ACTIVITIES REPORT

2023

SURVEYING AND MAPPING AUTHORITY
OF THE REPUBLIC OF SLOVENIA

TABLE OF CONTENTS

INTRODUCTORY WORDS

Dear readers.

I am pleased to present to you the Activities Report of the Surveying and Mapping Authority of the Republic of Slovenia for 2023. The past year was marked by many important projects and challenges that have significantly impacted our work and contributed to the progress of the geodetic profession in Slovenia.

It was a time of progress and innovation, and we are proud to point out our many achievements and milestones. We upgraded information systems for a better user experience and faster access to geodetic data and introduced new technologies (remote sensing, drones and artificial intelligence) to help us collect and process data more accurately and efficiently.

One of the key projects that we successfully completed was the digital transformation of the Real Estate Cadastre. This transition not only simplifies administrative procedures for users but also improves transparency and accessibility of data for all stakeholders. Digitalization represents a step towards sustainable development by reducing the need for paper documentation and promoting environmentally friendly practices.

In 2023, we strengthened our cooperation with other countries and international organizations in the field of geodesy. The exchange of knowledge and experience allows us to follow global trends and introduce best practices into our work. In addition, we have conducted numerous workshops and trainings for our employees, increasing their competences and readiness for new challenges.

We are aware that users of our services are at the center of our operations. Therefore, in 2023, we continued to pay special attention to improving our services for citizens, businesses and other users of geodetic data. Therefore we are especially proud to have increased user satisfaction and improved the responsiveness and accessibility of our services.

All these achievements and the progress made are due to the dedication, professionalism and hard work of all the employees of the Surveying and Mapping Authority for which I am thankful to every one of them. I would also like to thank all our contractual partners and users, for their trust and support.

I invite you to take a closer look at the sum of our activities in this report, and I am confident that they provide a strong foundation to facilitate our future plans written down in this report. Pleasant reading.

Tomaž Petek
Acting General Manager of the Surveying and Mapping Authority of the Republic of Slovenia

ABOUT THE 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 Natural Resources and Spatial Planning. It carries out the responsibilities of the national land surveying service, including the establishment, management and maintenance of databases regarding basic geodetic system, real estate, mass real estate valuation, state border, spatial units and house numbers, public infrastructure and topographic and cartographic system.

VISION

The Surveying and Mapping Authority of the Republic of Slovenia strives to become the leading organization in the field of spatial data infrastructure and real estate management in Slovenia. Its purpose is to promote sustainable social development and position Slovenia among advanced countries, where all decisions affecting space and real estate will be based on efficient services within the framework of public spatial data infrastructure and land management and will be using official spatial and real estate data. At the same time, great care is given that its services and data meet the users' needs regarding quality and ease of use. To achieve this vision, active involvement and cooperation with stakeholders at the national, European and international levels is necessary, along with investment in the people, values, and work culture of the public land surveying service.

The strategic goals of the Surveying and Mapping Authority of the Republic of Slovenia are focused on the development of a comprehensive real estate system and national spatial data infrastructure. The aim is **to provide high-quality basic and derived data and services to all users** in support of spatial, environmental and land policy and efficient real estate management. Among the **concrete goals** are the realization of a modern geodetic reference coordinate system, the provision of services for high-quality spatial positioning (SIGNAL network), the establishment of a 3D multi-purpose Real Estate Cadastre, quality improvement of cadastral data, maintaining the authority over capturing and managing high-quality topographic and cartographic data and products for the territory of the Republic Slovenia, establishing integration and interoperability of data sets and carrying out organizational adjustment for the implementation of strategic tasks.

ACTIVITIES

The activities of the Surveying and Mapping Authority of the Republic of Slovenia encompass a wide range of tasks that are essential for the management of geodetic data and the provision of high-quality spatial and real estate information.

Key tasks include:

- **conducting administrative proceedings and deciding on administrative matters** at first instance in accordance with land surveying service legislation

- **establishing, managing and maintaining databases** in the field of basic geodetic system, real estate registration, mass real estate valuation, state border, spatial units and house numbers, topographic and cartographic system
- **issuing data from geodetic databases:** providing and issuing basic spatial and real estate data from its maintained data set
- **carrying out mass real estate valuation:** maintaining a system for mass real estate valuation, recording and monitoring of real estate sale and rental transactions and analyzing the status and characteristics of the real estate market
- **providing the infrastructure for land surveying:** taking care of the national coordinate system, which is crucial for the spatial placement of data, and providing the infrastructure for implementing geodetic measurements
- **participating in international organizations**, implementing European guidelines in the field of surveying and operating as the National Contact Point in the implementation of the European INSPIRE Directive
- **developing and maintaining geo-information solutions** for internal processes and data access for external users

ORGANIZATION

The organizational units of the Surveying and Mapping Authority of the Republic of Slovenia (SMA) are the Main Office, the Geodesy Office, the Mass Real Estate Valuation Office, the Real Estate Office and twelve Regional Surveying and Mapping Authorities with associated Local Geodetic Offices. Close integration between individual units enables performing tasks efficiently and providing high-quality services and data to users. They provide accurate geodetic data and services that are crucial for effective spatial planning, real estate management and general development of the country. The SMA thus plays an important role in spatial development and regulation in Slovenia.

CONTACT DETAILS:

SURVEYING AND MAPPING AUTHORITY OF THE REPUBLIC OF SLOVENIA

Ministry of Natural Resources and Spatial Planning

Zemljemerska ulica 12

1000 Ljubljana

01 478 48 00

pisarna.gu@gov.si

WEB PAGE: Surveying and Mapping Authority | GOV.SI

ORGANIZATIONAL UNITS OF THE SURVEYING AND MAPPING AUTHORITY OF THE REPUBLIC OF SLOVENIA

- MAIN OFFICE
- GEODESY OFFICE
- MASS REAL ESTATE VALUATION OFFICE
- REAL ESTATE OFFICE
- TWELVE REGIONAL SURVEYING AND MAPPING AUTHORITIES WITH LOCAL GEODETIC OFFICES

The Offices, in cooperation with the Regional Surveying and Mapping Authorities, perform key tasks in the field of geodesy, real estate valuation and land cadastre management in the Republic of Slovenia. Duties include establishing and maintaining geodetic infrastructure, conducting geodetic surveys, real estate valuation, managing real estate records, and providing professional support and services at the local level.

MAIN OFFICE

The main responsibilities of the Main Office are:

- **performing administrative, professional, technical and supervisory tasks regarding spatial data sets and spatial data infrastructure**
- **issuing data and certificates and ensuring e-commerce with spatial data**
- **supporting IT development of the land surveying service and managing the ICT infrastructure**
- **providing IT, applicational and user support and education in the field of informatics**
- **assisting with substantive and legal matters of all Offices and Regional Surveying Authorities**
- **performing tasks relating to personal data protection, financial management, public procurement, human resources, education and office management**
- **maintaining work health and safety and performing other joint tasks of an organizational nature, important for the functioning of the SMA**

GEODESY OFFICE

The Geodesy Office is responsible for establishing, maintaining and managing the basic spatial reference systems in Slovenia. These systems consist of the National Spatial Coordinate System and National Topographic System, including remote sensing data, data sets on the natural and built environment, geographical names and national maps. In accordance with ratified international treaties, it also performs the tasks of keeping the State Border Record.

The **National Spatial Coordinate System** is crucial for the correct placement and interpretation of data in space and is the basis for the operation of spatial information systems. It is established using national

geodetic points such as trigonometers, polygons and benchmarks, and using the permanent stations of the Global Navigation Satellite System (GNSS). GNSS enables high-precision positioning on the Earth's surface using satellite signals, which is crucial for establishing and maintaining reference points in a coordinate system. A secondary network has been established for quality control of services, software operation and operational settings (e.g. when changing and upgrading the system) of the SIGNAL network, for testing surveying instruments, GNSS measurement methods and educational purposes.

The Geodesy Office is responsible for establishing and maintaining this system in accordance with international standards, particularly the European Coordinate System, that provides a single point of reference for all spatial data in Slovenia, enabling connectivity and compatibility between different sources and applications.

The **National Topographic System** is designed to collect, maintain and update data on objects and other phenomena on the surface. This includes **topographic data** collected in the form of topographic models and maps, as well as remote sensing data, in particular aerial photography and, more recently, aerial laser scanning. Topographic data are crucial for many public institutions, as they enable spatial planning and management, the study of natural phenomena, and spatial analysis and modelling.

In addition, the office also manages the **State Border Record**, which includes marking, maintaining and renewing border signs and participating in international commissions. These tasks are crucial in ensuring that the border between Slovenia and its neighbouring countries is clearly defined and respected.

Standardization of geographical names is another important task of the office, as it allows for coherent and clear use of geographical names. This includes establishing a standard written format for names and aligning it with international standards, facilitating international communication and information exchange.

These are the main contributions of the Geodesy Office to the efficient management of space in Slovenia, which provide fundamental data and crucial references for many public activities and services.

MASS REAL ESTATE VALUATION OFFICE

The Mass Real Estate Valuation Office performs tasks of recording sale and rental agreements data involving real estate, analyzing the real estate market and preparing reports. Based on real estate market data and mass valuation methods, which are based on statistical and other mathematical methods, it develops and calibrates valuation models and based on set criteria.

The valuation models are maintained in the Register of Valuation Models. It contains generalized real estate values, which are calculated based on real estate data and valid valuation models. In administrative procedures, it decides on special circumstances that affect the value of real estate but are not covered by the valuation models. Their impact and duration are recorded in the Valuation Register.

The Act Determining Temporary Measures to Mitigate and Remedy the Consequences of COVID-19 (Official Gazette of the Republic of Slovenia, No. 152/20; hereinafter: ZZUOOP) has postponed the deadlines for carrying out certain tasks of mass real estate valuation to a date to be determined by the new Decree

determining valuation models, as stipulated in Article 20 of the Real Estate Mass Valuation Act (Official Gazette of the Republic of Slovenia, No. 77/17, 33/19 and 66/19; hereinafter ZMVN-1).

Despite the delay in deadlines, the SMA, as the government real estate valuation body, is obliged to carry out all the tasks assigned to it based on ZMVN-1. ZZUOOP only delays the public dissemination of mass valuation data and the enforcement of special circumstances. This means that the SMA must monitor developments in the real estate market, prepare appropriate analysis and, if it finds that the models no longer meet the criteria set out in ZMVN-1, adapt them to the new market situation. The statutory deadline for reviewing valuation models is two years (Article 10 of ZMVN-1).

REAL ESTATE OFFICE

The Real Estate Office plays a key role in providing up-to-date and accurate data on the country's real estate and infrastructure. It performs administrative, professional, technical, coordination and supervisory tasks related to the management of the Real Estate Cadastre and Address Register. Additionally, it manages the Register of Spatial Units and the Consolidated Cadastre of Public Infrastructure and carries out various tasks and real estate-related projects. It is also tasked with managing and coordinating the work of Regional Surveying Authorities regarding real estate.

The **Real Estate Cadastre** is the foundation, which contains data on land plots, buildings, parts of buildings, land and other civil-engineering structures. Its purpose is to record and maintain data on the actual state of real estate, while also including information on the state border, spatial units and addresses. Its legal basis is the Real Estate Cadastre Act and it is managed with the help of a cadastral information system called IS kataster.

In accordance with regulation governing residency, address data in the Republic of Slovenia is kept and maintained in the **Addresses Register**, while data on administrative boundaries (municipalities, settlements, administrative units, constituencies, polling stations, school districts) are kept and maintained in the **Register of Spatial Units**. This data enables identifying precise locations for the purposes of administrative procedures.

The **Consolidated Cadastre of Public Infrastructure** focuses on mapping infrastructure such as roads, power grids, water supply systems and other public infrastructure networks. This register is crucial for planning and developing infrastructure projects and for efficient spatial management at various levels.

The entire records system, managed by the Real Estate Office, is supported by an **information system** that enables efficient data management, maintenance and distribution. This system ensures that data is up to date, accurate and accessible to various users, including government authorities, local communities, investors and the public. This data is crucial for many activities and services in the country and serves as a basis for planning spatial interventions, implementing various land policy measures and supervising the implementation of rights, restrictions and obligations on land.

The Real Estate Office ensures that its records and information system are always up-to-date and in line with social and economic needs, as they are constantly adapting to legislative changes and technological developments in the field of real estate registration.

REGIONAL SURVEYING AND MAPPING AUTHORITIES WITH ASSOCIATED LOCAL GEODETIC OFFICES

Regional Surveying and Mapping Authorities with associated Local Geodetic Offices operate at the local levels. They perform tasks such as receiving applications, providing information, disseminating data and conducting administrative procedures with individual clients.

FIGURE 1: Jurisdictions of Regional Surveying and Mapping Authorities with associated Local Geodetic Offices

HUMAN RESOURCES

At the end of 2023, the Surveying and Mapping Authority of the Republic of Slovenia (SMA) employed 456 people, 320 of whom were employed at the twelve Regional Surveying Authorities and 136 at the Central Offices. The number of employees decreased by 2% compared to the end of 2022, mainly due to retirements or the termination of employment contracts by employees.

TABLE 1: Number of employees in the Central and Regional SMA Offices

Number of employees in Central and Regional SMA Offices on December 31, 2023	
Main Office	41
Real Estate Office	29
Mass Real Estate Valuation Office	26
Geodesy Office	25
Project unit	7
Outside Organizational Units	8
Regional Office Ljubljana	65
Regional Office Celje	29
Regional Office Kranj	29
Regional Office Koper	24
Regional Office Nova Gorica	26
Regional Office Murska Sobota	25
Regional Office Maribor	30
Regional Office Novo mesto	24
Regional Office Sevnica	18
Regional Office Ptuj	19
Regional Office Velenje	19
Regional Office Slovenj Gradec	12
TOTAL	456

The employees predominantly consist of surveyors with a university degree or a higher professional level of education. However, the SMA also employs other experts, including lawyers, economists, agronomists, IT specialists, and administrative-technical staff. Staffing follows the approved personnel plans of the public administration, with special emphasis on personnel management and continuous improvement of professionalism and efficiency in tasks and services provided to citizens and other stakeholders.

TABLE 2: Structure of employees by profession

Structure of employees by profession in 2023	%
Surveyors	60%
Agronomists	2%
IT specialists	2%
Lawyers, economists and administrative staff	36%
TOTAL	100%

The SMA has also carried out numerous activities for the development and education of employees, including internal training programmes, participation at expert conferences, and the exchange of professional knowledge and experience with other institutions and organizations.

FINANCE

The SMA is financed primarily from the National Budget and to a lesser extent from income generated by its own activities with the operation of permanent GNSS stations of the SIGNAL network. The Annual Work Programme of the National Geodetic Service is confirmed by the Government of the Republic of Slovenia.

The largest part of the budget, 72.7%, went to staff salaries, which underlines the importance of human resources in the operation of this institution. Material costs amounted to 4.9%, while a smaller part of the budget was intended for investment and capital maintenance (0.5%) and own activities (0.9%). The surveying programme took on a significant part of the budget, amounting to 20.9%, reflecting the focus afforded to fundamental tasks of the geodetic services.

Despite some financial challenges, the SMA successfully managed its budget, provided a high level of services and carried out its geodetic tasks in accordance with the set goals and budgetary constraints.

In 2023, the SMA managed a budget in the amount of EUR 24,388,555, which was increased to EUR 24,851,452 after transfers approved by the Government of the Republic of Slovenia. The institution achieved a high level of financial execution, reaching **94.23% of the initially adopted budget**, totaling EUR 23,417,628.

ADOPTED AND VALID BUDGET, AS WELL AS FINANCIAL REALIZATION OF THE BUDGET IN THE YEAR 2023

TABLE 3: Adopted and valid budget, as well as the financial realization in 2023

ADOPTED BUDGET	24,388,555
VALID BUDGET	24,851,452
FINANCIAL REALIZATION	23,417,628

TABLE 4: Budgetary financial realization in 2023

SPENDING THE BUDGET IN 2023	%
Salaries	72.7%
Material Costs	4.9%
Investments and Capital Maintenance	0.5%
Own Activities	0.9%
Program of geodetic works	20.9%
TOTAL	100%

ACCESS TO DIGITAL GEODETIC DATA

The Surveying and Mapping Authority of the Republic of Slovenia plays a key role in ensuring various users access to digital spatial data. It established its role with constant maintenance of its spatial databases and spatial information e-commerce. A major part is also linking with other spatial stakeholders, digitizing data and ensuring secure data access, thus providing efficient and uninterrupted operation of the Distribution System's data and services.

The need for digital data from the Surveying and Mapping Authority of the Republic of Slovenia (SMA) has been steadily increasing over the past years. This growth is reflected in the increase in e-commerce, technological advances, development of applications and services based on location data, data use in urban planning and development, and legislative requirements.

In the field of geodetic and spatial information, the SMA performs various tasks:

- creation and integration of spatial data sets, including creation of own data and integration with external sources
- support the use and sharing of data with internal and external users and institutions
- digitalization of business operations and ensuring information security when dealing with external stakeholders
- provision and archiving of spatial and real estate data
- e-commerce in spatial data, including issuance and archiving of surveying data and certificates
- taking care of professional and technical maintenance and development of ICT infrastructure at the SMA

The SMA provides access to data to various users, such as the state administration, business entities, citizens and professional public. By providing constant information, management, support and operation of the distribution system, the SMA ensures efficient use of its data and services by various stakeholders.

Through electronic channels and web portals, such as the **Prostor portal**, the SMA provides uninterrupted access to surveying data. Applications are classified into three categories according to the type of access: **public access (access to data for the general public), personal access (access to data for individuals) and registered access (special access for registered users),** which allows customized data insight according to the needs and legal rights of each user.

PUBLIC ACCESS enables the use of the services of the SMA and other spatial data providers without registration. As part of publicly available services, data is accessible through web viewers, public network services and applications for data transfer and processing.

View:

- public web viewer for geodetic data - Javni vpogled (JV)
- archived public viewer, discontinued 31.3.2020
- view into current real estate values
- view into the Register of Valuation Models

- access to active cadastral procedures
- viewer of archival land cadastral plans
- access to mass valuation information

Data download:

- public web portal for geodetic data - Javni Geodetski podatki (JGP)
- Slovene INSPIRE Metadata System
- various geodetic applications (SiTraNet, SiVis, SITRIK, 3TRA, ETRS89-SI, ITRS-SI)

PERSONAL ACCESS allows users to access data on real estate they own, including information on (co)ownership. It is also possible to create printouts in PDF format. Owned real estate data in a digital form can also be obtained with the use of a online application.

View:

- personal viewer for owned real estate

Data download:

- requesting non-public data

REGISTERED ACCESS enables the use of services for which the user must register into a security scheme and requires a personal digital certificate. As registered access provides also personal and other non-public data, users must provide appropriate legal basis. In 2023, around **2400 registered users from 455 different organizations** access data through registered services.

View:

- view for registered users

Data download:

- information system of the Consolidated Cadastre of Public Infrastructure
- SIGNAL network

Data management and reporting:

- reporting to the Real Estate Market Register
- cadastral information system (IS kataster)

The IT and Data Issuing Sector at the SMA provides spatial and real estate data and actively supports users with data access. By managing application solutions, registering users and granting rights for the use of web applications and services, they ensure secure and uninterrupted access to data.

OVERVIEW OF GEODETIC DATA USAGE

Ensuring accessible and digital spatial data is crucial in today's modern society and the Surveying and Mapping Authority of the Republic of Slovenia plays a key role in providing easy and secure access to spatial data for various users and, in doing so, contributes to the development and progress of society.

The Surveying and Mapping Authority of the Republic of Slovenia (SMA) is constantly improving its services and providing users with access to the latest data through maintained and publicly accessible applications. In addition, it enables access to data through public web services, further facilitating the use of spatial data.

DOWNLOADS, REQUESTS, USERS:

- nearly 1.3 billion records downloaded through all access points to geodetic data
- over 60 TB of digital geodetic data downloaded
- nearly 110,000 users of the Prostor portal
- more than 750,000 printouts on real estate generated
- over 14,000 issued real estate certificates by the Surveying and Mapping Authority of the Republic of Slovenia

In 2022, in addition to the overhaul of recording processes and the introduction of a new IT solution for the Real Estate Cadastre, the renovated **Prostor portal** also became operational in July of 2022, while more detailed analytics regarding data access and data transfer from the Distribution Environment of the SMA became available on May 2023.

In 2023, the Prostor portal was visited by **almost 110,000 users from all over the world**. As of May 2023, **almost 1.3 billion records have been downloaded**, equivalent to just **over 60 TB of data**.

FIGURE 2: Number of users by geographic location (darker color = greater number of users)

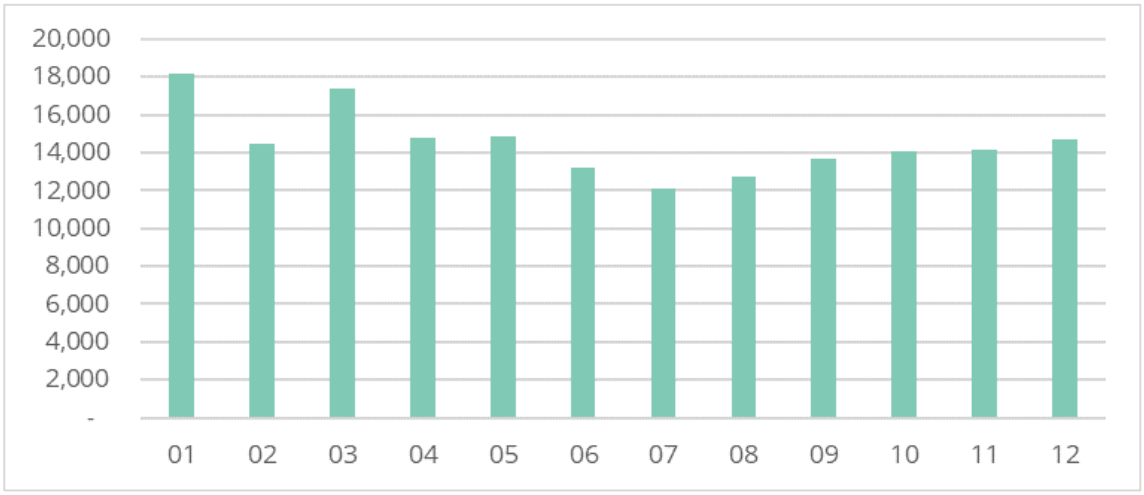

FIGURE 3: Total number of monthly users of the Prostor portal

A closer look at the central portal for downloading public geodetic data (JGP) shows that the **main interest** in weekly updated data **is still land plot data**, followed by building data and data on public infrastructure.

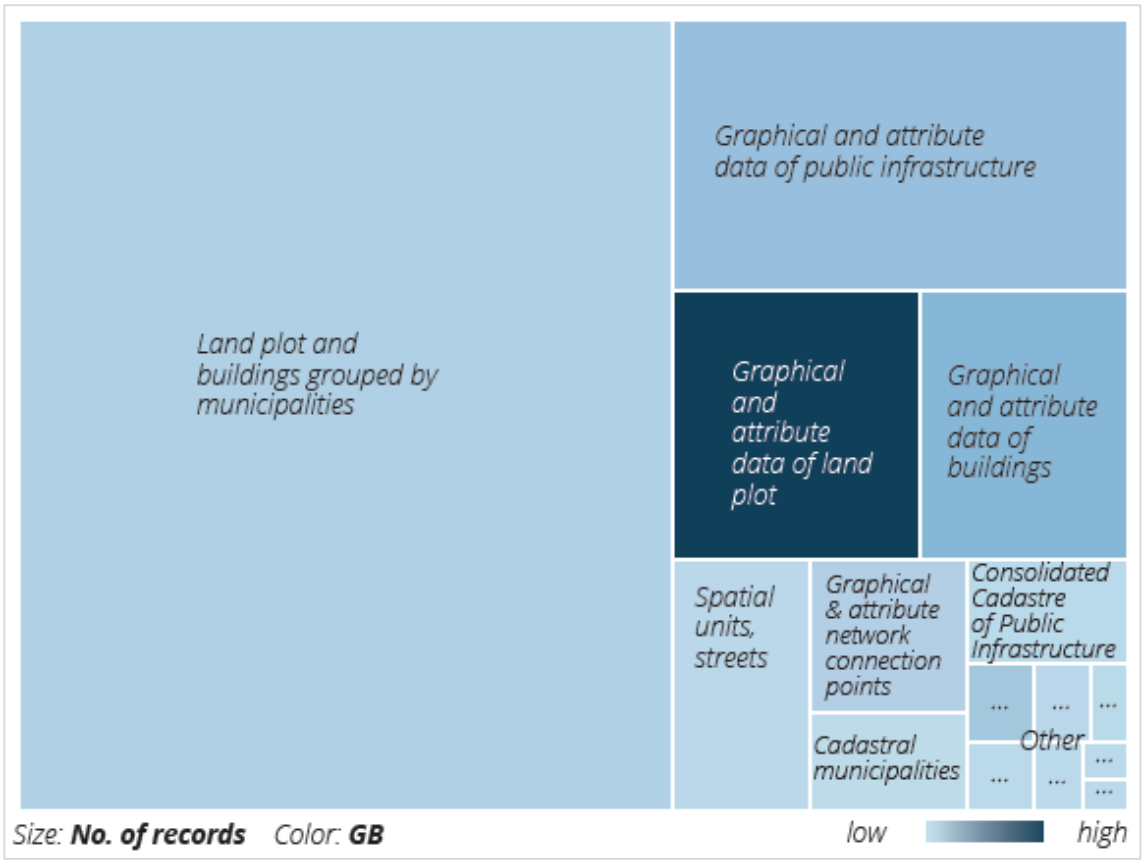

FIGURE 4: Display of the ratio between the number of records and the amount of downloaded data by content for weekly refreshed collections

If we focus on the data collections, which are updated less frequently, the highest number of downloads goes to the Digital Elevation Model, then to topographic data, as well as topographic and transparent maps. In total, almost **90,000 file packet transfers were made from May 2023 until the end of 2023**.

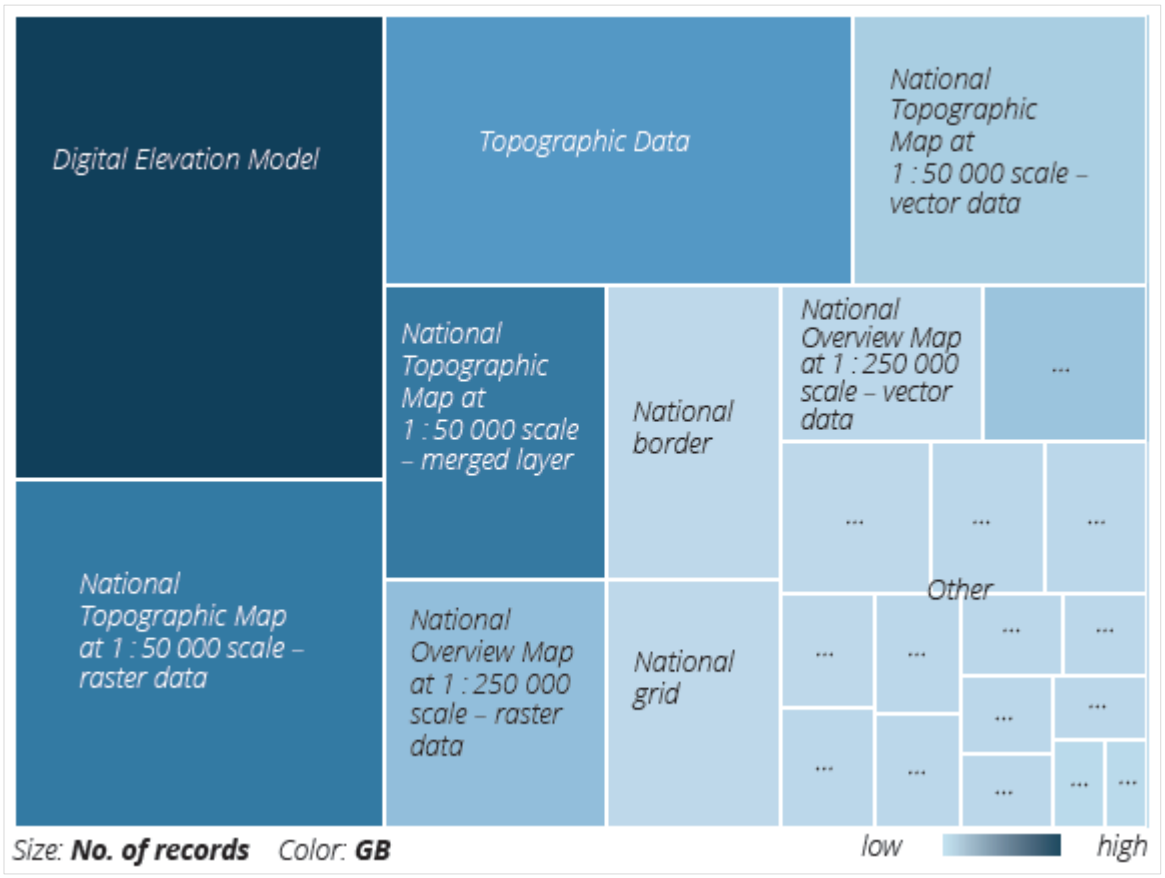

FIGURE 5: *Display of the ratio between the number of records and the amount of data downloaded by content for collections that are refreshed as needed*

An appropriate indicator for the use of the public, personal or registered viewers is real restate data printouts. In 2023**, more than 750,000 real estate data printouts were generated**, most from the public viewer (78%), as expected since it has the biggest user base, followed by printouts from the registered viewer (20%), and lastly the personal viewer (2%).

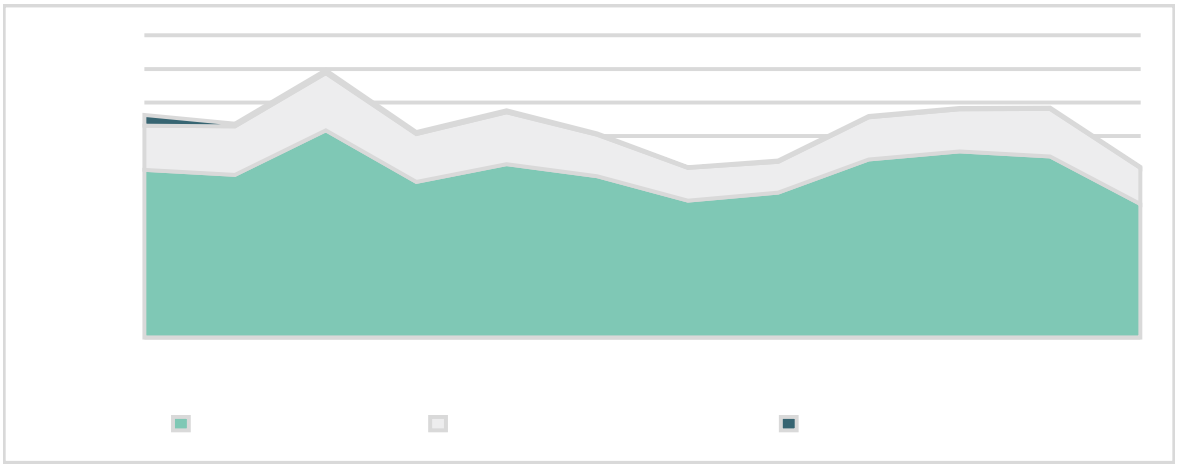

FIGURE 6: Number of monthly printouts generated with the public, registered and personal viewers in 2023

The SMA also issues various formal certificates on current real estate data from the Real Estate Cadastre and Address Register. In 2023, it issued just over **14,000 certificates**. The graph below shows the monthly distribution of issuing.

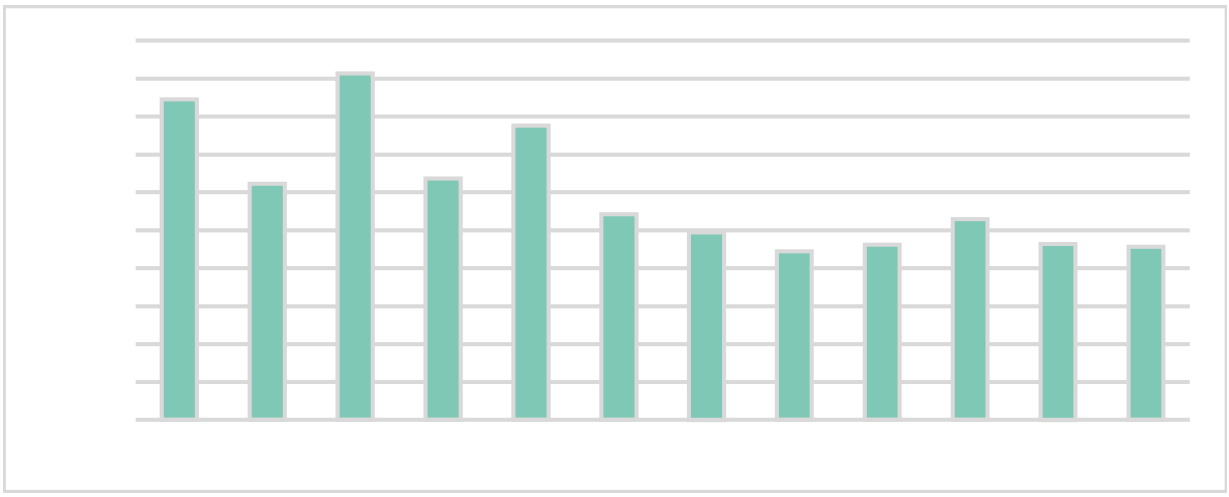

FIGURE 7: Number of monthly issued formal certificates by the SMA

KEY ACTIVITIES OF THE SURVEYING AND MAPPING AUTHORITY OF THE REPUBLIC OF SLOVENIA IN 2023

In accordance with the adopted Annual Work Programme of the National Geodetic Service for 2023, the Surveying and Mapping Authority of the Republic of Slovenia carried out tasks in the field of geodesy, topography, cartography, real estate registration, IT support and mass real estate valuation. It also maintained the Spatial Information Infrastructure, carried out administrative and professional activities, participated in development projects and coordinated the Green Slovenian Location Framework (GreenSLO4D) project.

The SMA carried out a number of key tasks in the fields of **geodesy, topography, cartography, real estate registration, IT support, distribution and issuance of data, mass real estate valuation, spatial information infrastructure,** and participated in development projects within the **Target Research Programmes** framework (referred to by the Slovenian abbreviation CRP).

It also carried out other **governmental, professional and administrative activities** that ensure stable operation and cover general work areas such as **public procurement, financial management, personnel and legal matters, training and other joint tasks of an organizational nature**.

Based on an adopted training plan for 2023, the SMA carried out education and training of its employees according to individual professional fields. The main objective was to improve knowledge, learn new methods and techniques and improve the use of software and other tools for management, maintenance and development of real estate registration systems and spatial data sets. In addition, training was carried out regarding the General Administrative Procedure Act along with a refresher course on the Decree on Administrative Operations. Educational sessions for professional promotion and other individual training were also organized. Most of the trainings in 2023 were carried out online, and technical support was provided along with the preparation of expert materials and publications.

FIGURE 8: Employee training in Ljubljana

GREEN SLOVENIAN LOCATION FRAMEWORK (GreenSLO4D)

The Green Slovenian Location Framework (GreenSLO4D) is a programme of activities running from 2021 to 2026 under the Recovery and Resilience Plan. Its goal is to digitalize processes and data in the fields of environment and spatial planning in line with the requirements of the European Green Deal. The Surveying and Mapping Authority of the Republic of Slovenia plays a key role in coordinating the project being carried out in cooperation with the Ministry of Natural Resources and Spatial Planning, the Ministry of the Environment, Climate and Energy, the Slovenian Environment Agency and the Slovenian Water Agency.

FIGURE 9: Logos of participating bodies in GreenSLO4D together with the logos of the Recovery and Resilience Plan (RRP), the EU emblem with the inscription "Financed by the European Union - NextGenerationEU" and the brand "I feel Slovenia"

Due to its size, the project is divided into **eight project teams**, two horizontal and six vertical. The organizational chart of the project also consists of the **Project Council**.

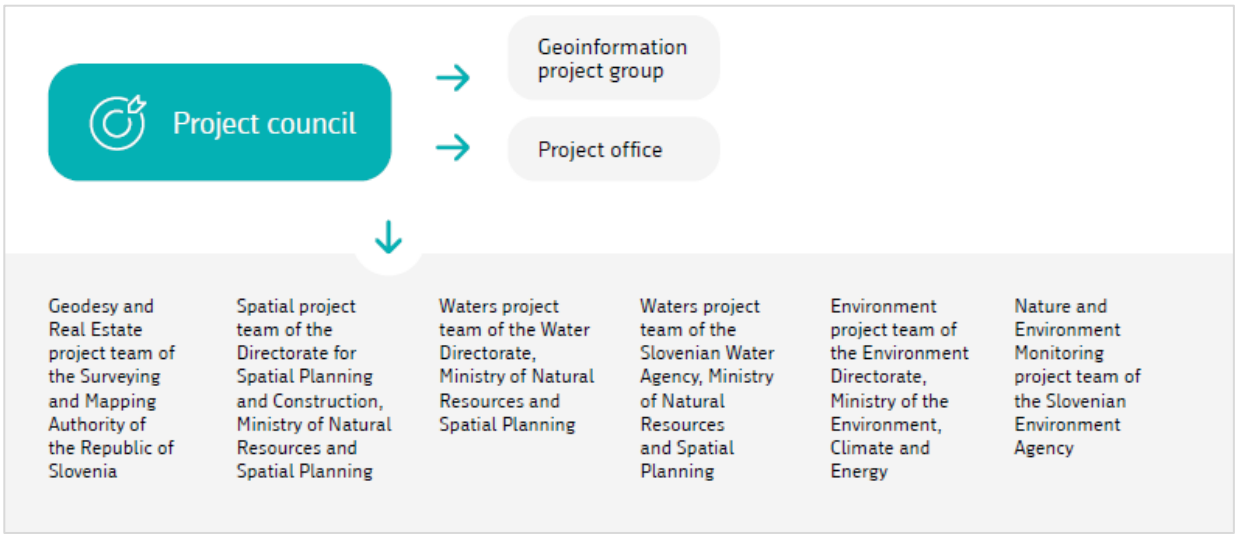

FIGURE 10: Organizational chart of the GreenSLO4D project

One of the key tasks of the Surveying and Mapping Authority of the Republic of Slovenia in this project is the **management of the Geoinformation Project Group**, which is responsible for linking the information systems of the participating bodies and coordinating and advising on the process of digitalization. The group has made a major contribution to the development of the spatial information systems and improvements in using geodetic data, which leads to an overall improvement in the operation of geoinformation systems at the national level and an increase in connectivity between various authorities and institutions in the field of geoinformatics.

SOLUTION FOR SLOVENIAN DEVELOPMENT CHALLENGES IN THE FIELDS OF SPACE, WATER, NATURE, ENVIRONMENT AND REAL ESTATE

The project responds to the challenges posed by the consequences of suburbanization and scattered construction in recent decades. By digitalizing the areas of space, water, nature, environment and real estate, as well as taking care of environmental protection, it plans to use modern location services to support investments in space.

The **horizontal digital linking of space, water, nature, environment and real estate** will enable smart management of space, which is increasingly becoming a scarce and valuable natural resource, and decrease sealing of new land, thus increased resilience to climate change.

PLANNED RESULTS OF THE GreenSLO4D PROJECT BY 2026

- to link key spatial and environmental digital data infrastructures so that key processes and data sets for space, environment, water, and nature are integrated
- to open up and enable access to digital data and services
- to establish an environment for location-based and other services
- to establish the fourth component of the National Coordinate System as a basis for digitalization and to provide missing digital data from the national spatial and environmental data infrastructure (topography, LiDAR, public infrastructure, building floor plans)

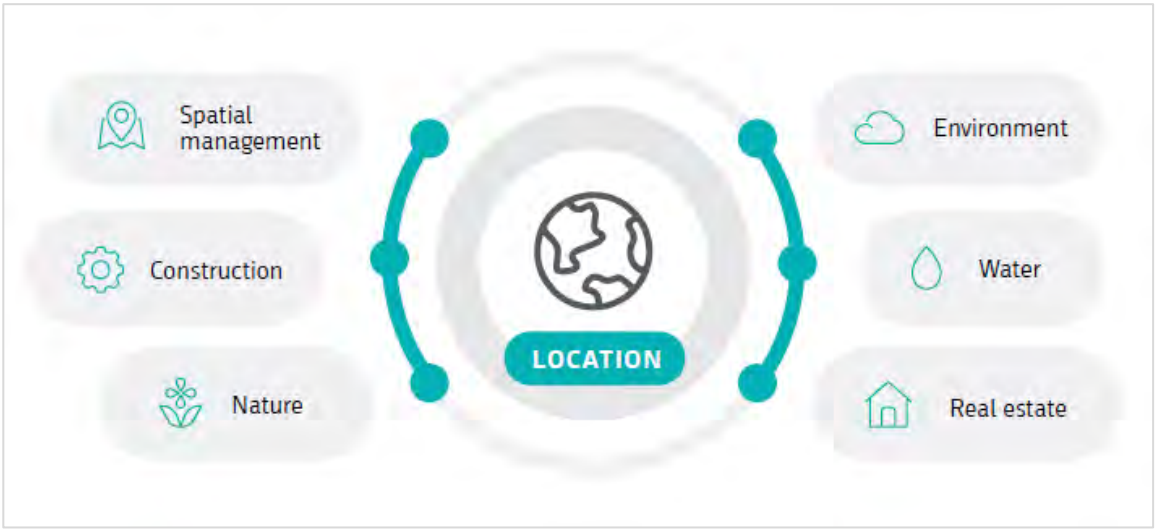

FIGURE 11: Planned results of the GreenSLO4D project

PLANNED ACTIVITIES OF THE SURVEYING AND MAPPING AUTHORITY OF THE REPUBLIC OF SLOVENIA WITHIN THE FRAMEWORK OF THE GreenSLO4D PROJECT UNTIL 2026:

- establishment of the fourth dimension of the National Coordinate System (time dimension)
- development of a modern national topographic system and integration with the system for topography and spatial monitoring
- digitalization of the national topographic model (DTM) data in areas of not up-to-date data
- digitization of laser scanning data LiDAR (Light Detection and Ranging)
- provision of Sentinel satellite imagery data
- digitization of missing civil engineering structures and the procedure for recording these structures
- vectorization and visualization of floor plans for the needs of digitalization and visualization of real estate
- introduction of a cadastre quality assurance system
- renovation of the information system for analytics and modelling in the Real Estate Valuation System
- the establishment of a system for the free flow of information from other data providers and a system for managing the quality of data and services
- promoting lifelong learning
- increasing the visibility and awareness of the general public regarding the services provided with the help of real estate and spatial data

On Wednesday, 12 April 2023, the **Introductory Conference of the Green Slovenian Location Framework (GreenSLO4D) project** was held at Brdo pri Kranju, which was attended by more than 200 participants. The Surveying and Mapping Authority of the Republic of Slovenia plays a key role in the implementation of the project, which will enable better spatial management and contribute to the implementation of the European Green Deal.

FIGURE 12: General Manager of the SMA, addressing audience at the introductory conference of the GreenSLO4D project

AT THE SMA, THE GREENSLO4D PROJECT IS BEING IMPLEMENTED WITHIN FIVE CONTENT AREAS:

- INFRASTRUCTURE FOR SPATIAL INFORMATION
- NATIONAL COORDINATE SYSTEM
- NATIONAL TOPOGRAPHIC SYSTEM
- 3D CADASTRE
- MASS REAL ESTATE VALUATION

In 2023, the SMA carried out a comprehensive series of activities within the GreenSLO4D project with the aim of improving the quality, accuracy and accessibility of spatial data and management infrastructure. These activities included:

→ BUILDING A JOINT SPATIAL AND ENVIRONMENTAL DIGITAL DATA INFRASTRUCTURE AND PREPARING A NATIONAL ACTION PLAN

The integration of various institutions and data sources is indispensable for improving process efficiency and the quality and availability of spatial information. A joint infrastructure enables us to better manage, plan and take decisions at all governmental levels.

Activities included verification and remodelling of key business processes, if necessary, in the fields of real estate, space, environment and water, identification of interdependencies and connection points, and establishment of a general process model.

Additionally, common information system building blocks were identified, a prototype web portal and data validation system were established, a SDI strategy and action plan were prepared, and strategic circular spatial management plan was developed. The project also carried out activities for capacity building of stakeholders and promotion of achieved results.

→ OPERATION OF THE KNOWLEDGE CENTRE AND SANDBOX FOR NEW TECHNOLOGIES

The establishment of the Knowledge Centre encourages innovation and the transfer of knowledge in the field of geodesy and spatial planning, which contributes to the implementation of new technologies and methods into practice. The Sandbox for new technologies enables verification and evaluation of solutions and advanced designs of user experiences for applied solutions, which is crucial for the realization of strategic goals of digitalization in the field of geoinformatics.

The Knowledge Centre is intended for regular training in the field of geoinformatics, other new technologies and spatial data, as well as the organization and coordination of specialized trainings. The goal is to establish an educational platform, a knowledge base and the promotion and evaluation of the effectiveness of created educational content.

The Sandbox for new technologies is a key environment where ideas, standards, advanced technologies and applied solutions are tested, enabling proper evaluation when designing advanced user experience, contributing to the goals of the eMOP strategic digitalization plan.

→ ACQUISITION OF DOCUMENTATION FOR THE CONSTRUCTION OF TWO ADDITIONAL ZERO ORDER POINTS FOR THE ESTABLISHMENT OF THE FOURTH COMPONENT OF THE NATIONAL COORDINATE SYSTEM

Upgrading the existing Combined Zero Order Geodetic Network is crucial for improving the accuracy of spatial data, which enables more reliable and precise geodetic measurements.

As part of the Combined Zero Order Geodetic Network upgrade, micro-network measurements were conducted at five existing points (Šentvid pri Stični, Areh, Korada, Kog, and Prilozje), the network condition was analyzed, new locations were studied, and project documentation for two new points was prepared.

Construction of the Javorniški Rovt point above Jesenice and Livada above Izola began in 2023. Both main points will include side protection and required infrastructure and will be completed by mid-2024. Afterwards, appropriate geodetic measuring equipment will be purchased and installed.

→ IMPLEMENTATION OF THE FIRST SET OF NEW CYCLIC LASER SCANNING OF SLOVENIA FOR 1/3 OF THE COUNTRY'S AREA

Regular cyclic laser scanning of Slovenia enables the acquisition of high-quality LiDAR data, aerial photographs and the creation of specific topographic products for the entire territory, providing up-to-date and accurate spatial information for various purposes, including planning, management and decision-making in cases of natural disasters.

In 2023, Cyclic Laser Scanning of Slovenia (CLSS) was launched, which is expected to provide high-quality LiDAR data, aerial photographs and specific topographic products for the entire country within a 3-year cycle. Due to the intense floods in August 2023, data acquisition in the affected areas (Celje, Velenje) was carried out ahead of time, originally planned for 2024. Data for these areas and most of the area of Kamnik were recorded with a higher density of points (20 points/m2). For areas where post-flood measures were planned, very high-density data (40 points/m2) were captured using the corridor capture method. Data acquisition for all four planned areas (Ljubljana, Kočevje, Novo mesto and Kamnik) has been completed.

→ 3D CADASTRE – FLOOR PLANS, BIM, DATA QUALITY AND CIVIL ENGINEERING FACILITIES

The 3D Cadastre project implements key steps for digitalization and upgrading of data systems that enable better integration, quality and efficiency in the management of buildings, civil engineering buildings and Real Estate Cadastre.

The project involves digitizing floor plans to improve quality of building data and enabling connectivity with modern methods like BIM. In 2023, 2,897 floor plans of buildings with 20 or more parts of buildings were digitized.

The upgrade of the cadastre information solution for 3D data management included the establishment of infrastructure for the integration of 3D data, the creation of examples of floor plans and BIM models, as well as functionalities for efficient work with 3D data.

Regarding civil engineering objects, registration processes modelling was carried out along with propositions for a legislative framework. Work will continue in 2024.

The information system for civil engineering objects was upgraded and a register was established including improvements to the data model. Procedural upgrades for registration are expected by 2024.

A system and application for monitoring Real Estate Cadastre data quality have been designed and will be available in the first half of 2024. A draft methodology for obtaining data on civil engineering objects was prepared – conclusion expected in 2024.

→ PREPARATION OF STARTING POINTS FOR THE MODERNISATION OF THE NATIONAL TOPOGRAPHIC SYSTEM (DTS)

The modernization of the National Topographic System is essential for providing accurate geodetic data, crucial for various public and private activities, including urban planning, infrastructure projects, environmental conservation, and Real Estate Cadastre. A contemporary National Topographic System enables better land management, informed decision-making, and enhances efficiency in project implementation.

To modernize the National Topographic System, several tasks were performed. The capture of topographic data was carried out, along with the implementation of test maintenance for hydrography data. Oblique Aerial Imagery capture was tested. A new way of maintaining topographic data was designed and tested, taking advantage of deep learning for road registration. Following examples from other countries, a proposal for three-dimensional building registration was drafted, along with a proposal for coherent maintenance of Buildings between the Real Estate Cadastre and the National Topographic Model. The results of all tasks performed will serve as a starting point for further improvements and optimization of the system.

→ COMPLEMENTING THE MODELLING TOOL WITHIN THE MASS REAL ESTATE VALUATION SYSTEM

An improved modelling tool will improve the accuracy and reliability of real estate valuations, allow for better adaptability of valuation models according to specific property characteristics, and increase the efficiency and performance of the Mass Real Estate Valuation System.

To complement the modelling tool within the Mass Real Estate Valuation System, it is necessary to create new functionalities that enable more accurate and comprehensive modelling of real estate values based

on various parameters, including flexible valuation models, better data capture and processing, and improved analytical tools for predicting value.

→ ESTABLISHMENT OF TECHNICAL CONDITIONS FOR THE OPERATION OF THE CALL CENTER FOR CUSTOMER SUPPORT

Supporting users is the key to unlock effective use and greater understanding of spatial data.

The SMA strives to maintain the trend of resolving administrative cases in the field of real estate registration at a 10% higher level than the expected inflow of new cases.

It is planned to adjust the organizational structure and reorganize workplaces, as well as establish a call center and knowledge base, which will further improve interaction with customers.

These measures will be carried out with SMA personnel.

→ OPERATION OF THE JOINT PROJECT OFFICE AND IMPLEMENTATION OF CONTROLS ON THE GreenSLO4D PROJECT

The Project Office is responsible for coordinating tasks, effectively managing, and controlling the operation of the project, which is crucial for successful implementation. It also carries out promotional and informational activities.

ACTIVITIES IN OTHER AREAS OF WORK OF THE SURVEYING AND MAPPING AUTHORITY OF THE REPUBLIC OF SLOVENIA

- GEODESY, TOPOGRAPHY, CARTOGRAPHY
- MASS REAL ESTATE VALUATION
- REAL ESTATE REGISTRATION
- INFORMATION TECHNOLOGY, DATA PUBLISHING AND INFRASTRUCTURE FOR SPATIAL INFORMATION

IN THE FIELD OF GEODESY, TOPOGRAPHY AND CARTOGRAPHY, numerous activities were carried out in 2023, which contributed to the accuracy and quality of spatial data and spatial information systems.

The area of the **National Geodetic Reference system** encompasses regular activities through which the SMA provides geodetic expert guidelines and technical frameworks for the precise placement of spatial

data. With the permanent operation of Global Navigation Satellite System (GNSS) stations and National Geodetic Points, a high-quality National Coordinate System ensures accurate positioning of objects and phenomena in space. Our territory is also connected to the European Coordinate Reference System. Regular maintenance of both horizontal and vertical components of the coordinate system is carried out.

In 2023, significant activity was carried out on the **National Geodetic Infrastructure**. The stable operation of the SIGNAL network and the Zero Order Geodetic Network was ensured, including hardware and software maintenance and urgent upgrades of two GNSS stations. The GNSS Service carried out the operation of both networks, including station maintenance, network administration and technical support. The analytical part of the operation of both networks involved the calculation of daily coordinates, time series and speed vectors. For the purpose of establishing the fourth component of the National Coordinate System, construction documentation was obtained for the construction of two new points of the Zero Order Network. Construction was already underway at the location Javorniški Rovt above Jesenice in 2023, and completion is planned in 2024. This is followed by the installation of surveying equipment and test integration into the network. The **Zero Order Geodetic Network** represents the backbone of the National Coordinate System and consists of the highest quality National Geodetic Points at which surveying observations are continuously carried out. The high accuracy of measurements at the points of this network makes it possible to monitor and model time-dependent changes in the spatial reference system due to geodynamic changes.

FIGURE 13: Micro-network measurements at the Zero Order point Korada

In 2023, stabilization and measurement of new geodetic points in the border zone for the future implementation of the arbitration border with the Republic of Croatia was carried out, along with minor upgrades for geodetic point record management. Measurements of the levelling polygons were also carried out to improve elevation data. In parallel, regular maintenance, upgrade and repair of equipment and geodetic instruments for performing field measurements took place. An entry in the Cultural Heritage Register for selected geodetic signs and several development projects were also carried out, including: Development of the National Altitude Transformation Model, Care4SIGNAL – Risk assessment of GNSS interference, both in the scope of Target Research Programmes (CRP), and Geodetic marks as material witnesses of geodetic networks development in Slovenia, in the scope of Applied Research Project (ARP).

The **operational implementation of the measurements** included more than 1200 man/days of field work, where various measurements were carried out to maintain the National Coordinate System. During these

activities, double-precision levelling lines were measured along with double GNSS – Real-Time Kinematic (GNSS-RTK, RTK technology enables real-time geodetic measurements with high accuracy) measurements at control points. Geodynamic points were measured, and some First Order trigonometric points were restored. In addition, several technical polygons were measured to provide a geodetic base in priority areas along the border with the Republic of Croatia. Inspection and measurement of trigonometric points of lower orders and complementing topography were also carried out. Measurements were carried out to verify land cadastral points and improve Cadastre. Periodic checks and planned maintenance of border marks at the national borders were carried out. For the implementation of field work, appropriate protective equipment was purchased, and staff training in the Geodesy Office was organized.

FIGURE 14: Levelling

FIGURE 15: Measurements at the First Order trigonometric point Malija

Due to the extensive floods that hit Slovenia in August 2023, some **activities took priority in order to provide support with combating the consequences.** The priority laser scanning of affected areas with higher point density was conducted to identify changes resulting from flooding, which is crucial for planning restoration efforts and preventive measures. Inspection of benchmarks (altitude points), which are important for determining altitude, was carried out. The scope of this work covers the inspection and eventual rehabilitation of approximately 100 kilometres of the levelling lines and is crucial for the restoration of the geodetic network. Control was carried out on border marks in areas affected by flooding, especially at the border with Austria. This is crucial for restoring border infrastructure and maintaining the accuracy of the border between the two countries.

The **National Topographic System** provides positional and descriptive data on the physical surface and objects and national maps for the territory of the Republic of Slovenia. It consists of topographic data (data on terrain, hydrography, land coverage, buildings, transport infrastructure and other objects), geographical names, remote sensing data (aerial photography, orthophoto, laser scanning images) and national topographic and transparent maps. Remote sensing technologies make it possible to obtain high-quality images of terrain and objects from air or space, which is essential for the production and maintenance of topographic data, maps and other spatial data. The data from the National Topographic System form the basis for navigation, tourism, urban planning, security operations, and many other activities.

In the field of cartography and topography, **topographic data** on buildings, transport networks and land use of a **52-sheet grid of 1 : 5000 scale** were restored. Data on land coverage in the National Topographic Model for a third of Slovenia (eastern part) was established, and test production of topography of buildings from laser scanning data and oblique aerial imagery was carried out. In the field of **remote sensing,** aerial photography was carried out to refresh the Digital Terrain Model (DMR1) and produce orthophoto for a third of the territory of Slovenia (western part). Quality control of cyclic aerial photography and laser scanning products of Slovenia was also conducted (capture was carried out in the scope of the Recovery and Resilience Plan).

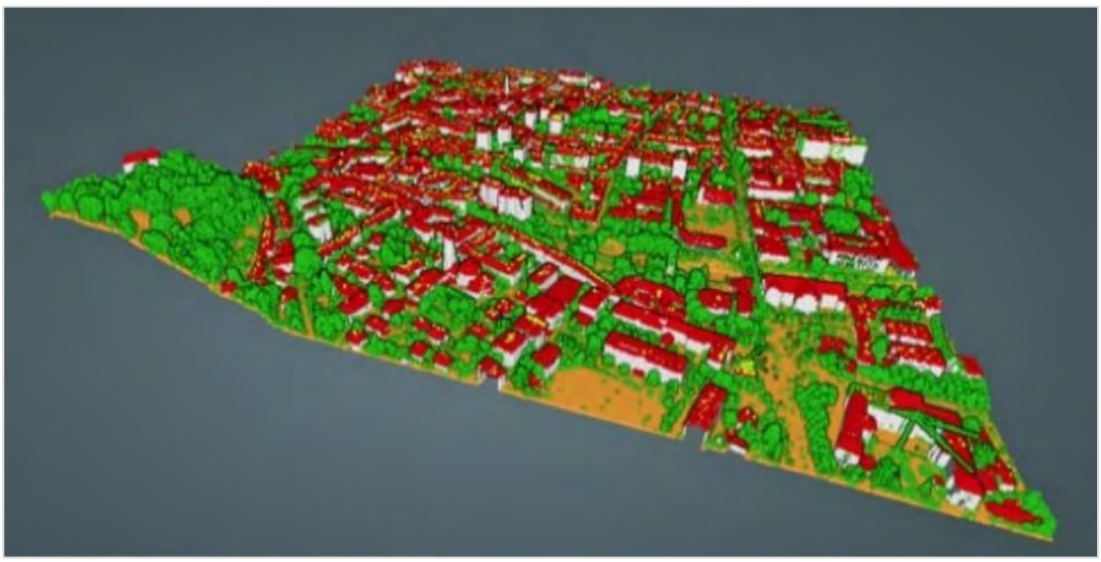

FIGURE 16: Classified point cloud from laser scanning data

A **methodology and test examples of geodetic plans** and an IT solution were developed to support the ordering of geodetic plans and access to products that will be produced as part of geodetic plan creation.

Based on the Act Regulating the Determination of Territories and the Naming and Marking of Settlements, Streets and Buildings (Official Gazette of the Republic of Slovenia, No. 25/2008), the Commission for the Standardisation of **Geographical Names** decided on the appropriateness of naming streets and settlements and represented Slovenia at the United Nations. In the area of geographical names, the task "Standardization of hydronyms in the register of geographical names" was carried out under the Target Research Programmes, within which a geographical and linguistic review of the names of water bodies was carried out, and hydronyms were sent to all Slovenian municipalities for review.

The maintenance **of National and Military Topographic Maps** at a scale of 1 : 50,000 continued, considering the renewed editorial plan. All national overview maps have been renewed and data have been produced for the European EuroBoundaryMap and EuroRegionalMap databases.

Specific tasks in the field of **cartography and topography for the needs of the Ministry of Defence** include the creation and printing of 15 NATO system sheets, interoperable Military Topographic Maps at a scale of 1 : 25 000 and the amendment of the editorial plan. A substantive update and printing of the Military Air Navigation Map 1 : 250 000 was also carried out.

In the field of **maintaining the state border** with Italy, Austria and Hungary, the planned tasks set by international commissions were carried out. Regular checks on border signs were carried out, as well as additional work such as landmark editing, measurement work and vegetation cleaning. On the border with the Republic of Croatia, work was carried out to prepare the geodetic basis for border demarcation, with an emphasis on the processing of field data and interpretation of the course of the border in six cadastral municipalities.

FIGURE 17: Measurements at the national border with Italy

FIGURE 18: Maintenance of border marks

IN THE FIELD OF MASS REAL ESTATE VALUATION, the maintenance of the mass valuation system and adaptation to successfully support the implementation of statutory procedures continued in 2023. Despite the delay in deadlines due to the Act on Interim Measures to Mitigate the Effects of COVID-19, the authority was obliged to carry out all tasks under the Real Property Mass Valuation Act – ZMVN-1. This includes **monitoring and analyzing the real estate market and adapting valuation models as needed**.

The processing of real estate market data took place regularly, with special regard to sales and rental transactions for commercial real estate. The empirical state of the market was reflected in the **2022 Annual Report** and the **2023 Semi-Annual Report**.

SLIKA 19: Cover pages of the Annual Report 2022 and the 2023 Semi-Annual Report on the Slovenian real estate market

In addition, new real estate valuation models were finalized and calibrated in 2023 and prepared for the trial calculation procedure. Changes in the real estate market were regularly calculated and all mass valuation records were maintained whilst considering funds and personnel.

Furthermore, a number of technical tasks were carried out, e.g. analytical support related to the implementation of housing policy. Activities have been launched to **use artificial intelligence (AI)** in the Real Estate Mass Valuation System, which enables advanced analysis and processing of real estate transactions and prediction of real estate value at a specific date. AI is also used to adjust temporal real estate market prices and extrapolate data, allowing for more realistic predictions of the value of real estate in the future. In addition, AI can assist in zoning and levelling, considering various factors such as socio-economic data, terrain geometry, topology of natural and artificial barriers. This data provides the basis for appropriate valuation models that correspond to the current state of the real estate market.

The development of the General Valuation System, the Valuation Register database and the Register of Valuation Models took place with the aim of improving the operation and adapting to new challenges in the real estate market. At the same time, preparations were made for the implementation of the Information System for Analytics and Modelling, which will enable better analytical support and optimization of evaluation procedures.

IN THE FIELD OF REAL ESTATE REGISTRATION, the Real Estate Office and Regional Surveying and Mapping Authorities carried out regular procedures, which included basic record-keeping and maintenance, as well as activities to improve data quality. Information support was provided for the operation of the Real Estate Cadastre, the Register of Spatial Units and the Consolidated Cadastre of Public Infrastructure.

In 2023, various activities were carried out to **improve data in the Real Estate Cadastre**. Data controls were carried out and errors and discrepancies that occurred during data migration or in the initial period of operation of the cadastral information system – IS kataster were carried out. In addition, some archival data were migrated to the new database. For the stable operation and use of the cadastral information system, technical assistance was provided to the Group for editing data in XML format and assistance was provided to users. To increase data harmonization, periodic alignment of the boundaries of municipalities from the Register of Spatial Units with the boundaries of land plots from the Real Estate Cadastre was carried out. A comparison of unrecorded or modified buildings with automatic classification was also carried out, using cyclic aerial photography data and laser scanning of Slovenia. As part of the maintenance of the graphic layer of areas with equal ratings, a review of special impacts (especially rockiness) was conducted. In 2023, the review was carried out in a part of the Karst region (approximately 50,000 hectares in total).

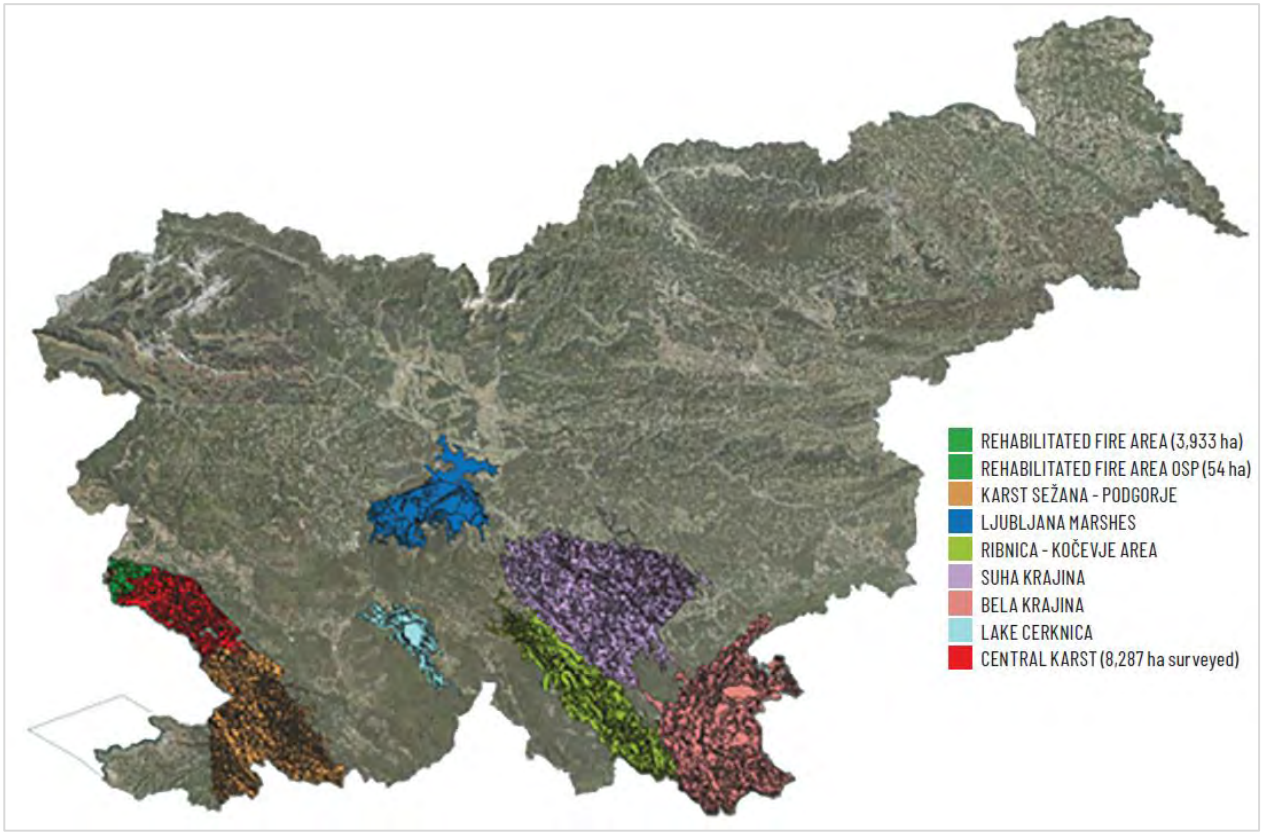

FIGURE 20: Map of areas subject to special impact review in 2023 and 2024

Research projects have been completed, and final reports and presentations of results have been prepared. They cover the following topics: "Connectivity of spatial data of official records with real estate cadastre data", "Multilingual dictionary for the field of geoinformatics" and "GeoBIM and national geodetic data".

In the field of **providing ICT, surveying and general infrastructure,** additions and upgrades of the cadastral information system applications called IR delovodnik and IR kataster were carried out, which ensure the operation of software solutions in accordance with the needs of business procedures and users at all levels of operation, both for external users such as surveying companies, developers and court experts, as well as for employees of the Surveying and Mapping Authority, conducting and carrying out cadastral procedures.

The day-to-day operation of **management and maintenance of the Consolidated Cadastre of Public Infrastructure** was also ensured, which included registering economic infrastructure facilities in the consolidated cadastre and registering network connection points. In 2023, 1322 elaborates were received for registering such objects, and 72 elaborates for registering network connection points. This has improved the accuracy of records and enables efficient management of infrastructure data, which is crucial for effective development and planning of infrastructure projects.

One of the key tasks of the SMA is to **conduct administrative procedures at the request of clients**. With the implementation of a new IT solution for the Real Estate Cadastre, the SMA began to manage data on land plots, buildings and parts of buildings in a unified register. A unified procedure called the **"cadastral procedure"** was introduced, where the technical part is carried out by surveying companies and the administrative part by employees of the SMA, whereby local jurisdiction in resolving matters has been abolished. Thanks to e-commerce, the SMA ensured the **resolution of administrative cases within the statutory deadlines** in 2022 and 2023, and strives to do so in the future. The influx of cases no longer

depends on the seasonal nature of surveying services, as they are carried out continuously throughout the year. The issuance of certificates also did not fluctuate significantly during the year and is in fact gradually decreasing, as the SMA provides information to users through its distribution system – publicly available viewer and online services, while public authorities directly access data for the conduct of their proceedings. In 2023, **82,723 customer requests** were resolved, while **71,266 requests were received**. Additionally, **14,304 certificates were issued**, indicating the responsiveness of the SMA to customer requests for changes to the Real Estate Cadastre. Such flexibility and efficiency in the management of administrative procedures allows records to be consistently maintained and kept up-to-date and accurate data to be provided to the public and users.

TABLE 5: Table of resolved and filed requests and certificates issued in 2023

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
RESOLVED REQUESTS	5,270	6,665	7,373	8,483	8,079	6,661	6,276	4,903	8,194	7,762	6,988	6,069	82,723
RECEIVED REQUESTS	6,527	4,885	5,473	6,321	6,684	6,598	5,011	4,796	5,592	7,042	6,190	6,147	71,266
CERTIFICATES ISSUED	1,690	1,246	1,827	1,272	1,550	1,083	990	874	871	1,059	929	913	14,304

The increased efficiency in resolving client requests reflects the consistent and effective work of the SMA in conducting administrative procedures and providing accurate and up-to-date data in the Real Estate Cadastre.

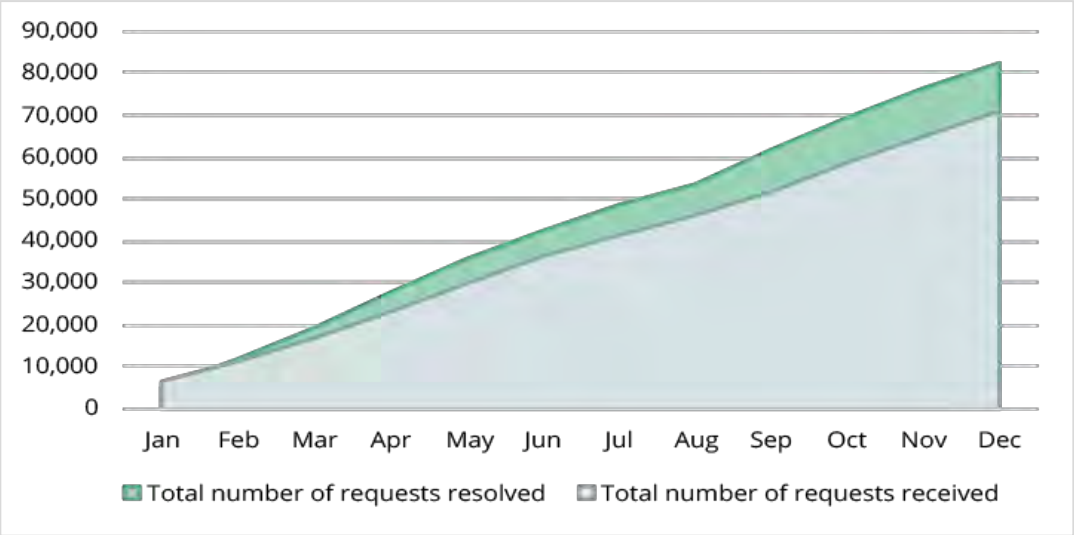

FIGURE 21: Total number of resolved and received requests

IN THE FIELD OF INFORMATION TECHNOLOGY, DATA ISSUANCE AND INFRASTRUCTURE FOR SPATIAL INFORMATION, the SMA carried out a number of tasks and activities that were crucial for ensuring the efficient functioning of information systems and the availability of geodetic data.

In 2023, the SMA continued to carry out activities in the field of **information technology** crucial for the stable operation of the organization. This included coordinating with the Ministry of Digital Transformation

to provide operational support to users and the SMA's information system. Additionally, regular substantive and IT support was carried out in the development of different solutions, both internally and by external contractors. Efforts to maintain data exchange between systems with other institutions were supported, such as the Supreme Court of the Republic of Slovenia, the Ministry of the Interior and the Agency of the Republic of Slovenia for Public Legal Records and Related Services. At the same time, coordination was carried out with other initiatives in the field of informatics, including the Slovenian Green Location Framework, GreenSLO4D.

To ensure information dissemination to users, the SMA regularly maintained and updated its websites, which include the Prostor portal, containing numerous services and other content. By carefully maintaining metadata, services and other information, it provides users with access to information about the quality, availability and usability of geodetic data. Regular support was also given to the operation of electronic services of the Distribution System, the issuance of data at the counters of surveying offices and the transfer of data to other public systems via electronic services.

Special attention was afforded to **the issuance of SIGNAL network data**, which ensured the transformation of data along with download services from the national network of permanent stations using GNSS SIGNAL technology.

As part of the long-term arrangement for digitizing archival aerial photographs, the gradual digitization of the collection of aerial images (films and contact prints) continued. This process is conducted by the SMA in collaboration with the Archives of the Republic of Slovenia.

Participation in national and international projects has brought new experience and knowledge and enabled the SMA to keep pace with modern technological and professional trends in the field of geoinformatics and spatial planning. Projects focused on improving the quality of spatial data and optimizing the management of geoinformation systems. Some of them were part of Target Research Programmes, with one ongoing project being "Development of guidelines for improving semantic interoperability in the field of spatial database management and geoinformatics in Slovenia".

The tracking and implementation of European guidelines and standards in the field of Spatial Information Infrastructure has been crucial for ensuring interoperability and international connectivity of geodetic data. As the National Contact Point in accordance with the requirements of the European INSPIRE Directive, SMA ensured the stable **operation of the INSPIRE infrastructure (Slovenian INSPIRE Metadata System, Slovenian System of Registers and Code Lists**, INSPIRE web services) and the implementation of monitoring and reporting tasks to the European Commission through the **European INSPIRE Geoportal.**

Regular coordination has taken place within the INSPIRE Group, including the organization of meetings of the Maintenance and Implementation Group for Policy (MIG-P) and Maintenance and Implementation Group for Technology (MIG-T). MIG-P focuses on maintaining and implementing metadata and data specifications within the INSPIRE framework, while MIG-T develops and tests solutions for interoperability between different spatial data sources. The aim is to ensure coherence, quality and compatibility of systems for the exchange and use of spatial information within the INSPIRE framework.

PROFESSIONAL NETWORKING AND INTERNATIONAL ACTIVITIES OF THE SURVEYING AND MAPPING AUTHORITY OF THE REPUBLIC OF SLOVENIA

Professional networking and international cooperation of the Surveying and Mapping Authority of the Republic of Slovenia (SMA) is crucial for the exchange of knowledge and experience when introducing best practices in the field of geodesy, cartography and spatial information system. Its contribution at the international level not only encourages the development of the geodetic profession, but also contributes to a more efficient performance of tasks at home, which strengthens the reputation and importance of the Slovenian land surveying community in the global environment.

COOPERATION WITH PROFESSIONAL ORGANIZATIONS

Within its activities, the SMA cooperates with the Slovenian Chamber of Engineers (IZS), the Faculty of Civil and Geodetic Engineering (FGG), the Economic Interest Association of Surveying Contractors (GIZ GI), the Association of Surveyors of Slovenia (ZGS) and individual geodetic societies, as well as with Association of Court-Appointed Surveying and Appraising Experts of Slovenia (DSICGEOS).

At the beginning of the year, a **Joint Consultative Group of experts** was established to coordinate activities in the implementation of the Real Estate Cadastre Act and the use of new IT solutions to ensure the effective functioning of the Real Estate Cadastre Act and the use of the cadastre information system. Fourteen members were appointed to the group, four of them representatives of the SMA and four representatives of land surveying companies. As a result of their work**, Recommendations for introducing the rules of the Real Estate Cadastre Act and the implementation of the cadastre information system** were drafted, which are constantly updated.

In accordance with the provisions of the Real Estate Cadastre Act, the SMA appointed a **Committee for expert audit in cadastral procedures**, whose members include representatives of the SMA, the Slovenian Chamber of Engineers, the Chamber of Architecture and Spatial Planning of Slovenia (ZAPS), the Faculty of Civil and Geodetic Engineering and the Association of Court-Appointed Surveying and Appraising Experts of Slovenia.

In cooperation with the Association of Surveyors of Slovenia, the SMA organized **eight regional expert consultations** on the implementation of the Real Estate Cadastre Act. The consultations were held at seven locations: Ljubljana (two consultations), Kranj, Novo mesto, Celje, Ajdovščina, Maribor and Mala Nedelja. The first consultation took place on 17 October 2023 in Ljubljana, and the last on 23 November 2023 in Mala Nedelja.

In total, 712 participants attended the consultations, 304 of them from the SMA and 408 from land surveying companies. The consultations addressed five topics formulated by the Joint Consultative Group of experts for coordinating activities in the implementation of the Real Estate Cadastre Act and the use of new IT solutions.

The **51st Geodetic Day** took place at the Brdo Congress Centre near Kranj on November 15 and 16, 2023. The topic of this year's Geodetic Day was devoted to the challenges of the geodetic and geo-information profession in today's society, with an emphasis on the challenges of multi-dimensional modelling.

The first part of the professional programme was devoted to invited lectures from abroad, followed by presentations of the results of selected research and development projects that were closely related to the main topic of the Geodetic Day. At the event, the SMA presented interim results of tasks that are part of the Green Slovenian Location Framework (GreenSLO4D) project, which include 3D Cadastre, a 4D National Coordinate System and the National Topographic Model. In addition, it gave visitors insight into the different ways in which they access the data the SMA provides.

The two-day expert conference was accompanied by an exhibition of geodetic and geoinformation companies and other institutions working in the field of geodesy and geoinformatics. Traditionally, a Solemn Academy took place as part of the Geodetic Day, where the awards of the Association of Surveyors of Slovenia were presented. The recipients also included employees or former employees of the SMA.

After the permanent exhibition at Bogenšperk Castle closed its doors to visitors on September 15, 2021, the Technical Museum of Slovenia, in collaboration with the SMA, the Association of Surveyors of Slovenia, and the Department of Geodesy at the Faculty of Civil and Geodetic Engineering, organized a series of **temporary exhibitions** of this rich collection of Slovenian technical heritage titled "**Every Millimetre Counts – Geodesy in Slovenia Through Time**". In 2023, the exhibition was first hosted by the Faculty of Civil and Geodetic Engineering in Ljubljana and moved to the Cultural Centre in Gorizia, Italy, on December 18, 2023.

INTERNATIONAL ACTIVITIES

The SMA is an active member of several international organizations, which gives it an important role in the field of geodetic and cartographic work both nationally and internationally.

The SMA has been a long-standing and well-established member of the **EuroGeographics,** the association representing Europe’s National Mapping, Cadastral and Land Registration Authorities, and of the United Nations Committee of Experts on Global Geospatial Information Management Europe (**UN-GGIM Europe**). A representative of the SMA is the chairman of the Executive Board of UN-GGIM Europe. The SMA actively participates in numerous other important international organizations. These include the United Nations Group of Experts on Geographical Names (**UNGEGN**), the Working Party on Land Administration (**WPLA**) within the United Nations Economic Commission for Europe (**UNECE**), the Permanent Committee on Cadastre in the European Union (**PCC**), the European Spatial Data Research (**EuroSDR**) association, which connects national surveying and cadastral authorities with research institutions and universities in Europe. It is also a member of the European Position Determination System (**EUPOS**), the European sub-commission for the European Reference Frame (**EUREF**) within the International Association of Geodesy (**IAG**).

As the National Contact Point for fulfilling obligations under the European INSPIRE Directive, the SMA coordinates the establishment of spatial information infrastructure in the Republic of Slovenia.

Its participation in these international organizations enables the exchange of knowledge, experience and best practices with other countries and experts in this field, which contributes to the improvement of geodetic and cartographic services and improves the quality of spatial information in Slovenia.

In 2023, the SMA actively collaborated with similar institutions in Europe and the southwestern Balkans region, aligning activities with the guidelines and strategic goals outlined in the Strategy of the National Land Surveying Service until 2025 and in the Work Programme of the National Land Surveying Service for 2023.

Representatives of the SMA attended the **general assembly of EuroGeographics**, held from 19 to 21 March 2023, in Valletta, Malta. In addition to the regular elections of new board members, approval of the work program, and the association's financial plan, participants at the assembly discussed the challenges faced by surveying authorities in geographic Europe within a rapidly changing modern society. At the conclusion of the meeting, Tomaž Petek, the General Manager of the SMA, was elected to the Management Board of the association for a two-year term.

On 29 March 2023, the **United Nations Global Geodetic Centre of Excellence** (UN-GGCE) was officially inaugurated at the United Nations campus in Bonn. The General Manager of the SMA attended the opening as the Chair of the Executive Committee for Spatial Data Management within the United Nations (UN-GGIM Europe). The Centre of Excellence will coordinate the development of global geodetic infrastructure and promote geodetic research and earth surface mapping for global cooperation in the surveying profession. This infrastructure is crucial for the proper functioning of Earth observation and navigation applications and for addressing issues such as stable living conditions, climate change adaptation, land use, and safe autonomous driving.

The General Manager of the SMA also attended the **inaugural meeting of the International Supervisory Board of the Centre of Excellence** and the third plenary **meeting of the Subcommittee on Geodesy under UN-GGIM**, held on 30 and 31 March 2023 at the United Nations campus in Bonn.

From 20 to 23 April 2023, a **meeting of the International Advisory Board on the Global Knowledge and Innovation Centre on Spatial Data** was held in Deqing, China. The Centre, established by the United Nations and financially supported by China's Ministry of Natural Resources, is a result of the efforts of the Committee of Experts on Global Geospatial Information Management (UN-GGIM). The purpose of the meeting was to formulate strategic guidelines and draft the Centre's work program, which aims to facilitate better decision-making based on geospatial data. The General Manager of the SMA also attended the meeting.

The **Geospatial World Forum** (GWF) was held in 2023 under the title "Geospatial Caravan embracing one and all" from 2 to 5 May in Rotterdam. The event brought together a global geospatial community, including governments, public sector bodies, industry, academia and civil society, to showcase the benefits of using geospatial data to facilitate day-to-day work and quality decision-making. Within the framework of the forum, a meeting of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM Europe) was held on the topic of data integration for the purpose of monitoring the SDGs, moderated by Tomaž Petek, General Manager of the SMA.

An **expert meeting of the surveying authorities of the successor states of the Austro-Hungarian Cadastre** was hosted in Slovenia this year. The SMA organized thirty-eight professional meetings, which took place from 24 to 26 May 2023, in Ptuj. Colleagues from the land surveying authorities of Austria, Bosnia and Herzegovina, the Czech Republic, Slovakia, Croatia, Hungary, the two provinces of northern Italy and

Slovenia participated in the meeting. The main topic of this year's conference was "Knowledge for effective land management". In the presentations, participants shared their experiences and services based on space recording.

Chalmers University of Technology, in collaboration with the Swedish National Geodetic Survey, hosted the annual **EUREF Symposium 2023**. The symposium, organized by the International Association of Geodesy (IAG) and the European Reference Frame Sub-Commission (EUREF), was attended by representatives from more than 25 countries. Representatives of the SMA also presented a national report. The purpose of participating in the symposium was to present the current state and new trends for the future in the field of geodetic reference (coordinate) systems.

The **13th Regular Session of the United Nations Committee of Experts on Global Geospatial Information Management** (UN-GGIM) took place in New York from 31 July to 4 August 2023. In addition to the plenary session, 28 side events and meetings were organized, including a meeting of the Executive Committee of UN-GGIM Europe, the Expanded Committee of UN-GGIM at the global level, and a series of consultations. The General Manager of the SMA participated in the session of the Committee of Experts on Global Geospatial Information Management.

From 4 to 6 September 2023, the **15th Regional Conference on Cadastre and National Spatial Data Infrastructure** entitled "Advanced technologies in the integration of geospatial and real estate cadastral data – achievements and improvements" took place in Belgrade. In addition to hosts from Serbia, the conference was also attended by representatives of the land surveying authorities of Slovenia, Croatia, Bosnia and Herzegovina (Federation of Bosnia and Herzegovina and the Republic of Srpska), Montenegro, Albania and Bulgaria. At the conference, Ema Pogorelčnik, MSc, and Matej Sotlar, MSc, both from the SMA, presented their experiences in integrating various records and databases of spatial data, which were carried out as part of the eProstor project and are also planned for implementation within the Green Slovenian Location Framework (GreenSLO4D) project, as well as the 3D Cadastre and the project to vectorize building floor plans.

From 27 to 29 September 2023, the **5th Congress on Cadastre** in Bosnia and Herzegovina (BiH) with international participation took place in Neum. More than 300 participants from Bosnia and Herzegovina and abroad gathered at the congress. Tomaž Petek, General Manager of the SMA, delivered an introductory speech, presenting the activities of the Green Slovenian Location Framework (GreenSLO4D) project in his paper entitled "The role of the EU Green Deal in the Slovenian Land Administration".

The **joint meeting of UN-GGIM Europe, EUROSTAT and UNECE** took place in Belgrade from 3 to 5 October 2023. The main topic of the meeting was the integration and linking of statistical and geospatial information. In addition, a two-day workshop on the integration of geospatial and statistical data took place. The event was attended by the General Manager of the SMA as Chairman of the Executive Board of UN-GGIM Europe, and representatives of UN-GGIM Europe, EUROSTAT and UNECE presented the current activities, work programme and results produced within the working groups.

At the premises of the European Parliament in Strasbourg, on 18 October 2023, a **meeting was held between members of the Executive Board of the European Regional Committee for Global Geospatial Information Management (UN-GGIM Europe) and representatives of the European Parliament**. The main purpose of the meeting was to highlight the role of official national spatial data in monitoring and implementing the United Nations Sustainable Development Goals as defined in the 2030 Agenda. Tomaž Petek, General Manager of the SMA and the Chair of the Executive Board of UN-GGIM Europe, presented

the activities of this committee and the importance of geospatial data as a key element of a stronger and more inclusive development framework for the period after 2030.

The **10th meeting of the European Committee of Experts on Global Geospatial Information Management took** place in Brussels from 22 to 23 November 2023, bringing together 61 representatives from 23 countries in geographical Europe, plus 15 observer representatives. The agenda of the meeting discussed the activities and achievements of the Regional Committee over the past 10 years, together with a strategy and work programme for the upcoming period. Many achievements of the UN-GGIM Europe working groups were also presented.

At the **INSPIRE 2023 conference**, which took place on 28 and 29 November 2023 in Brussels under the title "Green Data for All", Matej Sotlar, MSc, from the SMA presented the Joint Infrastructure for Spatial Information project and achievements in the field of geospatial information. His presentation was very well received, emphasizing procedural collaboration and innovation in the circular spatial management segment. The General Manager of the SMA shared extensive knowledge and experience in the field of geoinformation with high-level representatives from the European Commission, the European Environment Agency, the European Forum for Geostatistics, and other organizations. He underlined the importance of the GEO Slovenia initiative and Common Infrastructure for Spatial Information projects as models of best practices for the future.

FUTURE PLANNED ACTIVITIES

In 2024 and 2025, the Surveying and Mapping Authority of the Republic of Slovenia (SMA) will carry out several key activities aimed at improving the quality of real estate registration and providing better services to users.

The primary task of the SMA in 2024 is to effectively resolve administrative matters related to real estate registration. The objective is to maintain a high volume of resolved administrative cases, exceeding the expected influx of new real estate registration cases. Supported by a new IT solution – the cadastral information system IS kataster – the SMA will continue to comprehensively manage data on land plots, buildings, and parts of buildings. The issuance of certificates remains largely unchanged throughout the year and is gradually decreasing, as relevant data is accessible through public viewers. Additionally, the SMA is planning organizational structure changes and the implementation of a call center and knowledge base, facilitating improved customer interaction.

The SMA will also focus on improving the quality of Real Estate Cadastre data, particularly enhancing positional accuracy. This will include implementing homogenisation processes and new measurements in critical areas and establishing an effective coordination mechanism to consider user needs.

One of the important activities will be the modernisation and maintenance of land use records, with an emphasis on building land. The goal is to provide better technical capabilities for the interconnection and reconciliation of land use data. Activities for this action will be carried out within the project Green Slovenian Location Framework (GreenSLO4D).

Additionally, the SMA plans to complete the entire process of determining real estate valuation models, which includes coordinating with the expert public, municipalities, and public display of the models. A new Regulation establishing valuation models will be adopted, enabling the publication of real estate values.

These activities will be carried out in accordance with the work program of the SMA for the coming years and within the GreenSLO4D project. Special attention will be given to coordinating with municipalities, the professional public, and other stakeholders, as well as ensuring sufficient financial resources for the implementation of the planned tasks.

SLOVENIA IN NUMBERS

(Statistic on some general spatial data in Slovenia, representative for December 31st, 2023)

- house numbers 572,200
- streets 10,468
- settlements 6,035
- municipalities 212
- land plots 5,793,978
- buildings 1,168,118
- parts of buildings 1,895,761
- cadastral municipalities 2,698

ACTIVITIES REPORT 2023

Surveying and Mapping Authority of the Republic of Slovenia
Ministry of Natural Resources and Spatial Planning

+386 1 478 48 00

pisarna.gu@gov.si

Zemljemerska ulica 12
1000 Ljubljana