in the graphic form as well; and depending on the level of detail of the displayed information, it is possible to choose an appropriate cartographic basis (orthophoto, a basic topographic map, a topographic map, etc.) for such a display (e.g. parcel boundaries). This service of access for registered users is intended primarily for users in public administration (national and local level), commercial users (real estate agents, lawyers, insurance agencies, banks, etc.) and land survey service providers (Ažman and Petek, 2009).

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

The web mapping service described in 2.5.5. enables to connect the metadata system (SNSDC) with all the data included in the web mapping service.

2.6.4 OpenSource software for access services

The PROSTOR site states that. Web services are developed in accordance with the recommendations of the OGC (Open GIS Consortium) Taking into account the standards set out in the field of geographic information systems ISO/TC211.

Input of metadata by any administrator is done with a tool called MPedit (HTML form), while exchange of metadata is done using XML. The MPedit tool is free for data providers.

2.6.5 Availability of viewing services

An application for viewing some of the core datasets was established already in 2002. Currently, this has been enhanced with a number of databases and the user can access digital orthophotos, Digital Elevation Model, Topographic and a number of general maps among others. The service is available at http://prostor.gov.si/iokno/iokno.jsp (http://prostor.gov.si/iokno_ang/iokno.jsp in English) and enables searching and viewing.

There is also free public service for viewing real estate data. The service is available at: http://prostor3.gov.si/javni/login.jsp?jezik=sl. It allows viewing land and building cadastre.

The Web mapping service enables the connection to the metadata system (SNSDC) to all the data included in the service.

Moreover, a climate viewer provides access to climate/climatic data that are used for building energy efficiency calculation: http://www.geodetska-uprava.si/DHTML_HMZ/wm_ppp.htm

2.6.6 Availability of catalogue services to regulate access

No information has been found nor provided.

2.6.7 Availability of catalogue services that perform payment operations

Such service is not available. Ordering of data can be done by filling in an order form that can be downloaded through the SMA website. In addition, for digital data a statement must be filled out for making arrangements on the way the data can and cannot be used. After that the user can take the data from the (central) office of the SMA or it can be sent by post after remittance of payment.

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

This type of service is not yet available (unless PREGIZ will provide this functionality).[8]

[8] The strategic planning for the year 2004 foresees the development of a system for electronic ordering and delivering of geodetic data. This will fit, together with the other components of the system, in the e-Government system of Slovenia.

2.6.9 SDI user applications

Besides the already mentioned access services to (part of) the databases of the SMA, some applications are developed or under development.[9] On-line services are mentioned for following themes:

- Ecological sensitive areas and nature protected areas of ecosystems;
- Land Cover, landslides and earthquake areas;
- Hydrography and coastal erosion;
- Spatial Planning using data from so-called ANAS stations for soil and air monitoring.

Some examples are:

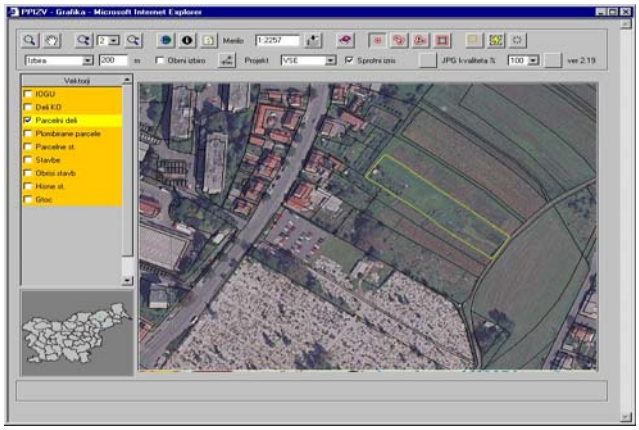
The *Interactive Environmental Atlas* is a free public accessible application on the Internet. It is based on the principle of a flexible, safe and powerful information environment. Users can in an easy and structured way access the spatial information. The Atlas gives answers to questions as "what is located where?" and "where is located what?". With the Atlas users can make a graphical search and perform spatial analysis, ask for a location and make communication with the server.

GEABIOS stands for **G**eo **E**nabled **and** **B**etter **I**nternet **O**riented **S**ervices. People backing up GEABIOS come from variety of business and institutions. They acknowledge that Internet is a problem not a solution. GEABIOS depicts their way how to solve the problems in certain application areas. They also acknowledge that GEABIOS is not the only possible solution. With proper mixture of ideas, philosophy, courage, technical knowledge and understanding of end-user process navigating through the Internet, GEABIOS tends to be a user friendly and efficient solution. GEABIOS integrates technology, data, maps and scenarios through clearness and easiness of a user

[9] This was not clear in the presentation during the 8th EC-GIS workshop, Dublin, 3-5 July, 2002.

interface. GEABIOS is a process not a fix solution. At GEABIOS web page we can find following data and services: Maps of Slovenia, Slovenia in brief, Fast Addresses, Cash dispensers, doctors, restaurants, ..., Virtual walk around, Astronomy, Atomic Clock, Meta Search Engine, 400 European radio stat., GPS Navigation, Tide tables, Postcards, World Maps, Nautical maps Adriatic Sea and Weather (**www.geabios.com**).

In the previous year, the Surveying and Mapping Authority was renewing their own web portal and home page. One of them is a Web based map viewer of SMA data for public use. In order to facilitate the application of geodetic data, certain data or views are free. This refers to the screen views of the raster data of topographic and transparency maps, orthophotos of smaller resolution, data on spatial borders and the like. Some policy directives for governmental data recommend, that they are free of charge, only material costs could be charged to users.



At the same time a map-viewing thematic website exists at **www.geopedia.si** while the spatial information system of municipalities is the most established Geoinformation

services for municipalities in Slovenia. The system includes a range of application solutions and topics that are constantly evolving and adapting to the needs of municipalities, the existing legislation, technological capability and availability of spatial records (**www.geoprostor.net**).

2.6.10 Availability of geo-processing services

Such services are not yet available. The applications listed in section 2.5.9 should be investigated to know more about the precise character of the spatial analysis and processing that is performed there.

2.6.11 Conclusions of Component 5

The portal http://e-prostor.gov.si/ contains provides central access to numerous metadata, maps, and also to viewing and download services. The PROSTOR site states that. Web services are developed in accordance with the recommendations of the OGC taking into account the standards set out in the field of geographic information systems ISO/TC211. The MR states that are 3 discovery, 6 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 (No information found)

2.7 Component 6: Thematic environmental data

2.7.1 Application of the legal framework and funding principles to thematic environmental data

The legal framework is focused on the general geodetic activities (Geodetic Activities Act) and on activities related to real estate as there are: real estate taxation, real estate property, etc. On the web site of the SMA it is stated however that: "Regulated real estate registration is conditioned by already adopted international liabilities in the field of environment, statistics, etc., and primarily by the process of joining the European Union.". In another text, the Environment Protection Act is mentioned. This was however not worked out yet at the time of the start of the ONIX project (1997-1998).

2.7.2 Application of data characteristics to thematic environmental data

EARS is the major actor for environmental data. In the table below, one can find the list of data for which EARS is responsible (ref. INSPIRE proposal for a Directive Annexes):

ANNEX I:

LAYER NAME	LAYER DESCRIPTION	Data administrator EARS
Protected sites	Area designated or regulated and managed to achieve specific conservation objectives.	YES

ANNEX II:

LAYER NAME	LAYER DESCRIPTION	Data administrator EARS
Elevation[1]	Digital elevation models for land, ice and ocean surface. Includes terrestrial elevation, bathymetry and shoreline..	YES, PARTIALLY
Land cover	Physical and biological cover of the earth's surface including artificial surfaces, agricultural areas, forests, (semi-)natural areas, wetlands, water bodies.	YES

ANNEX III:

LAYER NAME	LAYER DESCRIPTION	Data administrator EARS
Human health and safety[2]	Geographical distribution of occurrence of diseases linked directly (epidemics, spread of diseases, health effects due to environmental stress, air pollution, chemicals, depletion of the ozone layer, noise, etc.) or indirectly (food, genetically modified organisms, stress, etc.) to the quality of the environment.	YES, PARTIALLY
Government service and environmental monitoring facilities[3]	Sites for governmental services, location of hospitals and medical treatment locations, schools, kindergartens, etc. Includes sewage, waste and energy facilities, production sites and environmental monitoring facilities operated by or for public authorities.	YES, PARTIALLY
Production and industrial facilities[4]	Industrial production sites. Includes water abstraction facilities, mining and storage sites.	YES, PARTIALLY

Agricultural and aquaculture facilities[5]	Farming equipment and production facilities (including irrigation systems, greenhouses and stables).	YES, PARTIALLY
Area management/restriction/regulation zones & reporting units[6]	Areas managed, regulated or used for reporting at European, national, regional and local levels. Includes dumping sites, restricted areas around drinking water sources, nitrate vulnerable zones, regulated fairways at sea or large inland waters, OSPAR areas for the dumping of waste, noise restriction zones, prospecting and mining permit areas, river basin districts, OSPAR reporting units and coastal zone management areas.	YES, PARTIALLY
Natural risk zones	Vulnerable areas characterised according to natural hazards (all atmospheric, hydrologic, seismic, volcanic and wildfire phenomena that, because of their location, severity, and frequency, have the potential to seriously affect society), e.g. floods, landslides, avalanches, forest fires, earthquakes, volcanic eruptions.	YES
Atmospheric conditions	Physical conditions in the atmosphere. Includes spatial data based on measurements, on models or on a combination thereof and includes measurement locations.	YES
Meteorological geographical features	Weather conditions and their measurements; precipitation, temperature, evapotranspiration, wind speed and direction.	YES
Oceanographic geographical features[7]	Physical conditions of oceans (currents, salinity, wave heights, etc.).	YES, PARTIALLY
Bio-geographical regions	Areas of relatively homogeneous ecological conditions with common characteristics.	YES
Habitats and biotopes	Geographical areas characterised by specific ecological conditions and physically supporting the organisms that live there. Includes terrestrial or aquatic areas distinguished by geographical, abiotic and biotic features, whether entirely natural or semi-natural. Includes small features of the rural landscape – hedgerows, brooks, etc.	YES

Spatial data for which is Environmental agency of the republic of Slovenia partially responsible.

[1]**Elevation** – shoreline.

[2]**Human health and safety** - air pollution, chemicals, depletion of the ozone layer, noise, etc.

[3]**Government service and environmental monitoring facilities** - sewage, waste and energy facilities, production sites and environmental monitoring facilities operated by or for public authorities.

[4]**Production and industrial facilities** - Includes water abstraction facilities.

[5]**Agricultural and aquaculture facilities** – concession for fish farm.

[6]**Area management/restriction/regulation zones & reporting units** - Areas managed, regulated or used for reporting at European, national, regional and local levels. Includes dumping sites, restricted areas around drinking water sources, nitrate vulnerable zones, river basin districts.

[7]**Oceanographic geographical features** – measurement of sea level.

2.7.3 Application of metadata issues to thematic environmental data

Metadata for environmental data is provided by SEA (Slovene Environmental Agency). It is based on EEA's Catalogue of Data Sources guidelines.

EARS environmental metadata is provided to CEPP and they are based on SNSDC. They are also used in EEA CDS.

2.7.4 Application of access services issues to thematic environmental data

A web-based metadata system for environmental data is provided by SEA (Slovene Environmental Agency). It is not integrated with SMA's SNSDC (Slovenian National Spatial Data Catalogue) for reference and core thematic data. It is based on EEA's Catalogue of Data Sources guidelines and is available at http://eionet-en.arso.gov.si/Eionet-SI_SERVICES/F1093138780. Currently it contains descriptions of 173 datasets.

Nature protection atlas: http://gis.arso.gov.si/atlasokolja/profile.aspx?id=Atlas_Okolja_AXL@Arso.

2.7.5 Application of standards issues to thematic environmental data

These standards issues are generally applicable to thematic environmental data.

2.7.6 Application of update procedures issues to thematic environmental data

No information has been found nor provided.

2.7.7 Conclusions of Component 6

EARS is the major actor for environmental data Furthermore, a web-based metadata system for environmental data is provided by SEA. Apart from the SMA-lead NSDI, metadata about thematic environmental datasets are being offered on the internet. The MR finding support the above statements..

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 online services, which the SMA began to develop in 2006, are in compliance with OGC's recommendations They are taking into consideration the standards of SIST (the Slovenian Institute for Standardization), CEN (the European Committee for Standardization), and ISO (International Organization for Standardization) as well as the recommendations made by OGC and W3C (World Wide Web Consortium).

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

The degree of up-to-dateness is variable between the different datasets. It is clear that Slovenia has focused the last years on data related to real estate (see also the Real Estate Registration Modernisation Project). Parcel, building, address data are indeed more up-to-date than some of the typical topographic layers. A clearinghouse for environmental information is available.

The Slovenian SDI is being developed according to a well thought over step-by-step plan that already delivers concrete results which can be expected to be extended in the near future, especially since everything is centralised and well coordinated.

Information on the current use of the infrastructure (2007):

Here are some figures about the use of network services:

Views for registered users:

In the year 2007 there was 3478 different users of the system (700 more then in the year 2006).

- There was 1.870.000 demands on data via WFS services and there was 840.00.000 records downloaded through these services in the year 2007.
- There was 18.500.000 demands via view services with76.000.000 data in the year 2007.
- The geodetic data use almost all the governmental bodies, and there are some bodies that are directly linked to geodetic data and services:
  - Ministry of Finance – Tax Administration,

- Ministry of Finance – Public Payment Administration,
- Ministry of Agriculture, Forestry and Food,
- Ministry of the Interior,
- Ministry of Defence,
- Ministry of Environment and Spatial Planning,
- Ministry of Education and Sport,
- Ministry of Environment and Spatial Planning Agency for Environment,
- Statistical Office of the Republic of Slovenia,
- Agency of the Republic of Slovenia for Public Legal Records and Related Services,
- Environmental Agency of the Republic of Slovenia,
- Supreme Court of the Republic of Slovenia,
- Health Insurance Institute of Slovenia,
- Services for e-government applications.

In 2008 there were more than 4095 users from 995 organizations.

Examples of the positive impact of the use of (parts of) the infrastructure and how the SDI is used to support environmental practices

The data, the Surveying and Mapping Authority is responsible for, so called reference data. These are series of datasets that environmental policies use to “reference” environmental data. The geodetic data also provide a common link between different environmental data and applications and thereby provides a mechanism to enable the merging of data from various sources

So the geodetic reference datasets are standardized and made available at a state level, this common "framework" provides significant economies of scale and scope for both the collection of data, as well as for the development and provision of environmental datasets and applications that use them as their basis.

The geodetic data are used both at national and local level for the purposes of environmental planning and other environmental practices. They are accessible via view and download services.

3 Annexes

3.1 List of SDI addresses / contacts for Slovenia

Table: SDI contact list			
	Web address	Organisational mailing address	Over-all contact person: tel./fax/e-mail
National			
SGII (SMA)	http://www.gu.gov.si/ http://e-prostor.gov.si/	Zemljemerska ulica 12, 1000 Ljubljana, Slovenija	Tel: +386-1-4784800 Fax: +386-1-4784909 or +386-1-4784834
MESP	http://www.mop.gov.si/en/	Dunajska 48, 1000 Ljubljana, Slovenija	Tel: +386-1-4787431 Fax: +386-1-4787426
EARS[10]	http://www.arso.gov.si	Vojkova 1b, SI-1000 Ljubljana	Tel: +386-1-4784534 Fax: +386-1-4784052

3.2 List of references for Slovenia

Table: list of references used to compile the Country Report	
Web sites:	
	http://www.gov.si/gu/ official website of the Surveying and Mapping Authority of the Republic of Slovenia
	http://www.gov.si/ugf/ang/gf.html official website of the Geophysical Survey of the Republic of Slovenia
	http://www.anzlic.org.au/anz_site.htm ANZLIC, The Spatial Information Council (Australia)
	http://www.igea.si/eng/stran1_1.html IGEO d.o.o., one of the private partners of the SDI of Slovenia
	http://www.ec-gis.org the GIS portal of the European Commission managed by the Joint Research Centre, Ispra, Italy
	http://www.eurogeographics.org the official website of EuroGeographics, the association of the national mapping agencies of Europe
	http://www.privacyinternational.org/survey/phr2002/phr2002-part3.pdf
	http://195.228.254.144/program.html
	http://egeols222.egeo.sai.jrc.it/Workshops/7ec-gis/papers/pdf/dallemand.pdf

[10] Environmental Agency of the Republic of Slovenia / Agencija Republike Slovenije za okolje

	http://www.publicsectorinfo.com/summary_results/11d.html
	http://www.hfhrpol.waw.pl/Secserv/foia_sln.html
	http://www.sipo.mzt.si/GLAVAGB.htm
	http://195.228.254.144/abstracts.html
	http://193.2.111.28/gu_eng/public/Files/lp_ang.pdf
Publications:	
	Rezek, J., Ministry of the Environment and Physical Planning of the Republic of Slovenia, the Geoinformation Centre of the RS, The ONIX Project – Establishment of Slovenian Geoinformation Infrastructure (SGII), 1998.
	Law on Geodetic Activities, Geodetic Legislation, published in the Official Journal of the Republic of Slovenia, 2000, n°8.
	Regulation on Building Cadastre Registration (Ur. I. RS, n° 15/02)
	Surveying and Mapping Authority of the Republic of Slovenia. Real Estate Property, National Border and Spatial Units Registration Bill, Geodetic Legislation, published in the Official Journal of the Republic of Slovenia, 2000, n°52.
	Azman, I., T. Petek, Data dissemination and pricing policy for spatial data at Surveying and Mapping Authority, presentation at 8th EC-GI & GIS workshop ESDI – A work in Progress, Dublin, Ireland, July 3-5, 2002.
	Vrecar, S., Distribution of Spatial Data, presentation at the 8th EC-GI & GIS workshop ESDI – A work in Progress, Dublin, Ireland, July 3-5, 2002.
	Sumarada, R., Legal Issues Regarding Spatial Data, paper presented at the XXII FIG International Congress, Washington, D.C., USA, April 19-26, 2002
	Lapajne, J., Geophysical Survey of Slovenia, Letter of intent to set up Slovenia's seismic network.
	Vrecar, S., On-line access to Spatial Data, presentation at the 9th EC-GI&GIS workshop ESDI – Serving the User, A Coruña, Spain, June 25-27, 2003
	Petek T. Ministry of environment and spatial planning of the Republic of Slovenia, SPATIAL INFORMATION SYSTEM FOR, paper at GSDI conference and FIG working week, Cairo, Egypt 2005
	Petek T. Ministry of environment and spatial planning of the Republic of Slovenia, SPATIAL DATA SYSTEM IN SLOVENIA, paper at 10th EC

	GI&GIS Workshop ESDI, Warsaw, Poland 2004
	Ažman, I., and Petek, T. 2009. Spatial Data Infrastructure at the Surveying and Mapping Authority in Slovenia. GSDI 11, Rotterdam The Netherlands 15-19 June 2009.
	Petek, T. 2008. State of Play in Slovenia. INSPIRE Conference ISPRA, 9 May 2008.
	Petek, T. 2009. INSPIRE implementation in Slovenia. INSPIRE Conference Rotterdam, June, 2009