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Global Geospatial Information Management

Country Report of Slovenia - 2019

Submitted by: Surveying and Mapping Authority of the Republic of Slovenia

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INTRODUCTION

The National Report on Geospatial Information Management in the Republic of Slovenia describes the establishment and implementation of the National Spatial Data Infrastructure as well as availability of geospatial information in state institutions which manage geospatial information. It can be stated that the most important activities related to Geospatial Information Management in the Republic of Slovenia, are realised under the auspices of the Surveying and Mapping Authority of the Republic of Slovenia. This agency is also the National Contact Point for INSPIRE in the Republic of Slovenia and is responsible for leading the National Spatial Data Infrastructure establishment and INSPIRE implementation. The main mission of the Slovenian Infrastructure for Spatial Information is to develop the infrastructure which provides geospatial information through standardized network services to public authorities, businesses, organizations and citizens. From the establishment of National Spatial Data Infrastructure in Slovenia many positive outcomes in relation to development and managing of geospatial information have emerged. The Report briefly describes the availability of geospatial information the Republic of Slovenia through the development of geoportals, network services and many other geospatial applications that are developed to facilitate the use of spatial data to public authorities, citizens and other stakeholders. The Report also covers the data sharing policies in the Republic of Slovenia between public authorities and re-using of data for different purposes.

ABOUT SLOVENIA

Slovenia, a small gem of a country set between Italy, Austria, Hungary and Croatia, is a combination of Alpine beauty, majestic valleys and blue and turquoise colour lakes purified by their limestone surroundings.

Slovenia, officially the Republic of Slovenia, is a nation state in southern Central Europe at the crossroads of main European cultural and trade routes. It lies between latitudes 45° and 47° N, and longitudes 13° and 17° E. The 15th meridian east almost corresponds to the middle line of the country in the direction west-east. The Geometrical Center of the Republic of Slovenia is located at coordinates 46°07'11.8" N and 14°48'55.2" E. It lies in Slivna in the Municipality of Litija. Slovenia's highest peak is Triglav (2,864 m or 9,396 ft); the country's average height above sea level is 557 m (1,827 ft).

It covers 20,273 square kilometers (7,827 sq mi) and has a population of 2.08 million. It is a parliamentary republic and a member of the European Union and NATO.

Four major European geographic units meet on the territory of Slovenia: the Alps, the Dinaric Alps, the Pannonian Plain, and the Mediterranean, with a small portion of coastline along the Adriatic Sea. The territory has a mosaic structure and a mountainous landscape and biological diversity. The country is one of the most water-rich in Europe, with a dense river network, a rich aquifer system, and significant karstic underground watercourses. Over half of the country (10,124 km² or 3,909 sq mi) is covered by forests. This makes Slovenia the third most forested country in Europe, after Finland and Sweden.

Slovenia is in a rather active seismic zone because of its position on the small Adriatic Plate, which is squeezed between the Eurasian Plate to the north and the African Plate to the south and rotates counter-clockwise. Many parts of Slovenia have a carbonate ground, and an extensive subterranean system has developed.

IDENTITY CARD OF SURVEYING AND MAPPING AUTHORITY OF THE REPUBLIC OF SLOVENIA

The Surveying and Mapping Authority of the Republic of Slovenia is a body within the Ministry of the Environment and Spatial Planning. The competence of the Surveying and Mapping Authority of the Republic of Slovenia comprises the tasks of the national land survey service, which include the creation, management and updating of databases

pertaining to the Basic Geodetic System, real estate, the State Border, spatial units and house numbers, and the Consolidated Cadastre of Public Infrastructure, as well as the Topographic and Cartographic System. The Surveying and Mapping Authority of the Republic of Slovenia is responsible for basic data on space and real estate in the finalized databases, provides services pertaining to the registration of changes in physical space and on real estate, and performs the role of coordinator for the Real Estate System and Spatial Data Infrastructure.

In cooperation with the Ministry of Finance, it is carrying out Mass Real Estate Appraisal with the aim of creating the foundations for successful and efficient real estate management, to provide data for objective and comprehensive real estate taxation and improve the efficiency of the real estate market. It provides for the National Coordinate System and its compliance with the European Coordinate System and creates the conditions for implementing land surveys.

The Surveying and Mapping Authority of the Republic of Slovenia comprises of the Main Office, the Geodesy Office, the Real Estate Office, the Mass Real Estate Valuation Office and twelve regional surveying and mapping authorities. The latter has been set up to streamline operations and increase the accessibility of administrative and professional tasks and services implemented by the Surveying and Mapping Authority of the Republic of Slovenia.

Main tasks and activities

In cooperation with the regional surveying and mapping authorities, the regional offices implement the following joint tasks:

- preparing the national land survey service annual programme and the report on its implementation,
- organising the work of the regional surveying and mapping authorities, monitoring their work and ensuring the uniform implementation of national land survey service assignments,
- directing the implementation of development assignments pertaining to surveying and mapping activities,
- implementing operational, professional and administrative assignments from the offices' fields of work,
- drafting regulations on surveying and mapping activities,
- meeting international obligations in the field of national land survey services.

The Surveying and Mapping Authority of the Republic of Slovenia comprises:

- the Real Estate Office,
- the Mass Real Estate Valuation Office,
- the Geodesy Office and
- twelve regional surveying and mapping authorities.

Real Estate Office

The Real Estate Office is responsible for administrative, professional, technical, coordination and supervisory activities pertaining to the management of the Land Cadastre, the Building Cadastre, the Real Estate Register and other records on real estate, the management of state border records and activities pertaining to marking, restoring and maintaining the state border. It is also engaged in managing the Register of Spatial Units and the Register of House Numbers. It operates in an interagency capacity in the work of international commissions and in other activities and projects, and is responsible for the training and education of employees of the regional surveying and mapping authorities. It prepares subject matter and material for the mandatory training of geodesists with a geodetic permit in cooperation with the Slovenian Chamber of Engineers. The substantive management and coordination of the work of regional surveying and mapping authorities in the field of real estate is another of its tasks.

In the field of registering real estate, the Real Estate Office and the regional surveying and mapping authorities implemented regular procedures to manage and maintain data from real estate records and activities to improve the quality of data. The envisioned tasks which were determined as part of the revised budget were fully implemented. The planned tasks in the field of managing and maintaining data on the state borders with Italy, Austria and Hungary as determined by intergovernmental commissions were implemented. Minor measurements of border posts and regular periodical control of border stones were carried out, and border documentation for individual sectors on the state border was drafted.

In the field of renovation and creation of new informational solution we started drafting public tender for full informational renovation; we implemented a tender for first phase of the task – creation of graphic module of land cadastre and some minor replenishment in the field of graphic data. For improvement of data we implemented locational improvement of data of land cadastre in field of permanent plantations and two municipalities. We implemented many coordinated tasks for organisation and cleansing of data about land cadastre reference points in whole area of Slovenia. We digitalised more than 4 million of documents of archive of land cadastre and established system for recording and use of these data.

Mass Real Estate Valuation Office

The Mass Real Estate Valuation Office implements the tasks of general real estate valuation and the tasks of ascribing value to real estate properties. The main tasks comprise the preparation of real estate valuation models, determination of real estate value indices and monitoring of the Slovenian real estate market. The main products are valuation models for individual types of real estate that, on the basis of data from the Real Estate Register, provide for the calculation of the market value of real estate, calculated indices of the value of real estate that enable updating of market values with regard to price trends in the real estate market during the period between general valuations of real estate and periodic reports on developments in the market based on systematic monitoring and analysis of data on the market. The Office manages and maintains the Real Estate Market Record, which is a multi - purpose public database on purchases and rental agreements pertaining to real estate. The Real Estate Market Record is managed in order to provide data on realised prices and rents in the real estate market for the purposes of mass valuation and other public purposes determined by law. On account of the changes in real estate markets, the Office verifies individual real estate valuation models at least every four years. The Office manages and updates the Real Estate Valuation Database, which is a public database on real estate valuation models and data on value indices.

The Office provides for the procedure of ascribing values, whereby the values of all recorded real estate are calculated on the basis of data on real estate entered in the Real Estate Register by using the mass valuation model for calculation of generalized market value, and enters the calculated values into the Real Estate Register.

In the field of mass real estate valuation, the Mass Real Estate Valuation Office operatively implemented the tasks of general real estate valuation.

We emphasised preparation of models for mass evaluation as a means to implement the Real Property Tax Act. For that purpose, we executed adjustments to evaluation models based on price changes on the real estate market, mostly in form of calculating the price tendencies for specific real estates, and thus generally lowering real estate prices for specific real estates in specific areas in the country. The Information system for real estate market records was upgraded in a way that enables systematically recording of all the purchases of real estates, which are subject of taxation with taxes on real estate's transactions and Added value tax, and also recording of rental business for whole buildings as well as parts of buildings. We managed and maintained a production and distribution environment of the public records of the real estate market, which provides good groundwork for improvements in the clarity of the real estate market in the Republic of Slovenia. We reviewed and processed real estate sales for the means of modelling the real estate market in Republic of Slovenia and for calculating the value indexes for individual models of evaluation of real

estates. In substantive and informational – technological sense we maintained and upgraded the system for general evaluation of real estate. We made analysis and calculations on which the government of Republic of Slovenia determined value indexes for real estate. With those indexes they adjusted the calculated values of real estate to those on the market at the start of the year 2013. We established and maintained application for postscripts of the value of real estate and based on this information all the real estate, recorded in the real estate register, were given general market values based on changed data of real estate. Models for evaluation of real estate and value indexes of real estate were managed and made available to the public through the internet in form of real estate value collections.

Geodesy Office

The Geodesy Office is responsible for the basic geo - information infrastructure, represented by the national coordinate system and the national topographic system. In these fields, it implements legislative, professional, technical and coordination, implementation and supervisory assignments. It is responsible for establishing and updating the national coordinate system and its accessibility through the system of permanent global satellite positioning stations and other geodetic networks (the SIGNAL network). It coordinates and implements activities pertaining to the transition to the European coordinate system ETRS (European Spatial Reference System) and is responsible for linking the national coordinate system with the coordinate systems of neighbouring countries. It carries out field work required to set up the horizontal and vertical (geometric and physical) components of the national coordinate system, provides transform motion parameters between the existing (old) national and (new) European coordinate system and captures spatial data of the Surveying and Mapping Authority for the purpose of controlling. It manages a collection of data on geodetic points. It also implements organisational and coordination activities regarding the capture, management and integration of topographic data. It manages a collection of topographic data and the Consolidated Cadastre of Public Infrastructure. It is responsible for the national cartographic system and ensures the creation of national topographic and cartographic products for the needs of the state, ministries and local government. It provides for the compliance of the basic geo - information infrastructure with the European guidelines. It prepares regulations and participates in European and international projects in these fields.

In the field of geodesy, topography and cartography, the Geodesy Office performed control of the configuration of fifteen permanent GNSS stations of the SIGNAL network and purchased and upgraded the necessary technical equipment. Geodetic measurements of high accuracy were carried out on 123 km of levelling lines, GNSS measurements on EUREF points, gravimetric measurements on benchmarks. We also executed measurements for the recording of land underlying a building and we renewed some of the trigonometers of the

first order. In line with Financial mechanism of European economy field for period from 2009 to 2014 (FM EGP) we gained funds for donations for co - financing of the execution of project »Modernization of spatial data infrastructure to reduce risks and impacts of floods«, which will be executed by The Surveying and Mapping Authority of Republic of Slovenia in cooperation with Ministry of Agriculture and Environment and project partners – Norwegian Mapping Authority (Statens kartverk) and National Land Survey of Iceland (Landmælingar Íslands). We executed basic starting activities on project.

A proposition for the Act on georeference system was prepared, professional and interdepartmental coordination was conducted. We made aerial images for 30% of Slovenia (North - Eastern part), aero triangulation and digital model of relief, colour ortofoto and infrared ortofoto. In line with standards of EuroGeographics we executed completion of some data layers of EuroRegionalMap (ERM) and EuroGlobalMap (EGM). We renewed public review map of scale 1:250,000. We did some work for Commission for standardisation of European geographic names. We captured topography data for 70 sheets of scale 1: 5,000 and special tasks Ministry of Defence on the field of cartography and topography. 470 studies for registering public infrastructure buildings into the Consolidated Cadastre of Public Infrastructure were for warded and 497 studies were entered into the Cadastre. Together with Ministry for Education, Science and Sport we executed two tasks: »Informational support for management of cadastre of economic public infrastructure« and »Accessibility of data about accessibility of broadband internet in Republic of Slovenia«. We successfully organized the 3rd Conference on the recording of public infrastructure in Slovenia.

Regional Surveying and Mapping Authorities

- create, manage and update the Land Cadastre, the Building Cadastre, the Register of Spatial Units and other data bases provided by law; provide information from the Land Cadastre, the Building Cadastre and the Register of Spatial Units and other databases
- implement administrative procedures and make first instance rulings in administrative matters for which they are competent
- provide professional assistance to clients and information to users
- participate in the planning and programming of land survey activities, primarily in cooperation with local communities
- coordinate activities in the land survey offices
- implement individual activities in the areas of financial operation, personnel matters, office operation and other organisational activities
- implement other activities as stipulated by the Director General of the Surveying and Mapping Authority

Regional surveying and mapping authorities receive applications, provide information, provide data to clients and carry out individual tasks in administrative procedures pertaining to direct contact with customers at their head offices and all other geodetic offices.

COORDINATION OF SPATIAL DATA INFRASTRUCTURE IN SLOVENIA

The activities related to coordination and implementation of The Infrastructure for Spatial Information are done by the Surveying and Mapping authority of the Republic of Slovenia. For that purpose, a national contact point was determined for contacting the European Commission regarding the INSPIRE Directive and for efficient implementation of The Infrastructure for spatial information.

The Infrastructure for Spatial Information Act (Official Gazette of RS, No. 8/2010, hereinafter, the ISI Act), which transposed in the Slovenian legal order the Directive 2007/2/ES of the European Parliament and of the Council establishing an Infrastructure for Spatial Information in the European Community (hereinafter the INSPIRE Directive), determines a national contact point for contacting the European Commission regarding the INSPIRE Directive and for efficient implementation of the infrastructure for spatial information. The ISI Act specifies that the tasks of the national contact point shall be implemented by the ministry responsible for land survey, which in this case means the Ministry of Infrastructure and Spatial Planning and the Surveying and Mapping Authority of the Republic of Slovenia as its affiliated body.

Name and contact information of the national contact point

National contact point Name of public authority MINISTRY OF INFRASTRUCTURE AND SPATIAL PLANNING, SURVEYING AND MAPPING AUTHORITY OF THE REPUBLIC OF SLOVENIA

Mailing address Zemljemerska ulica 12, LJUBLJANA

Telephone number +386 1 478 48 00

Fax number +386 1 478 49 09

E-mail Pisarna.gu@gov.si

Website address <https://www.gov.si/drzavni-organi/organi-v-sestavi/geodetska-uprava/>

Contact person: Uroš Mladenovič

Telephone number +1 478 48 00

E-mail uros.mladenovic@gov.si

Contact person substitute Matej Sotlar

Telephone number +386 478 48 00

E-mail matej.sotlar@gov.si

The tasks of the national contact point are determined by the ISI Act, specifying that the national contact point shall perform the following tasks:

- managing and maintaining the list of spatial data sets
- managing the detailed descriptions of the spatial data themes
- managing the spatial information geo-portal
- managing and maintaining the metadata information system
- providing the interoperability of the spatial data sets and the services related thereto
- preparing the proposals of operational programmes of the Government
- executing the implementing rules of the INSPIRE Directive in the Republic of Slovenia
- preparing and supplementing the strategy of the infrastructure for spatial information
- preparing the programme of activities and measures to meet the requirements for establishing the infrastructure for spatial information
- preparing reports on providing the infrastructure for spatial information for the European Commission

The focus of activities in 2018 was reviewing the state spatial data sets and establishing communication with spatial data set resource providers. Many events were organized: workshops for spatial data set resource providers highlighting activities needed to improve compliance with the INSPIRE Directive and the Spatial Information System, workshops regarding spatial data set and service metadata creation and editing, workshop for the use of specific software solutions for the implementation of the INSPIRE Directive and many workshop with participation from international experts meant to inform the expert public of resource providers with current topics regarding the common infrastructure for spatial information. Activities were carried out in order to inform the expert public on the proceedings of the project (digital communication, publications, different written materials, events and seminars, printed materials and other means of public informing).

A new version of the Slovene Geoportal was deployed and different ways to provide data sets through the INSPIRE infrastructure were considered. In the area of monitoring and reporting the basis for an automated process of monitoring and a simplified process for reporting was prepared. A state of the land analysis regarding the spatial data set and service metadata inside the Slovene infrastructure for spatial information was produced. In the frame of establishing network services for spatial data sets of the Spatial Information System activities regarding the identification of Priority Data Sets began in 2018. The INSPIRE (SI) metadata system was upgraded. It has an improved help interface for users as well as

editors. It now provides a user manual, along with the Metadata Profile, and for registered editors also a manual for metadata editors. Issues regarding displaying, discovering and accessing metadata were dealt with as they appeared. The upgrades also include an integrated thesaurus for the identification of Priority Data Sets via keywords. Many spatial data set and service metadata now also include translation in English. A concept for the renovation of the distribution environment, which provides conceptual starting points for the renovation of the distribution environment of the SMA was produced. The purpose of the renovation of the distribution environment is to provide high quality and up to date services to a wide userbase. Based on this concept the drafting of a public tender for a new distribution system has begun.

The coordination group responsible for cooperation of all managers of spatial data sets and services is established as INSPIRE coordination group in Slovenia. Since the participation of public authorities outside the Ministry of the Environment and Spatial Planning will have to be provided in implementing the tasks, the Slovenian Government establish an appropriate coordination structure in Slovenia by establishing an intersectoral coordination group as a strategic body for directing the measures for sharing the spatial data sets and the services related thereto, as well as for implementing the INSPIRE Directive in practice. Such a coordination group advise and offer help to individual public authorities in preparing the legal acts in the field of regulating and managing spatial data sets and their usage.

In addition to the Ministry of the Environment and Spatial Planning, the following ministries participate as well:

- Ministry of Infrastructure,
- Ministry of Defence,
- Ministry of Agriculture, Forestry and Food,
- Ministry of Public Administration,
- Ministry of Health,
- Ministry of Culture,
- Ministry of Higher Education, Science and Technology,
- Ministry of the Interior,
- Ministry of the Economy,
- Ministry of Education and Sport,
- Statistical Office of the Republic of Slovenia.

If needed, the group also invite the representatives of other ministries, whose field of work will be related to the discussed theme, to participate in its activities. The administrative support for the activities of the coordination group will be provided by the national contact

point. The coordination group will perform the tasks of the strategic body responsible for directing the measures for sharing the spatial data sets and the services related thereto, as well as for implementing the INSPIRE Directive in practice.

SDI STAKEHOLDERS

Different stakeholders cooperate in Slovenia in the implementation of the INSPIRE Directive. These are:

- the national contact point,
- the Intersectoral INSPIRE project group,
- managers of data sets,
- individual public institutions and
- interested users.

Currently, over 124 spatial data sets are included in the list of data sets. The key providers are in particular the following public authorities:

- Ministry of the Environment and Spatial Planning (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-okolje-in-prostor/>) and the bodies affiliated to the Ministry:
 - Surveying and Mapping Authority of the Republic of Slovenia (<https://www.gov.si/drzavni-organi/organi-v-sestavi/geodetska-uprava/>),
 - Environmental Agency of the Republic of Slovenia (www.arso.gov.si),
 - Slovenian Water Agency (<https://www.gov.si/drzavni-organi/organi-v-sestavi/direkcija-za-vode/>)
- Ministry of Public Administration (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-javno-upravo/>),
- Ministry of Infrastructure (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-infrastrukturo/>) and the bodies affiliated to the Ministry:
 - Slovenian Infrastructure Agency (<https://www.gov.si/drzavni-organi/organi-v-sestavi/direkcija-za-infrastrukturo/>)
- Ministry of Agriculture, Forestry and Food (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-kmetijstvo-gozdarstvo-in-prehrano/>),
- Ministry of Defence (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-obrambo/>) and the body affiliated to the Ministry:
 - Administration of the Republic of Slovenia for Civil Protection and Disaster Relief (www.sos112.si),

- Ministry of Culture (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-kulturo/>),
- Ministry of Economic Development and Technology (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-gospodarski-razvoj-in-tehnologijo/>),
- Ministry of Health (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-zdravje/>),
- Ministry of the Interior (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-notranje-zadeve/>),
- Slovenia Forest Service (www.zgs.si),
- Geological Survey of Slovenia (www.geo-zs.si),
- Geodetic Institute of Slovenia (<http://www.gis.si/>),
- Biotechnical Faculty (www.bf.uni-lj.si),
- Fisheries Research Institute of Slovenia (www.zzrs.si),

and other public institutions and local communities.

Relations with third parties

In order to implement the tasks of strategic importance, the national contact point and the intersectoral INSPIRE project group have invited to cooperation also many private sector institutions as contractors of technical tasks of establishing and operating the Slovenian infrastructure for spatial information, as well as the Geodetic Institute of Slovenia as public institution offering expert and technical support in the implementation of development and research tasks.

Use of spatial data infrastructure

All existing elements of the Slovenian infrastructure for spatial information are used mainly by the institutions of the public administration. For several years, individual elements of the infrastructure for spatial information have been available to the public. Such information contains mainly joint fast communication network of public authorities (HKOM), managed and maintained by the Ministry of the Interior and Public Administration, which has been connecting all public authorities and some other public institutions for many years. On the basis of the Act on the Access to Information of Public Character and according to the Decree on re-use of information of public sector, every public authority must publish on its website the »Catalogue of Public Information«, which enables the users a more transparent access to the information managed and maintained by a particular public authority. In these data, spatial information occupies an important position. The Ministry of the Interior and

Public Administration is actively working on establishing a national interpretational framework (NIO) and it represents Slovenia in the EU ISA program »Interoperability Solutions for European Public Administrations«. Cooperation of the national administration in the EU ISA program offers an additional dimension of the ISI use in Slovenia.

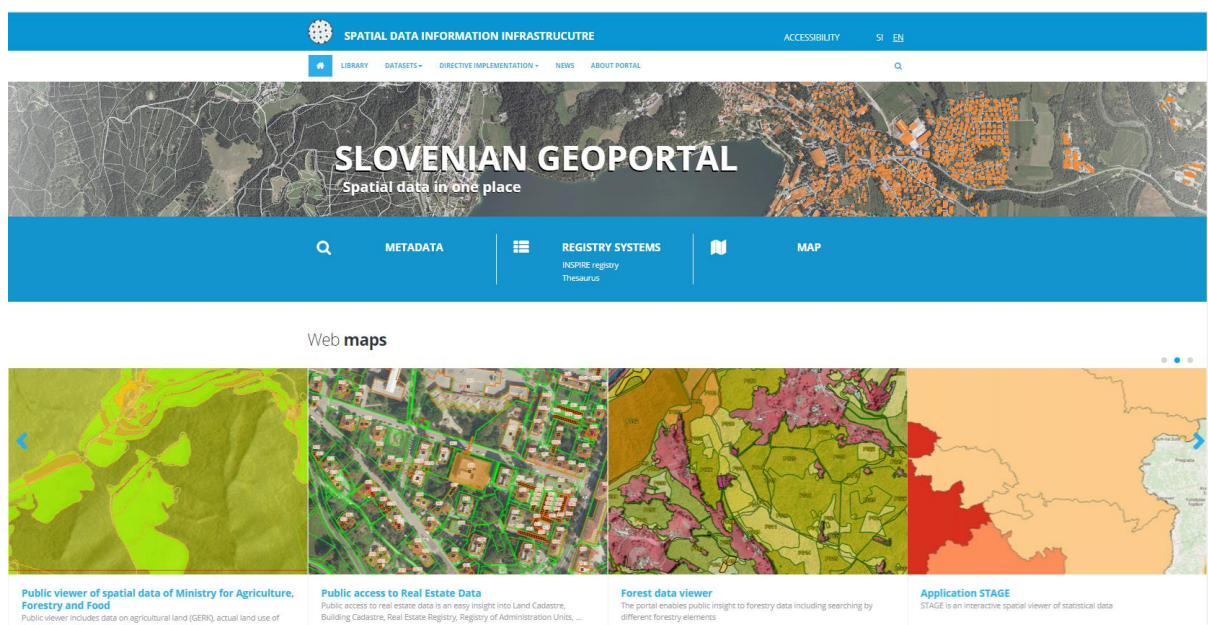
In the field of information and communication technology (ICT) and e-commerce, interoperability represents one of the most important conditions for a successful development of information society, as it brings positive effects to the users (greater choice of services, increased competition and, thus, also better quality at lower price, enabling the closing of information systems and applications), as well as for the ICT industry (facilitating the entry to the market, sharing knowledge, basis for the development of new innovative and competitive products and services). This allows faster development and implementation of innovation (technological, organisational, and procedural) in the public administration and economy, which shall ensure faster dissemination of knowledge, involvement, innovation and competition for society as a whole. The Ministry of Higher Education, Science and Technology and the Ministry of the Interior and Public Administration implemented a project "Concept of national interoperability framework and test interoperability of the e-Kindergartens application". From the outset of systematic elaboration of the national e-administration, the interconnection of official records has been one of the main problems impeding faster development of electronic services of the types G2G, G2B and G2C. Due to lack of connectivity standards there appear, as a rule, in the interconnection of data bases or applications technical and organisational problems related to harmonising interests, duties and rights of national (public) institutions.

INTERNATIONAL COOPERATION

Surveying and Mapping Authority of the Republic of Slovenia implementing international cooperation and participation in Institutions of the European Union, cooperation with neighbouring countries and countries in southeastern Europe as well as bilateral cooperation with other countries. The employees of the Surveying and Mapping Authority of the Republic of Slovenia are actively involved in different international organizations and associations. Alongside the longstanding membership in EuroGeographics – European National Mapping, Cadastral and Land Registry Authorities and the European Regional Committee of the United Nations Initiative on Global Geospatial Information Management (UN-GGIM: Europe), the Surveying and Mapping Authority of the Republic of Slovenia participates in EUREF – Reference Frame Sub-Commission for Europe of the International Association of Geodesy (IAG) in the PPC - Permanent Committee on Cadastre in the European Union as well as in the United Nations Economic Commission for Europe Working Party on Land Administration. A representative from the Surveying and Mapping Authority of the Republic of Slovenia is also chairman of the Executive Board of UN-GGIM: Europe. The Surveying and Mapping Authority of the Republic of Slovenia and the Geodetic Institute of Slovenia (GIS) are members of EuroSDR, which unites surveying and mapping authorities and research institutions in carrying out development projects in the fields of geodesy and geoinformatics. In addition, we continued the activities for the design of strategic plans and international comparisons regarding the development of national surveying services using indicators for the implementation of strategic goals and implementation of the strategic project for the 2015-2025 time period. In 2018 the Surveying and Mapping Authority of the Republic of Slovenia performed tasks as the National Contact Point (NCP) for the implementation of the INSPIRE Directive. As the NCP the Surveying and Mapping Authority of the Republic of Slovenia coordinates the establishment of the National Spatial Data Infrastructure (NSDI) in the Republic of Slovenia.

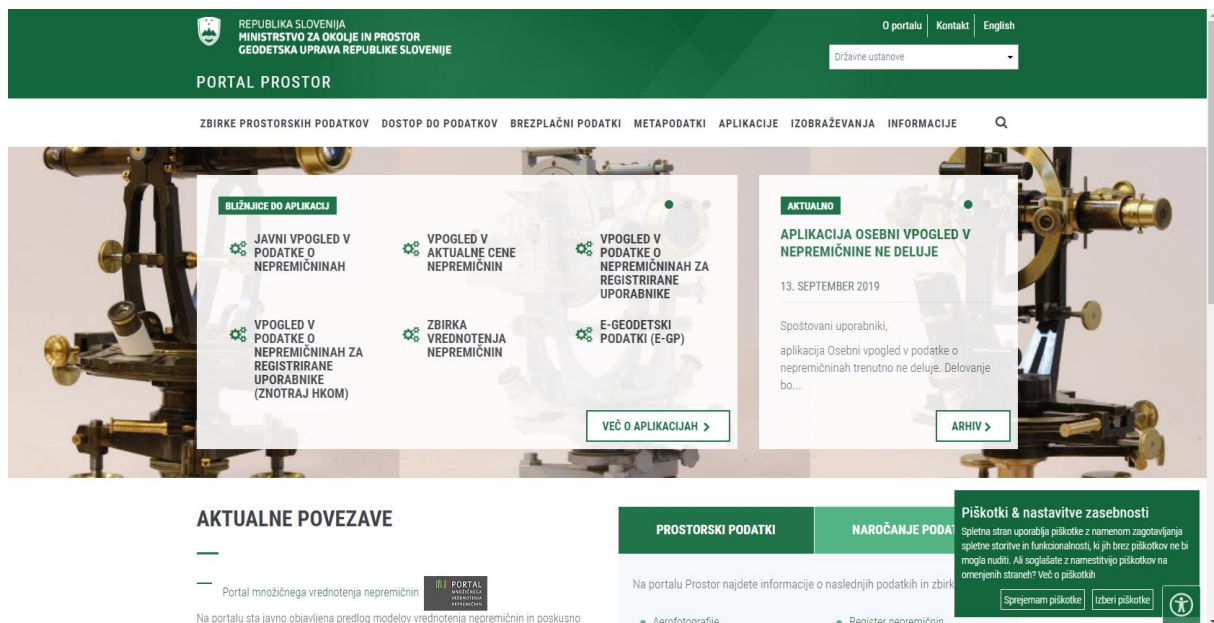
GENERAL OVERVIEW AND DESCRIPTION OF INFRASTRUCTURE FOR SPATIAL INFORMATION IN SLOVENIA

The Surveying and Mapping Authority has established the national INSPIRE Geoportal (www.geoportal.gov.si). The portal includes a metadata system, INSPIRE glossary, link to some web applications for data access and key information related to the INSPIRE Directive and its implementation in Slovenia (list of events, data set managers, list of data sets, regulations and materials, and other information). For the majority of data sets in the list of the INSPIRE data sets and for some services related to them the metadata system contains metadata descriptions consistent with the INSPIRE Directive.



(Slovenian Geoportal: www.geoportal.gov.si)

The Surveying and Mapping Authority has established portal **Prostor (Space)** (www.e-prostor.gov.si), providing access to its data, information on data and the possible methods of access to the data. Users have access to some free data and data samples for all data sets. The portal also allows access to some public services, mainly different types of data accesses.



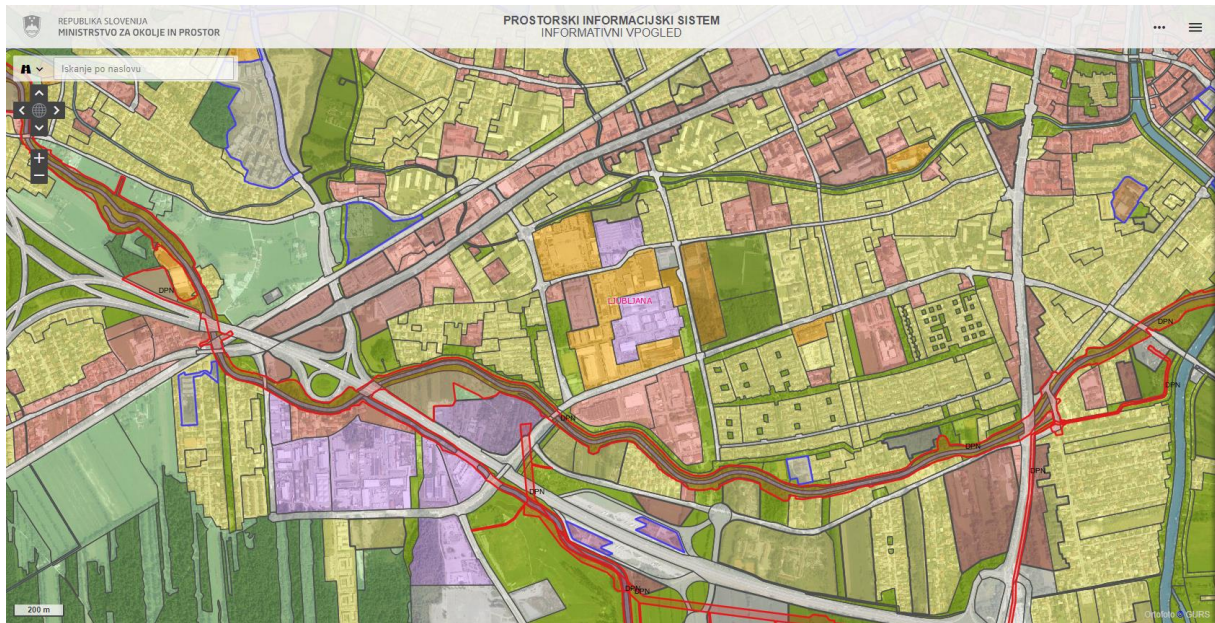
Portal Prostor (Space) www.e-prostor.gov.si

Geospatial Information availability in Slovenia

Spatial data geoportal (named also Slovenian INSPIRE portal) is a common entry point of the Slovenian spatial data infrastructure. It enables access to datasets and network services established for spatial datasets, as well as other services and information related with spatial data infrastructure, but there are many of other portals and entry points for geospatial information available in Slovenia.

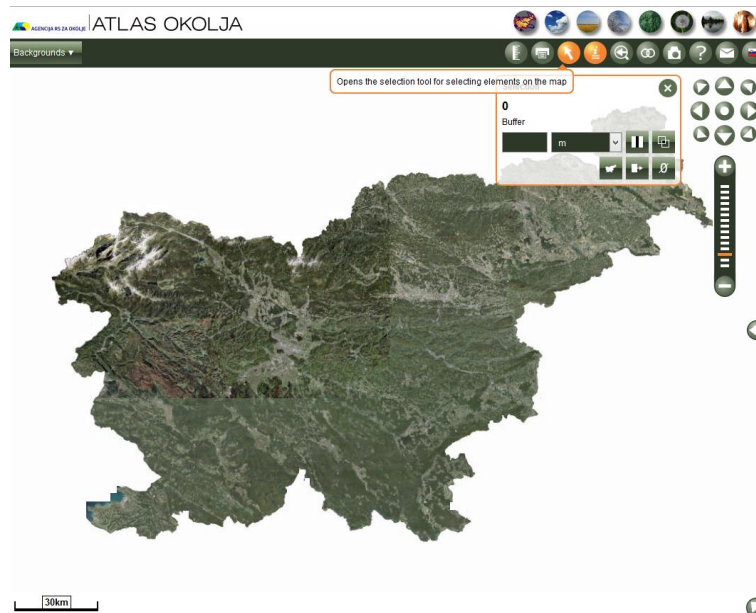
The main focus of public authorities is to develop e-services that help citizens to solve their everyday problems faster, easier and more efficient. Which corresponds to the NSDI vision: 'Help users find, understand and use spatial data.' The vision is realized by developing the infrastructure which provides geospatial information through standardized network services and interoperable data.

The Ministry of the Environment and Spatial Planning has published a spatial data viewer called **"Prostorski informacijski sistem – informativni vpogled"** (translation: Spatial Information System – informative view). It provides access to informative information on national and municipal spatial acts and administrative acts relating to construction.



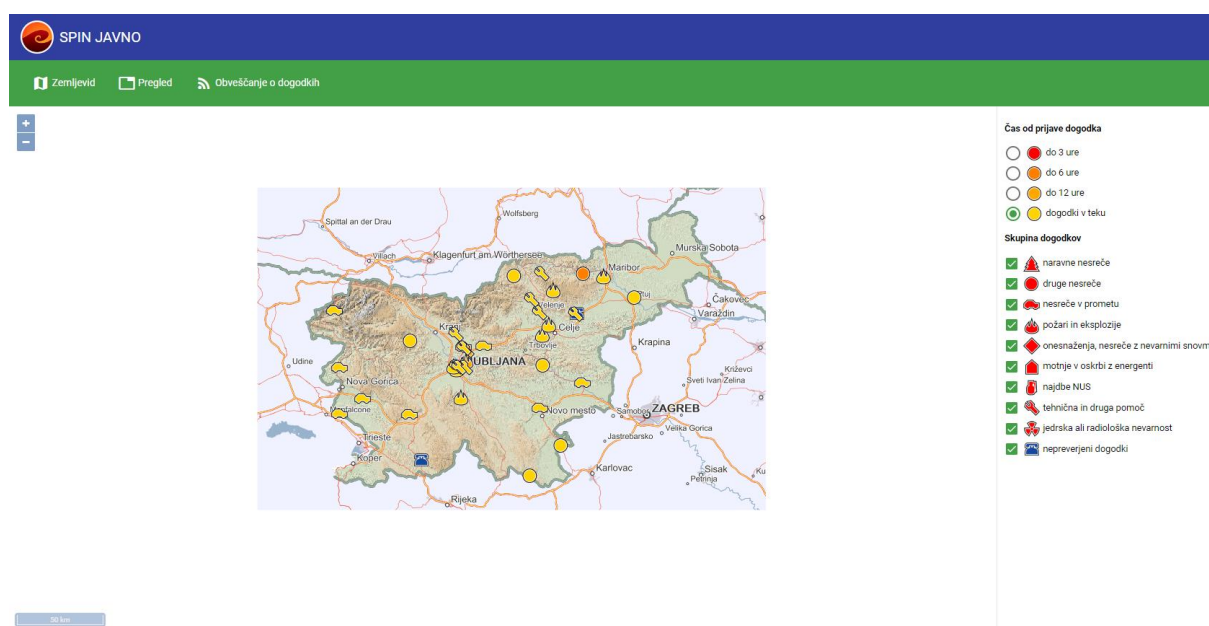
(PIS – informativni vpogled: http://storitve.pis.gov.si/pis-iv/informativni_vpogled.html)

The Slovenian Environment Agency as the second largest INSPIRE data set manager in the country has also established its **Geoportal** (www.gis.arso.gov.si) for the data sets within its competence, which is compliant with the demands of the INSPIRE Directive. The portal includes a metadata system, a search engine and a browser through data sets, WMS and WFS Internet services (browsing and downloading) and a link to the web data viewer (Environmental Atlas). The portal allows access to more than 120 data sets.



(Geoportal ARSO/Atlas okolja: www.gis.arso.gov.si)

Since 2005 Administration of the Republic of Slovenia for Civil Protection and Disaster Relief use their own application **SPIN** (<https://spin3.sos112.si/javno/zemljevid>) - Information system for the reporting of accidents and intervention. Application SPIN is the result of collaboration Administration for Civil Protection and Disaster Relief and representatives of the civil protection rescue and enables timely collection and processing of data on accidents and interventions and has been upgraded in April 2019 to better support the needs of different stakeholders regarding disaster relief. The application provides a public viewer and operational interface for registered users which allows instant capture data on all natural and other disasters, the activation of protection and rescue units and informing all those they need to be notified of activation.

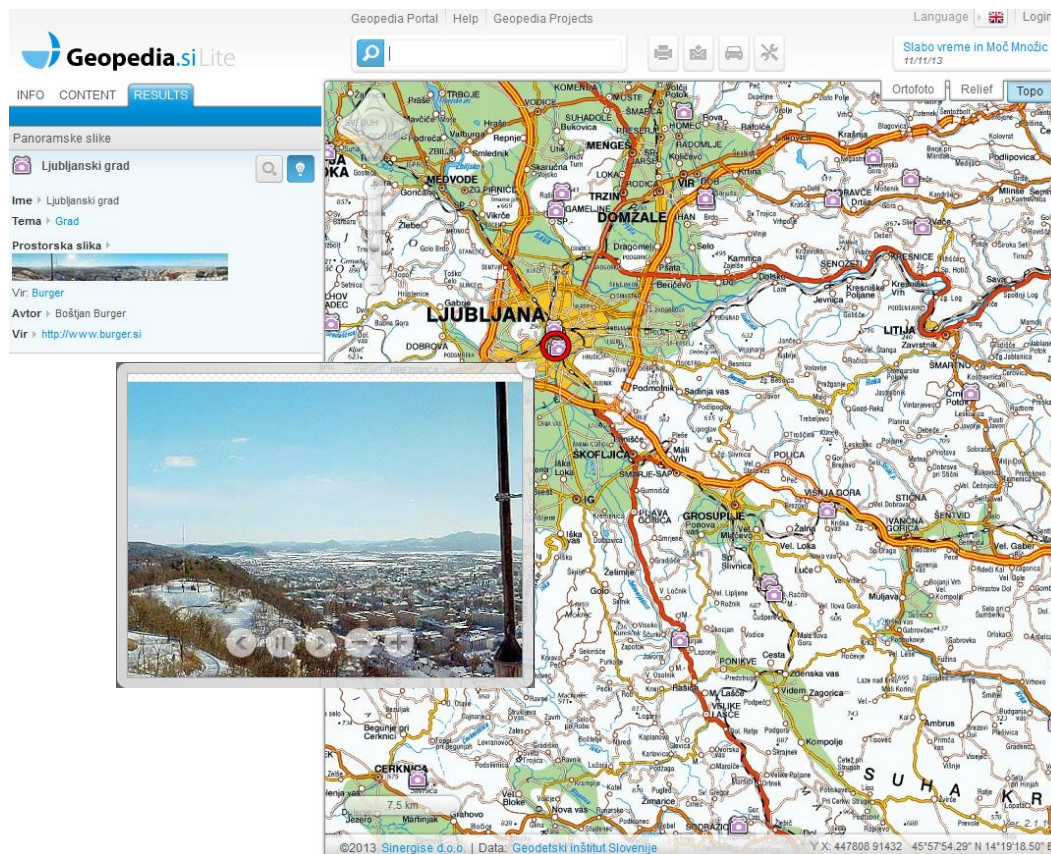


SPIN public viewer: <https://spin3.sos112.si/javno/zemljevid>

Geopedia (www.geopedia.si) is a web based application for searching, viewing, and editing of geographical data, with service available to many clients at the same time. It contains various kinds of geographical and geo- referenced information which comes from many different sources and is thoroughly described, tagged, cross-referenced and categorized.

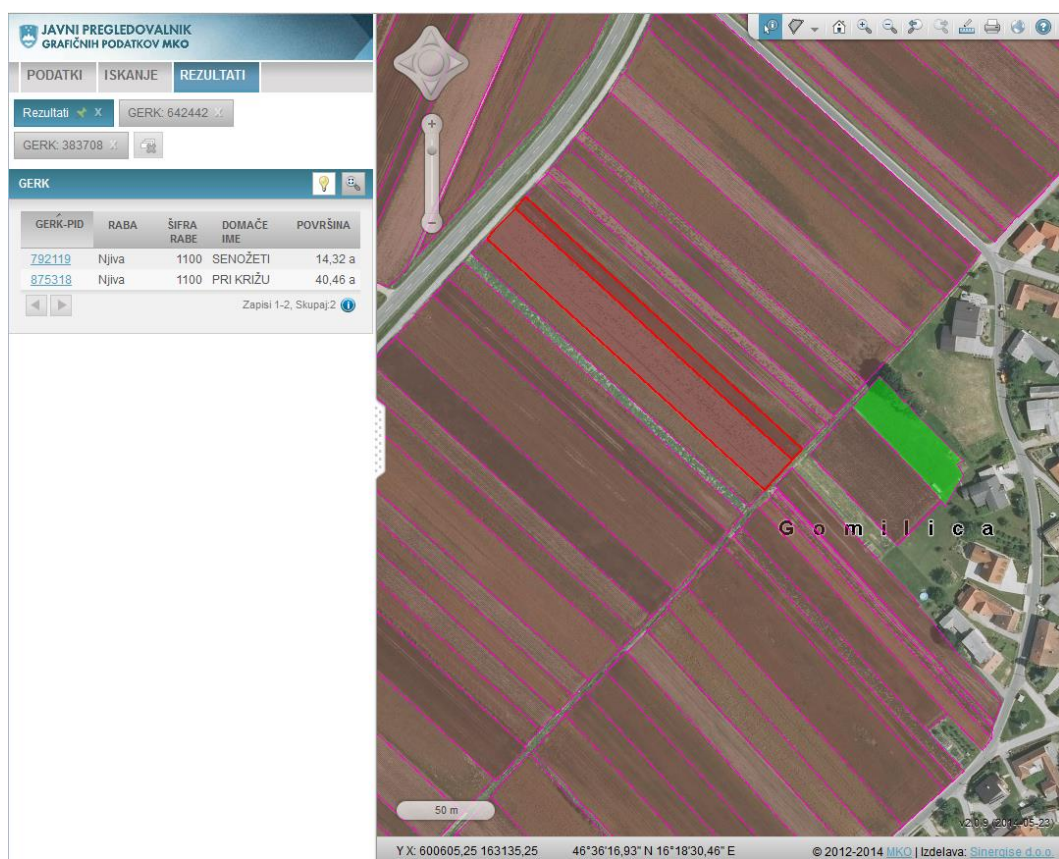
Its user-friendly web interface makes it easy to find items of interest – either through full text search or via hierarchically organized categories – and to display them on interactive maps, which can be saved for later viewing and manipulation.

Users can define and publish new layers with custom styling and textual descriptions, aggregate related layers into custom maps and associate them with other sources of information. Its advanced browser-based geometry editor allows anyone to insert new geographical features or edit existing one.



(Geopedia: www.geopedia.si)

Land Parcel Information System (LPIS – www.rkg.gov.si) is a system to identify land use. It provides an overview of data on land use of agricultural holdings, records of actual use of agricultural and forest land, and certain other information: orthophoto and other information The Surveying and Mapping Authority of the Republic of Slovenia (maps, register of spatial units, cadastral data, digital model of relief), vineyard information, forestry data, control layers for agricultural policy measures, bee pasture, water regulation, the soil map.



(LPIS: www.rkg.gov.si)

Metadata system in Slovenia – INSPIRE (SI) data portal

Surveying and Mapping Authority of the Republic of Slovenia has the role of National Contact Point for INSPIRE. As such it is obliged to take provide a metadata system as envisied by the INSPIRE Directive – The INSPIRE (SI) data portal.

Metadata are created, managed and kept for INSPIRE spatial data sets in included on the list of INSPIRE data sets provided on the national INSPIRE geoportal, and for spatial data services. Additionally, the metadata system is being used in a broader scope, providing the infrastructure to create metadata for spatial datasets, that are not covered by the INSPIRE Directive but are still important in other frameworks and on the national level.

Metadata include the following information:

- name and description of spatial data sets and spatial data services and key words for the description of these sets and services
- conformity of spatial data sets with the implementing rules laying down technical arrangements for the interoperability of spatial data sets and services
- conditions applying for access to, and use of, spatial data sets and services and, where applicable, corresponding fees
- quality and validity period of spatial data sets
- the responsible parties
- limitations on the use of spatial data sets and the reasons for such limitations, if any

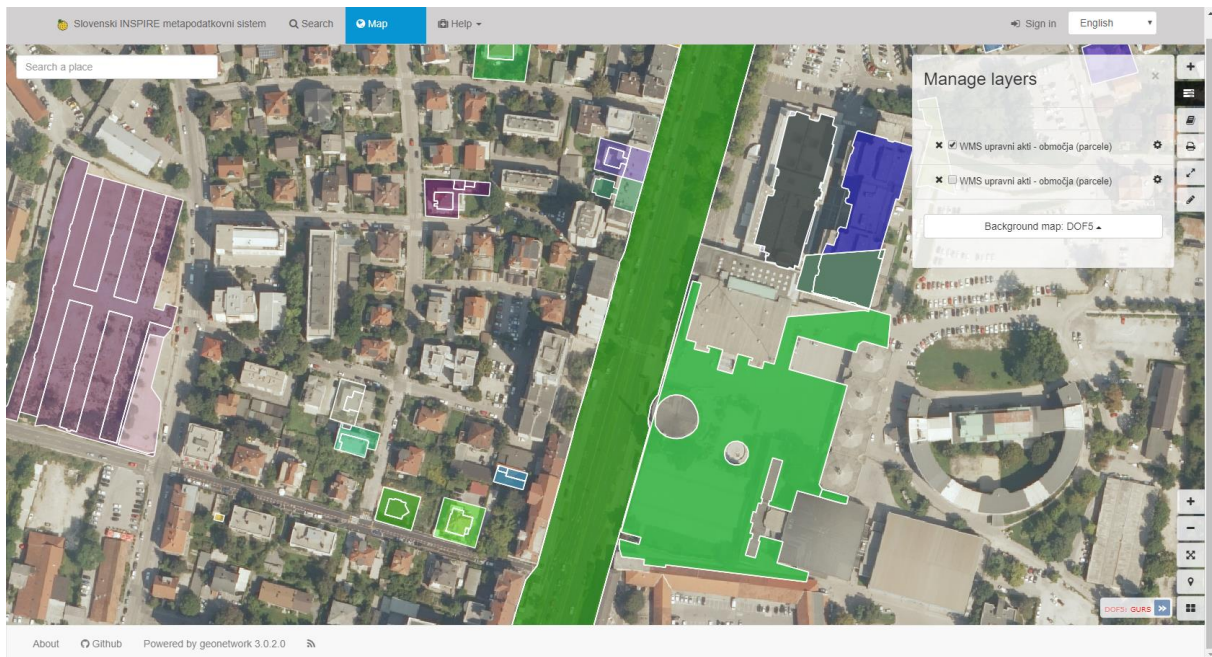
Metadata are managed and kept in digital form in the metadata information system, which is an integral part of the Slovenian geoportal. The Metadata system is harmonised with INSPIRE requirements. All the stakeholders that are responsible for data sets, related to INSPIRE, are obliged to create and manage metadata describing INSPIRE data sets and related spatial data and network services.

The metadata information system makes it possible for registered users (managers) to enter metadata for their spatial data sets directly into the metadata information system and manage them in the system. Aditionally, the metadata information system allows data harvesting of metadata from other (outside) information systems, provided they adhere to the INSPIRE (SI) data portal data model. The metadata information system is established, managed and kept by the national contact point.

The metadata system provides a frame to store and maintain all kinds of spatial data. The metadata ascribed the INSPIRE category describe data sets and data set services that fall under the INSPIRE Directive and its requirements. These metadata are harvested to the

European INSPIRE geoportal. As mentioned, the INSPIRE (SI) data portal is capable of storing more than just INSPIRE metadata. Based on this, the Surveying and Mapping Authority of the Republic of Slovenia has decided to keep all spatial data metadata in the INSPIRE (SI) data portal.

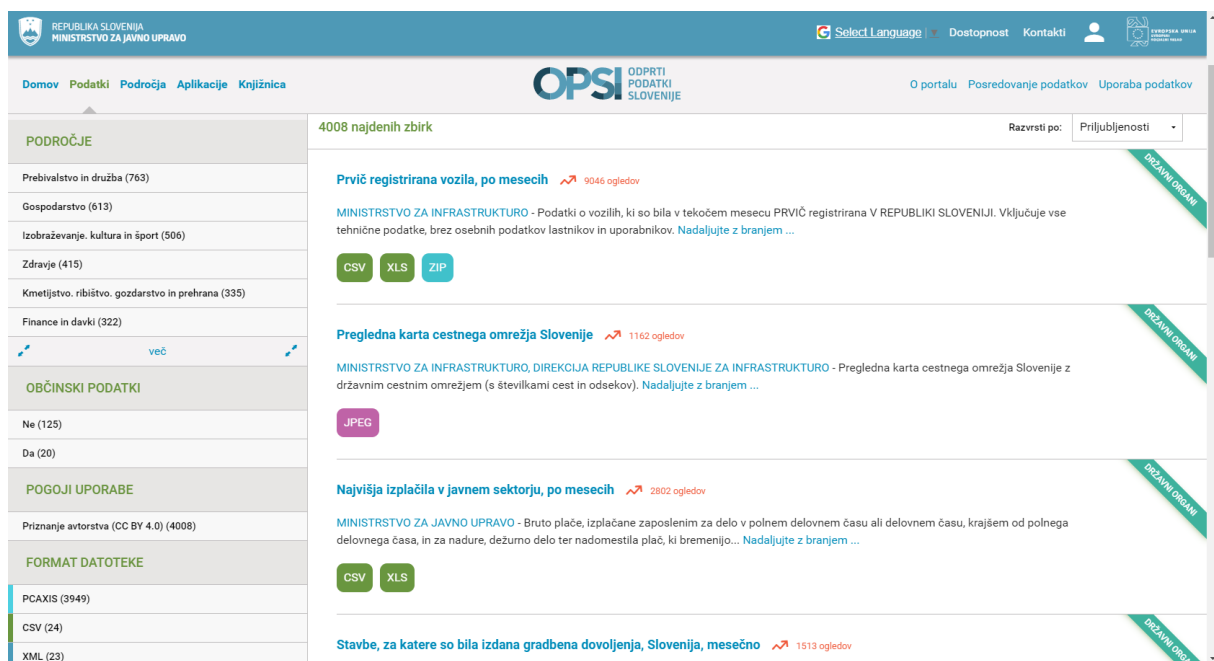
The image displays two screenshots of the Slovenian INSPIRE metadata portal. The top screenshot shows the 'Get started' page, which includes a search bar, a grid of 16 INSPIRE themes (e.g., Land cover, Buildings, Geology), and a 'Browse resources' section showing 124 datasets and 73 services. The bottom screenshot shows a search results page for 'Geological map of Iška alluvial fan 1:25 000'. It features a left sidebar with filters for 'TYPE OF RESOURCES' (Dataset, INSPIRE, IJZ, Maps & graphics, Datasets, Interactive resources), 'INSPIRE THEMES' (Coordinate reference systems, Elevation, Land cover, Orthomagery, Geology), 'KEYWORDS' (INSPIRE, geology, Slovenia, Območja upravljanja/zaprtja..., Celinske vode), and 'CONTACT FOR THE RESOURCE' (Geological Survey of Slovenia, Surveying and Mapping..., Geološki zavod Slovenije, Ministry of Agriculture..., Ministry for the Environment...). The main content area displays six search results, each with a thumbnail map, title, description, and source (Geological Survey of Slovenia). The results include 'eENVplus GeoZS 1M surface Geologic Unit', 'Geological map of Iška alluvial fan 1:25 000 - Geophysical cross sections', 'Geological map of Iška alluvial fan 1:25 000 - Geological Structures', 'Geological map of Iška alluvial fan 1:25 000 - Geological units', 'Geological map of Iška alluvial fan 1:25 000 - Shear Zone', and 'Geological map of Iška alluvial fan 1:25 000 - Boreholes'. A small map of Slovenia is visible in the bottom right corner of the results area.



<http://prostor4.gov.si/imps/srv/slv/catalog.search#/home>)

The Ministry of Public Administration (MPA) is responsible for Open Data of public institutions and has created an open data portal (OPSI). OPSI is established on the basis of the EU on open data and the re-use of public sector information and National legislation - Public Information Access Act (ZDIJZ). It constitutes a single centralizes national webportal for publishing and accessing open data for the whole public sector. OPSI has a dual function:

1. provides a central records and databases catalog in the country, i.e. central inventory of metadata about all the records and databases kept by state authorities, municipalities and other public sector bodies,
2. represents a single site for the publication of data from databases in open and machine-readable formats. As far as certain collections in open formats have already been published on another website, the portal OPSI website provides links to the originator sites (harvesting).



<https://podatki.gov.si/>

As previously stated, the INSPIRE (SI) data portal provides a broader use case than just providing INSPIRE metadata and the OPSI data portal enables data harvesting and linking to the referential metadata for open data. Based on these capabilities, the Surveying and Mapping Authority of the Republic of Slovenia in cooperation with the Ministry of Public

Administration and other stakeholders in the INSPIRE (SI) data portal, created the Slovenian metadata profile, which satisfies both the needs and principles of the INSPIRE and Open Data Directives.

The solutions we prepared were:

- new INSPIRE metadata elements are added (metadata for interoperability) – Coordinate reference System, Encoding, Character Encoding, Spatial Representation Type
- new MP elements from open data metadata profile were added (legislation, frequency of maintaining, licence, related data sets...)
- we changed the multiplicity and obligation/condition for some MP elements (e.g. date of creation is mandatory) to satisfy both profiles
- crossover code lists from INSPIRE to open data code list were prepared (e.g.. categories from INSPIRE to open data, conditions applying access to use, limitations on public access)
- new category for metadata (so called PSI category – IJZ in Slovene) was introduced in the metadata system, only the metadata with this category are meant to be harvested on the OPSI portal
- we also standardised some metadata elements – prepared rules and recommendations how metadata must/should be prepared

This solution required upgrading the INSPIRE (SI) data portal in line with the new Slovenian metadata profile along with updating the metadata descriptions of individual metadata. To provide appropriate support to metadata managers, workshops have been carried out and support regarding this is still ongoing.

~~The information system for metadata was upgraded. The next step was upgrading metadata descriptions in line with new requirements. For this workshop for of stakeholders are needed. This phase is still ongoing. In the future test harvesting will be made.~~

LEGAL FRAMEWORK

Infrastructure for Spatial Information Act (Official Gazette of the RS, No. 8/10 and 84/15).

The Act defines the tasks related to the establishment and operation of a metadata system, network services to access the data and their use, coordination in establishing the infrastructure for spatial information (ISI) and the use of this infrastructure. It also defines the tasks of individual public entities responsible for establishing, managing and using spatial data and services, which have to be provided as an integral part of the Slovenian and also European Infrastructure for Spatial Information.

National Land Survey Reference System Act (Official Gazette of the RS, No. 25/14 and 61/17)

This act introduces a new, modern national spatial reference system, which is based on the European Spatial Reference System (ESRS), and a new national topographic system together with the new map-grid system. The scope of the new act is regulation of competences and tasks of the Surveying and Mapping Authority of the Republic of Slovenia related to the realization and maintenance of the national spatial reference system in long term and providing up-to-date spatial datasets and data products.

Public Information Access Act (Official Gazette of the RS, No. 51/06, 117/06-ZDavP-2, 23/14, 50/14, 19/15 – Constitution Court decision 102/15 and 7/18)

This Act governs the procedure which ensures everyone free access to and re-use of public information held by state bodies, local government bodies, public agencies, public funds and other entities of public law, public powers holders and public service contractors.

Decree on the provision and re-use of public information (Official Gazette of the RS, No. 24/16)

This Decree lays down the method by which public information shall be provided to applicants and published on the World Wide Web, as well as the charging of costs for provision, re-use of information, price and other terms of such use and reporting on provision of access to public sector information.

Data sharing and data policy in Slovenia

Policymakers, researchers, data scientists and IT developers use spatial data every day. Geospatial Information reflects the physical world in which all human, economic and environmental activity takes place, and provides the digital version of our world - without which a digital economy is not possible. Geospatial information describes the physical location of geographic features and their relationship to other features and associated statistical information. Geospatial information is presented in many forms and mediums including maps, satellite imagery and aerial photography. Citizens, communities, business sectors, governments, and many other stakeholders benefit, on a daily basis and often unknowingly, from the use of geospatial information and related location-based services. This is because geospatial information provides the digital connection between a place, its people and their activities, and is used to illustrate what is happening – where, how and why. It is also used to model and portray the impact of the past, the present and likely future scenarios. Geospatial information is a nation's 'digital currency' for evidence-based decision-making. It is a critical component of a national infrastructure and knowledge economy that provides a nation's blueprint of what happens where, and the means to integrate a wide variety of government services that contribute to economic growth, national security, sustainable social development, environmental sustainability and national prosperity.

The INSPIRE infrastructure provides access to a wealth of spatial data from a variety of themes, from protected sites to industrial facilities. These data can be shared and used easily across domains and countries as they follow common rules and standards. The INSPIRE infrastructure is based on agreed European standards, which were developed in close collaboration with a wide community, ranging from government authorities to individual experts.

Thus far, appropriate support was provided for including the ISI act, among the priorities of the Slovenian public administration and including the ISI in the ecommerce strategy in state administration, the e-government strategy, and other national strategic development documents. The limited access to the spatial data has to be regulated and re-examined and, thus, the opening of the market itself and providing free access to information of public character defined. In addition to the public authorities, the access to the products must be provided to other users who require them as well, which can be achieved as soon as possible by establishing the market for spatial data and products. The logic of such a business model must be followed because the public administration provides basic data, while the private sector is the provider of added value of these data. Of course, this cannot be achieved unless the sources of longterm and stable financing are provided. First, participation of the public administration is foreseen, and later a stronger private support. For an appropriate

coordination of work, a clear organisational structure of all participants must be established. The appointment of a national contact point is foreseen, which is defined in the ISI Act. Operational work requires establishing an ISI project group and suitable administrative support. In addition, the implementation and organisation of promotional activities and including a wider circle of participants in the organisation of joint projects are planned. In order to find answers to a particular more complex technological question, individual working groups are formed. All listed tasks are already being implemented with the participation and engagement of the national land surveying service. Based on the experience abroad, the national land surveying service is most often responsible for organisational and technical aspect of establishing the ISI and supporting the processes in the field of data and services, while the private sector, to the fullest extent possible, participates in the processes of standardisation and harmonisation of data during the capture and maintenance, as well as in providing the added-value services, which can be achieved in our country, too. In addition to other elements, the metadata, must also include the key words relating to a data set or service. It is essential that this vocabulary be updated and all terms relating to the data sets and services entered into it. The vocabulary, such as it is, is limited in use or even useless for land surveying. It contains no land surveying terms such as, for example, parcel. It is essential that the detailed criteria and conditions for determining the fee for data and service sharing by public authorities of other countries or the European Community institutions and bodies be established, and the bill of costs for using the network services and the bill of costs for data and service sharing by the public authorities of other countries or the European Community institutions and bodies prepared.

In Slovenia the focus of activities in 2018 was in reviewing the state spatial data sets and establishing communication with spatial data set resource providers. Many events were organized: workshops for spatial data set resource providers highlighting activities needed to improve compliance with the INSPIRE Directive and the Spatial Information System, workshops regarding spatial data set and service metadata creation and editing, workshop for the use of specific software solutions for the implementation of the INSPIRE Directive and many workshop with participation from international experts meant to inform the expert public of resource providers with current topics regarding the common infrastructure for spatial information. Activities were carried out in order to inform the expert public on the proceedings of the project (digital communication, publications, different written materials, events and seminars, printed materials and other means of public informing).

A new version of the Slovene Geoportal was deployed and different ways to provide data sets through the INSPIRE infrastructure were considered. In the area of monitoring and reporting the basis for an automated process of monitoring and a simplified process for reporting was prepared. A state of the land analysis regarding the spatial data set and

service metadata inside the Slovene infrastructure for spatial information was produced. In the frame of establishing network services for spatial data sets of the Spatial Information System activities regarding the identification of Priority Data Sets began in 2018. The INSPIRE (SI) metadata system was upgraded. It has an improved help interface for users as well as editors. It now provides a user manual, along with the Metadata Profile, and for registered editors also a manual for metadata editors. Issues regarding displaying, discovering and accessing metadata were dealt with as they appeared. The upgrades also include an integrated thesaurus for the identification of Priority Data Sets via keywords. Many spatial data set and service metadata now also include translation in English. A concept for the renovation of the distribution environment, which provides conceptual starting points for the renovation of the distribution environment of the SMA was produced. The purpose of the renovation of the distribution environment is to provide high quality and up to date services to a wide userbase. Based on this concept the drafting of a public tender for a new distribution system has begun

CONCLUSIONS

A great task of completing the establishment of the spatial data infrastructure and determining the coordination method in this field lies ahead of us. In accordance with the detailed specifications brought by the INSPIRE Directive and the ISI Act adopted on the basis thereof, technical details of spatial data sharing have to be defined, while unifying the rules of accessing the spatial data managed by the public authorities in Slovenia and the pricing policy rules related to these data. The Ministry of the Environment and Spatial Planning and the bodies affiliated to the Ministry, the Surveying and Mapping Authority of the Republic of Slovenia and the Environmental Agency of the Republic of Slovenia, have continuously supported the harmonisation of the spatial data, as well as the promotion of sharing and accessibility thereof to as many users as possible. Slovenia already meets most of the guidelines and requirements determined by the INSPIRE Directive. Today, there are enough fundamental spatial data available in Slovenia that are easily available to the users and fairly regularly maintained. The metadata system may be positively assessed, too, which simplifies the search for the users and provides information on the existence of particular data sets, their quality and access terms and conditions as well as the pricing policy. Dividing the pricing policy to commercial and noncommercial methods of using the spatial data and the financing method of the first establishment of data sets in Slovenia was resolved in the similar manner as foreseen in the proposal for the Directive. Based on all this, we have a good starting position for establishing a quality spatial data infrastructure in Slovenia. A lot of hard work and harmonisation lie ahead of us, as well as the opportunities to open new fields of operation of the Slovenian public administration. Of course, the precondition thereof is providing the appropriate coordination structure and financial resources for implementing the obligations.

LINKS:

The Surveying and Mapping Authority of the Republic of Slovenia	https://www.gov.si/en/state-authorities/bodies-within-ministries/surveying-and-mapping-authority/
INSPIRE Geoportal	www.geoportal.gov.si
Portal Prostor (Space)	www.e-prostor.gov.si
Prostorski informacijski system – javni spletno mesto	www.pis.gov.si/
Geoportal ARSO	www.gis.arso.gov.si
Application SPIN	https://spin3.sos112.si/javno/zemljevid
Portal Geopedia	www.geopedia.si
Land Parcel Information System LPIS	www.rkg.gov.si
Interactive application to display statistical data in space - STAGE II	https://gis.stat.si/

Appendix:

List of organisations – names and contact details:

- MOP - Ministrstvo za okolje in prostor, (Ministry of Environment and Spatial Planning), Dunajska cesta 48, 1000 LJUBLJANA, (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-okolje-in-prostor/>), (e-pošta: gp.mop@gov.si)
- GURS – Ministrstvo za okolje in prostor – Geodetska uprava Republike Slovenije, (Ministry of Environment and Spatial Planning - Surveying and Mapping Authority of the Republic of Slovenia) Zemljemerska ulica 12, 1000 LJUBLJANA (<https://www.gov.si/drzavni-organi/organi-v-sestavi/geodetska-uprava/>), (e-pošta: pisarna.gu@gov.si)
- ARSO – Ministrstvo za okolje in prostor, Agencija RS za okolje, (Ministry of Environment and Spatial Planning – Slovenian Environmental Agency), Vojkova cesta 1b, 1000 LJUBLJANA, (<https://www.arso.gov.si/>), (e-pošta: gp.arso@gov.si)
- DRSV – Ministrstvo za okolje in prostor, Direkcija za vode, (Ministry of Environment and Spatial Planning – Slovenian Water Agency), Hajdrihova ulica 28c, 1000 LJUBLJANA, (<https://www.gov.si/drzavni-organi/organi-v-sestavi/direkcija-za-vode/>), (e-pošta: gp.drsv@gov.si)
- MKGP - Ministrstvo za kmetijstvo gozdarstvo in prehrano, (Ministry of Agriculture, Forestry and Food), Dunajska 22, 1000 LJUBLJANA, (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-kmetijstvo-gozdarstvo-in-prehrano/>) , (e-pošta: gp.mkgp@gov.si)
- MZI – Ministrstvo za infrastrukturo, (Ministry of Infrastructure), Langusova 4, 1000 LJUBLJANA, (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-infrastrukturo/>), (e-pošta: gp.mzi@gov.si)
- DRSI - Ministrstvo za infrastrukturo, Direkcija za infrastrukturo (Ministry of Infrastructure – Slovenian Infrastructure Agency), Tržaška cesta 19, 1000 LJUBLJANA, (<https://www.gov.si/drzavni-organi/organi-v-sestavi/direkcija-za-infrastrukturo/>), (e-pošta: gp.drsi@gov.si)

- MZ - Ministrstvo za zdravje, (Ministry of Health), Štefanova 5, 1000 LJUBLJANA, (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-zdravje/>), (e-pošta: gp.mz@gov.si)
- MNZ - Ministrstvo za notranje zadeve, (Ministry of the Interior), Štefanova 2, 1000 LJUBLJANA, (www.mnz.gov.si), (e-pošta: gp.mnz@gov.si)
- MGRT - Ministrstvo za gospodarski razvoj in tehnologijo, (Ministry of Economic Development and Technology), Kotnikova 5, 1000 LJUBLJANA, (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-gospodarski-razvoj-in-tehnologijo/>), (e-pošta: gp.mgrt@gov.si)
- MJU – Ministrstvo za javno upravo, (Ministry of Public Administration), Tržaška cesta 21, 1000 LJUBLJANA (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-javno-upravo/>) (e-pošta: gp.mju@gov.si)
- URSZR – Ministrstvo za obrambo, Uprava RS za zaščito in reševanje (Ministry of Defence - Administration of the Republic of Slovenia for Civil Protection and Disaster Relief), Vojkova 61, 1000 LJUBLJANA, (www.sos112.si), (e-pošta: urszr@urszr.si)
- MK - Ministrstvo za kulturo, (Ministry of Culture), Maistrova 10, 1000 LJUBLJANA, (<https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-kulturo/>), (e-pošta: gp.mk@gov.si)
- SURS - Statistični urad Republike Slovenije, (Statistical Office of the Republic of Slovenia), Litostrojska cesta 54, 1000 LJUBLJANA, (www.stat.si), (e-pošta: gp.surs@gov.si)
- ZGS - Zavod za gozdove Slovenije, (Slovenia Forest Service), Večna pot 2, 1000 LJUBLJANA, (www.zgs.gov.si), (e-pošta: zgs.tajnistvo@zgs.gov.si)
- GeoZS - Geološki zavod Slovenije, (Geological Survey of Slovenia), Dimičeva ulica 14, 1000 LJUBLJANA, (<http://prenit.geo-zs.si/geozs/index.php/en/>), (e-pošta: www@geo-zs.si)
- GIS - Geodetski inštitut Slovenije, (Geodetic Institute of Slovenia), Jamova cesta 2, LJUBLJANA, (<http://www.gis.si/>), (e-pošta: info@gis.si)
- BF - Biotehnična fakulteta, (Biotechnical Faculty), Jamnikarjeva 101, LJUBLJANA, (www.bf.uni-lj.si), (e-pošta: info@bf.uni-lj.si)
- ZRS – Zavod za ribištvo Slovenije, (Fisheries Research Institute of Slovenia), Spodnje Gameljne 61 a, 1000 LJUBLJANA, (www.zzrs.si), (e-pošta: info@zzrs.si)