



**Annual Report  
of the Czech Office for Surveying, Mapping and Cadastre  
for 2023**

**Prague, 2024**

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## INTRODUCTION

Cadastral offices, survey and cadastral inspectorates as well as Land Survey Office in Prague managed by the Czech Office for Surveying, Mapping and Cadastre (ČÚZK), ensure the administration of real estate cadastre of the Czech Republic and land-surveying activities in the public interest established by law.

Cadastral offices received in total 777 778 proposals for entry of owners' and other rights to real estate in 2023. Deadlines for registrations of rights remained stable in 2023. Average deadlines were 22 days in all regions. The number of completed registrations or deletions based on record and notation mildly decreased year-on-year to 415 563. The number of delivered requests regarding the verification of the survey sketches decreased yearly and reached 169 471. Data provision was carried out mainly in the electronic way using the remote access to the real estate cadastre. ČÚZK performed more than 25 million requests for information, representing significant increase in comparison to 2022. Due to the high degree of digitization of the real estate cadastre, almost all requests for information were processed electronically, and the number of electronic submissions for registration in the real estate cadastre increased.

In 2023, we successfully renewed the cadastre documentation by new mapping or by taking over the results of land readjustments in 304 cadastre units with very poor quality maps, and checked the compliance of technical data of the cadastre with the reality by revisions in 640 cadastre units.

An important project solved in 2023 was the preparation of digital technical maps of the regions, which ČÚZK coordinates and covers with a central component – information system of the digital map of public administration. Work on this project has progressed significantly to implement launch into trial operation in 2024.

The year 2023 was a year of long-planned fundamental branch changes in land surveying. A new law on land surveying and a completely new government regulation on establishing geodetic reference systems binding on the entire territory of the Czech Republic have entered into force. The new state map work has become a new standardized cartographic basis for public administration, including at the international level. Two new sets replaced the set of basic maps of the Czech Republic published since 1969. Making most of the data sets available as open data was certainly also a challenging task for the Land Surveying Office, as mastering it was associated with strengthening the hardware and relatively large adjustments to the Geoportal application interface. The year 2023 is also associated with the establishment of the Czech Chamber of Surveyors (ČKZ) as a self-governing professional organization of authorized surveying engineers. The constructive cooperation between the ČÚZK and the ČKZ should also bring solutions to some professional problems in the future.

More information on results of work of land surveying and cadastral offices in 2023 brings this detailed annual report.

# 1. Surveying, Mapping and Cadastre Sector in the Czech Republic

The real estate cadastre of the Czech Republic is a set of data about real estate in the Czech Republic, including their inventory and description and their geometric specification and position. Parts of it are records of property and other material rights and other legally stipulated rights to real estate.

State administration of land surveying ensures chosen land surveying products and connecting services from the whole territory of the state as stipulated by the Act No. 359/1992 Coll., on Land surveying and cadastral bodies and by the Act No. 200/1994 Coll., on Land surveying.

Administration authorities in the branch of land surveying and cadastre are described in the Act No. 359/1992 Coll., on Land surveying and cadastral bodies, which specifies their subject matter and territorial competence. ČÚZK governs 14 regional cadastral offices (KÚ), 7 survey and cadastral inspectorates (ZKI), the Land Survey Office (ZÚ), and is the founder of the Research Institute of Geodesy, Topography and Cartography, public research institute (VÚGTK, v.v.i.).

Cadastral offices execute state administration of the real estate cadastre with territorial scope of the single regions; KÚs have their branch offices in large cities, number of which is now 94. ZKIs control cadastral offices and supervise some commercial activities, whose results are applied to the real estate cadastre and state documentation funds and have usually the territory scope of two regions. Land Survey Office, which focuses on other land survey activities that are provided in the public interest, has the national coverage.

## 2. Administration of the Real Estate Cadastre

Current Czech real estate cadastre was established in 1993 by the Act No. 344/1992 Coll., on the Real estate cadastre of the Czech Republic, and integrates the function of Land Registry Book (registration of rights) and former Cadastre of Lands (records of real estate) into one tool. On January 1, 2014 the Act No. 256/2013 Coll., on the Real estate cadastre (Cadastral Act) came into force, having replaced not only the Cadastral Act No. 344/1992 Coll., but also the Act No. 265/1992 Coll., on Registration of rights into the real estate cadastre. Both issues - real estate cadastre and registration of rights to the cadastre - are now regulated in one act.

Since its adoption, the Cadastral Act has been amended fourteen times, but it was mostly a minor change due to the adoption of other laws. In 2023 one amendment of the Cadastral Act occurred. On January 1, 2024, provisions relating to the registration of floor areas of units in the cadastre, came into effect.

Real estate cadastre in the Czech Republic is administered with help of the information system of the real estate cadastre (ISKN), which is an integrated information support system for state administration of the real estate cadastre and for providing user services of the cadastre. Since 2012 ISKN has been interconnected to the Information system of territorial identification (ISÚI) together representing the key agenda information systems serving for editing of the Register of territorial identification, addresses and real estate (RÚIAN), which is one of the four basic registers of state administration. Launch of the system of basic registers has brought tangible results into the administration of real estate cadastre particularly in the area of checking up data on physical and legal persons compared to the registries of inhabitants and persons so as in the possibility of taking over the data changes from these registries (changes of addresses, surnames etc.). ISKN is interconnected via web services to other registers, f. i. to insolvency register, which enables verification of the participants of the proceeding.

## 2.1. Main Tasks of Cadastral Offices and Their Statistics

Main task of cadastral offices is recording of proprietary and other rights to real estate and other data.

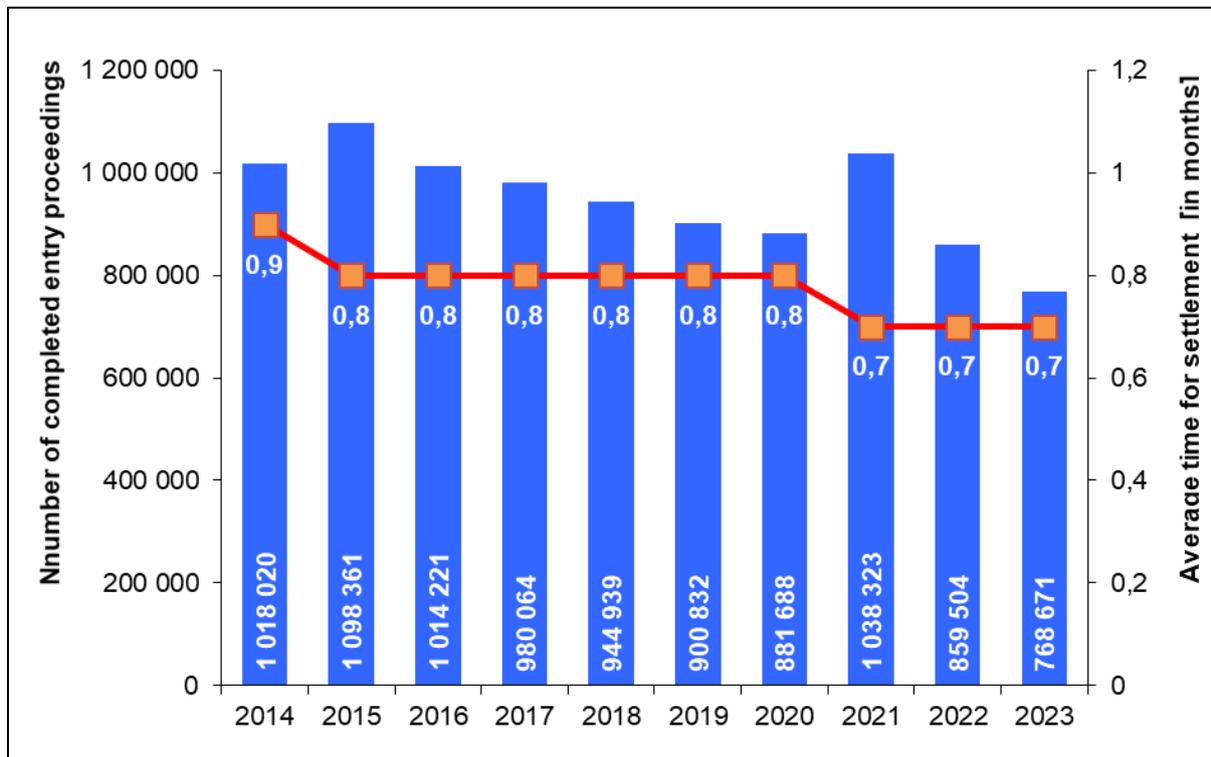
### Entries of Proprietary Rights into the Real Estate Cadastre

Registration of all material rights, rights agreed as material so as lease and tenure are being performed in the way of entry regardless of its constitution – based on either the contract, or other way.

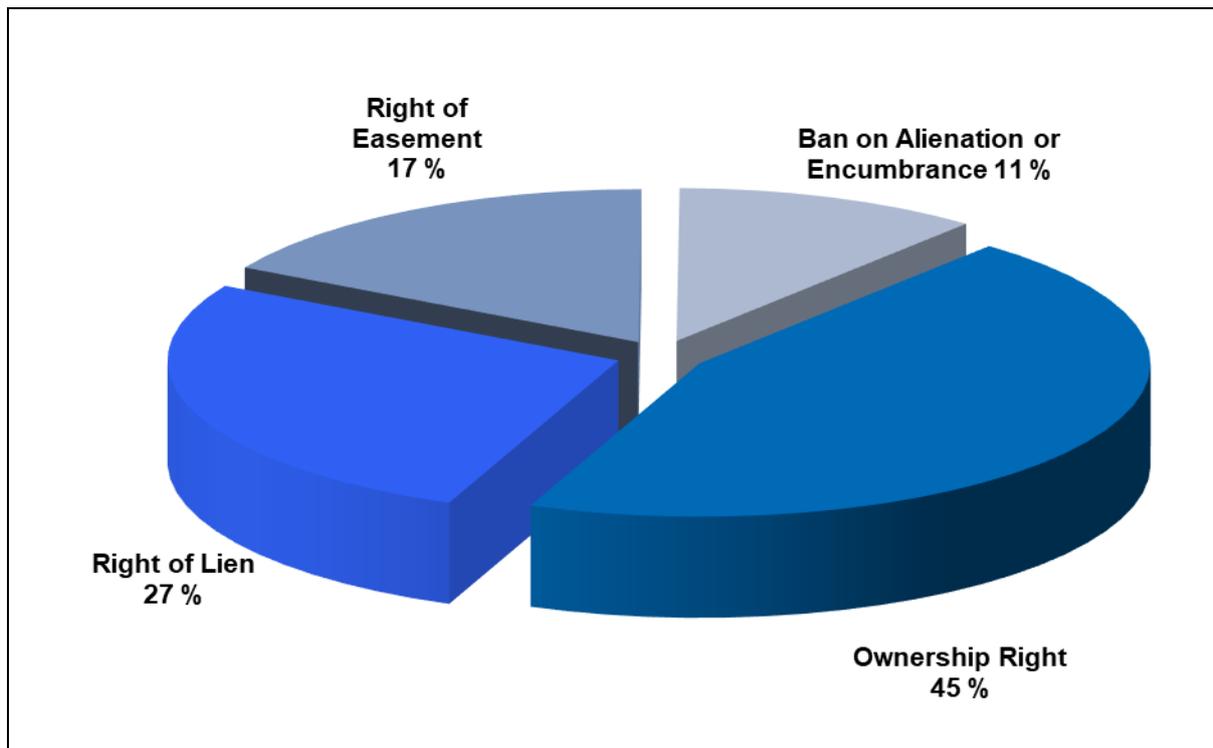
In 2023, the number of accepted proposals for entries of rights by cadastral offices was 777 778, which means mild decrease of 7 % in comparison to 2022. Number of completed proposals for entry of proprietary right was 768 671 and yearly average time for completing of application remained the same.

From the total number of yearly requests for entry in 2023, 95 % entries of rights were approved, the rest of administrative proceedings were refused or interrupted.

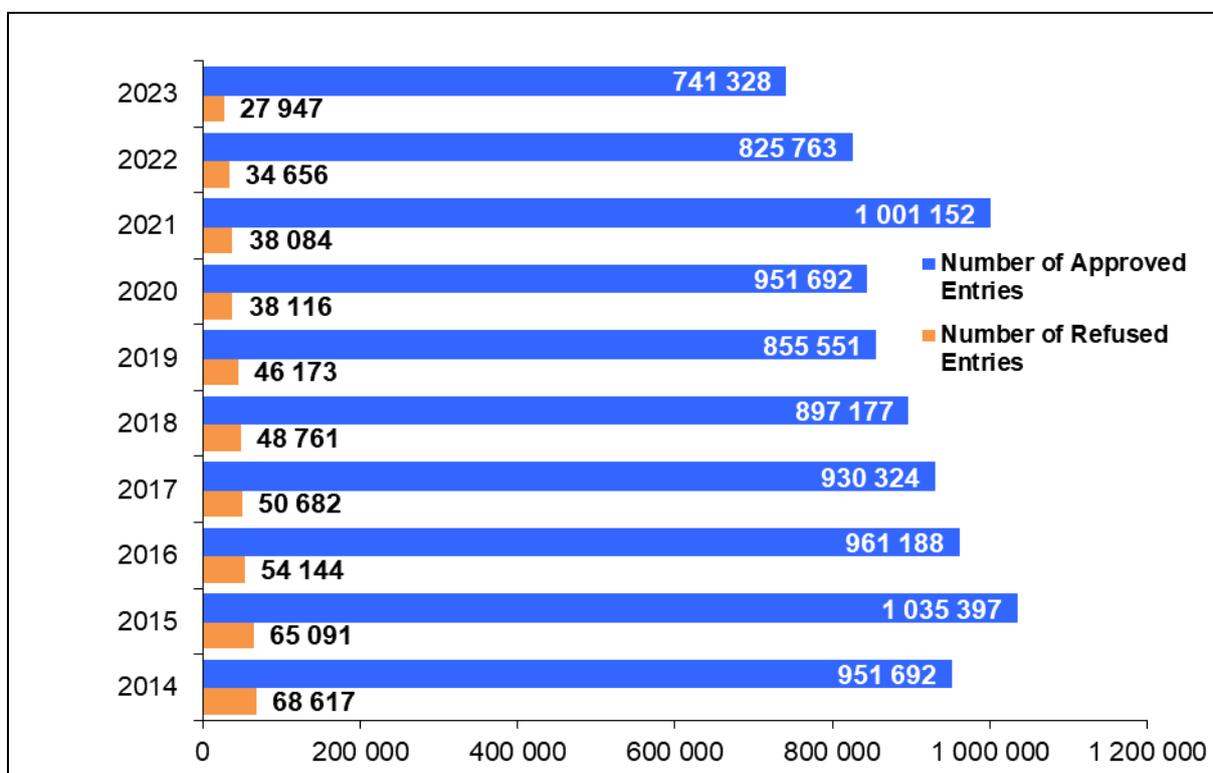
Registration of Rights to the Cadastre (Fig 1)



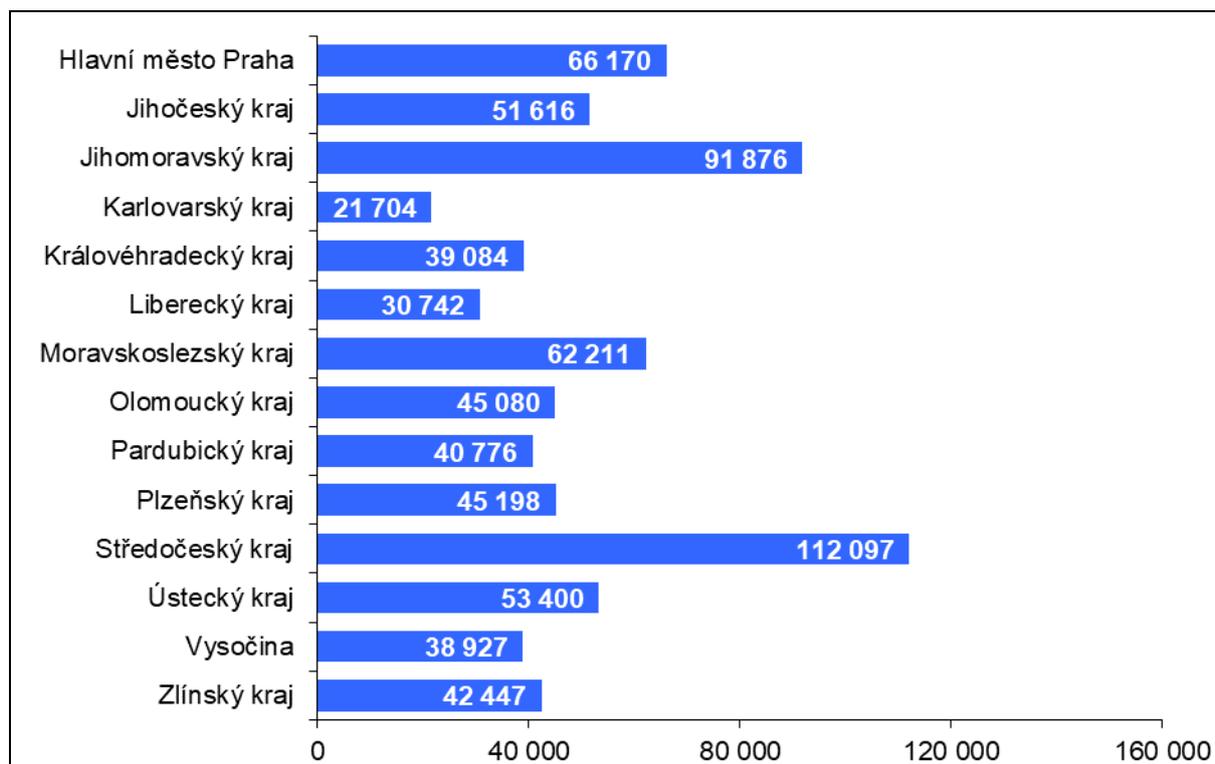
**Share of Different Types of Rights Recorded by Entry into the Cadastre (Fig 2)**



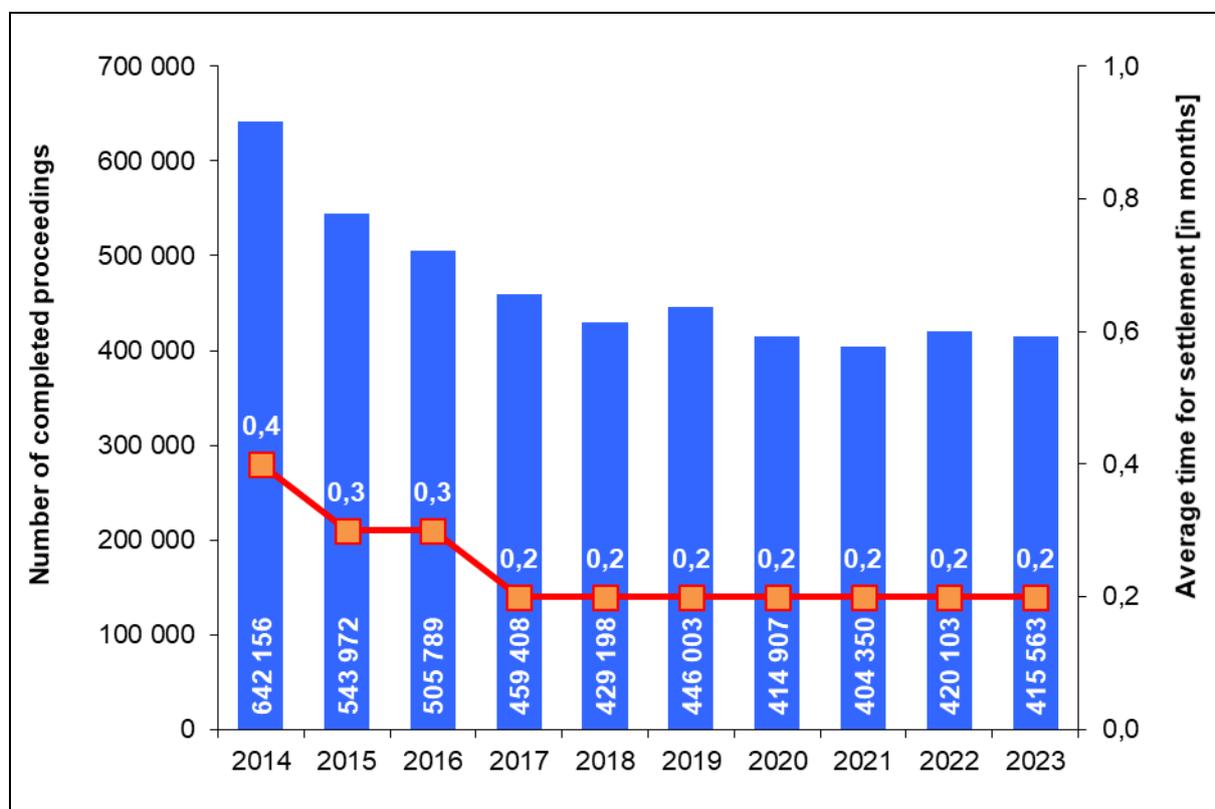
**Development in the Number of Approved and Refused Entries (Fig 3)**



**Number of Entries in Single Regions of the Czech Republic in 2021 (Fig 4)**



**Number of Completed Submissions for Registration by Record and Notes (Fig 5)**



## **Registration by Record and Note and Others**

Cadastral offices performed also other registrations into the real estate cadastre. In 2023, in total 419 016 submissions for registration by record and by note were delivered to cadastral offices, which means that the number of these records decreased yearly by 1 %. In total 415 563 submissions were completed, and the average time for its completing remained the same.

## **Data Acceptance from the Basic Registers of the Public Administration**

Part of other registrations into the real estate cadastre previously carried out based on submissions from owners and other authorized persons has been since 2014 taken over from the basic registers of public administration. These are mainly changes of the data on individuals, which are taken from the Basic register of inhabitants (ROB) and about legal entities that are taken from the Basic register of persons (ROS). In 2023, in total 265 650 changes in addresses of permanent residence and registered offices of legal entities and changes in names were taken from ROB and ROS. Furthermore, in 2023, 277 142 participants of administrative proceedings were verified in ROB and ROS and the data on them were used in the real estate cadastre. From the Basic register of territorial identification, addresses and real estate, 35 840 changes in real estate data were taken over in 2023, mainly due to the real estate cadastre revisions.

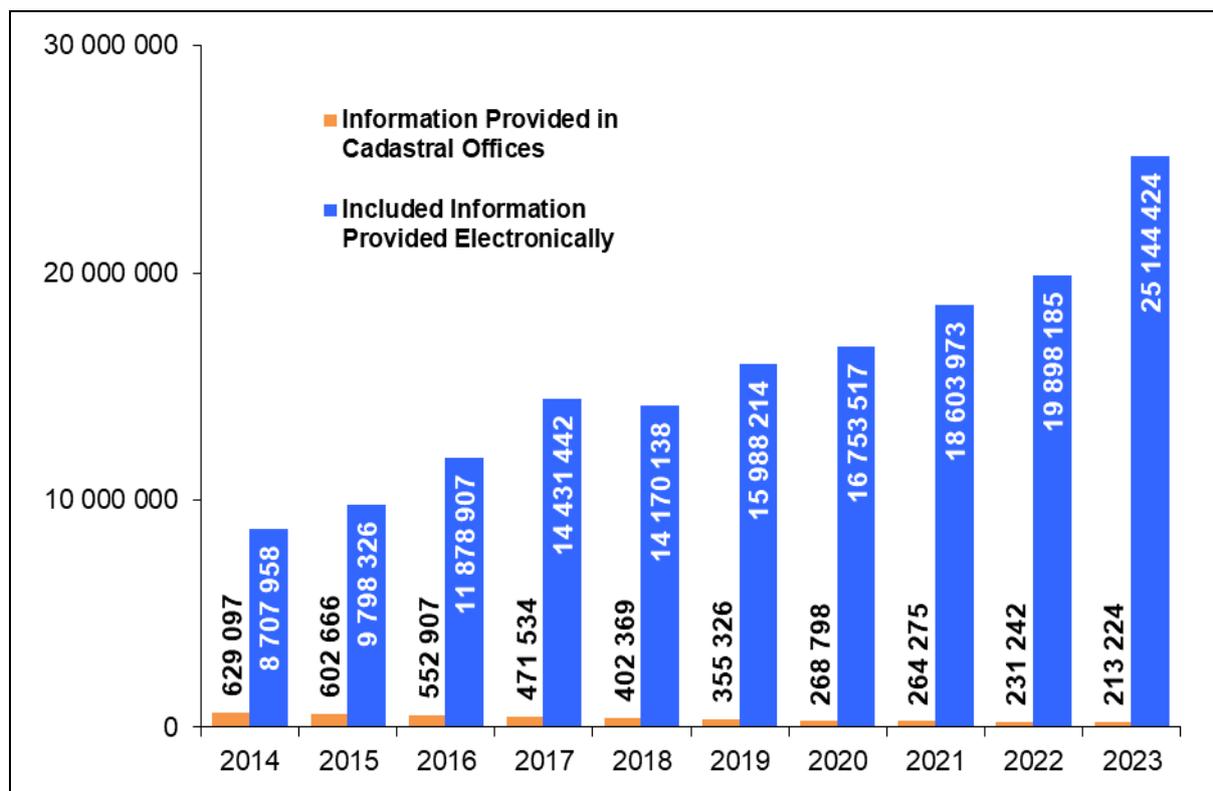
## **Provision of Information from the Real Estate Cadastre**

Individual workplaces of cadastral offices provide clients with information from the cadastre over the counter during office hours. All outputs from the cadastre (extracts from the real estate cadastre, copies of cadastral maps, copies of documents stored in document funds) are provided by cadastral branch offices from the complete state territory. Since 2001, internet services have been made available allowing outputs from the cadastre by remote access, without visiting the cadastral office. Outputs provided with an electronic seal, for which it is necessary to prove the identity of the applicant, can be obtained from the second half of 2021 using identification through the Portal of the National Point for Identification and Authentication (<https://www.identitaobcana.cz>). These services satisfy today most of continually growing demands for information from the real estate cadastre.

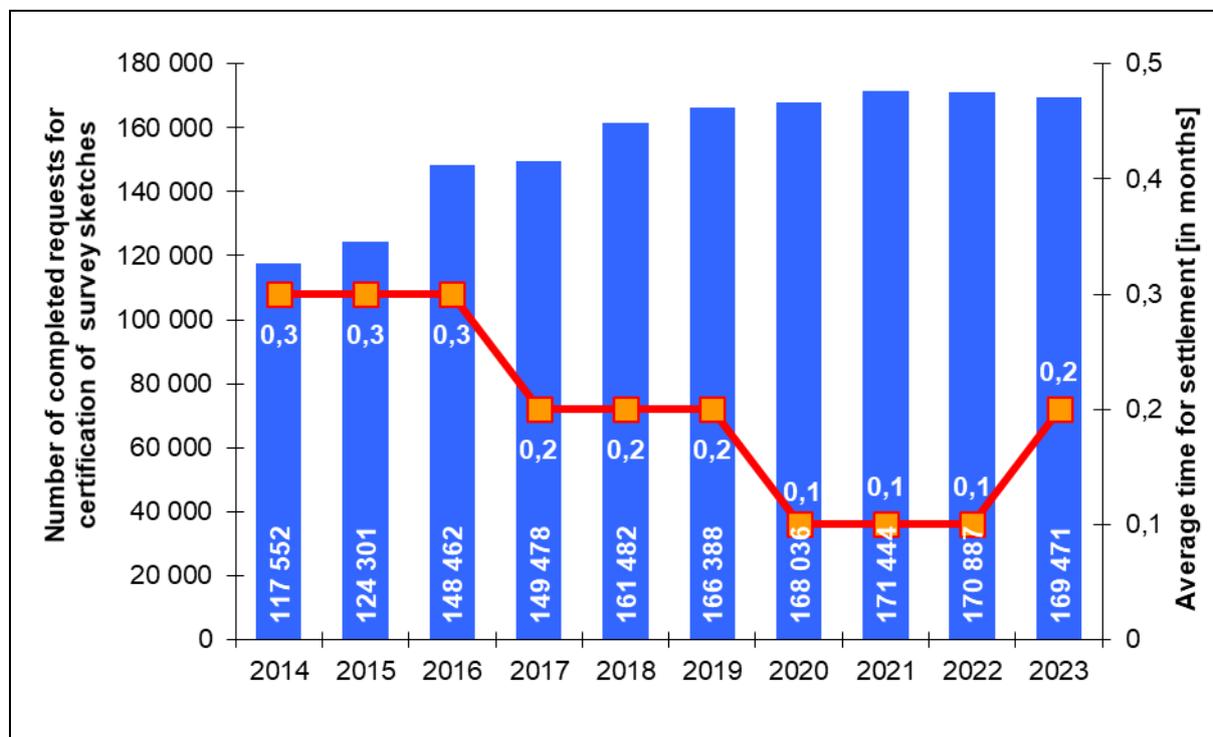
The number of completed requests for information provision at the counters of cadastral offices has slightly decreased in 2023, whilst the number of applicants for information from the real estate cadastre increased in 2023 again – more than 99 % applicants received the information by electronic services. Big share on this high number of electronically provided services have permanently court executors, notaries, municipalities, regions and governmental bodies, because of free of charge remote access to the data from the real estate cadastre.

On contact points of public administration (Czech POINT), more than 115 thousands outputs from the real estate cadastre and more than 3.8 thousands map copies were issued in 2023. Another 62 thousands outputs were created via the CzechPOINT@office service. At present, it is possible to publish the following verified outputs on CzechPOINTS: an extract from the real estate cadastre, an overview of the rights registered for a specific person, a snapshot of the cadastral map, and the copies of documents. The electronic statements from the real estate cadastre are since 2006 marked with an electronic seal and considered as public documents.

**Information Provision from the Cadastre (Fig 6)**



**Development in the Number of Requests for Certification of Survey Sketches (Fig 7)**



## Certification of Survey Sketches

Survey sketches represent land parcel division, position of a building or change of its external outline in the real estate cadastre and some other changes depicted in cadastral maps. Mostly private geodetic companies make them. Every survey sketch has to be certified by an experienced surveyor - authorised land surveying engineer. The Czech Chamber of Surveyors started to provide the authorization since July 1, 2023. Survey sketch is created in electronic form; for the purpose of document creation the paper counterpart is created according to the before mentioned Act on Surveying and Mapping. Survey sketch is subject to authorization of the cadastral office.

The number of survey sketches is still very high in the Czech Republic (in 2023 mild decrease in comparison to 2022) and despite it, the average time for checking and certification of survey sketches by the cadastral offices mildly increased in comparison to 2022. Since 2016, web services are available enabling automatic acquisition of documentation for survey sketch creation, which has to be delivered into ISKN in electronic form.

## 2.2. Digitization of the Real Estate Cadastre

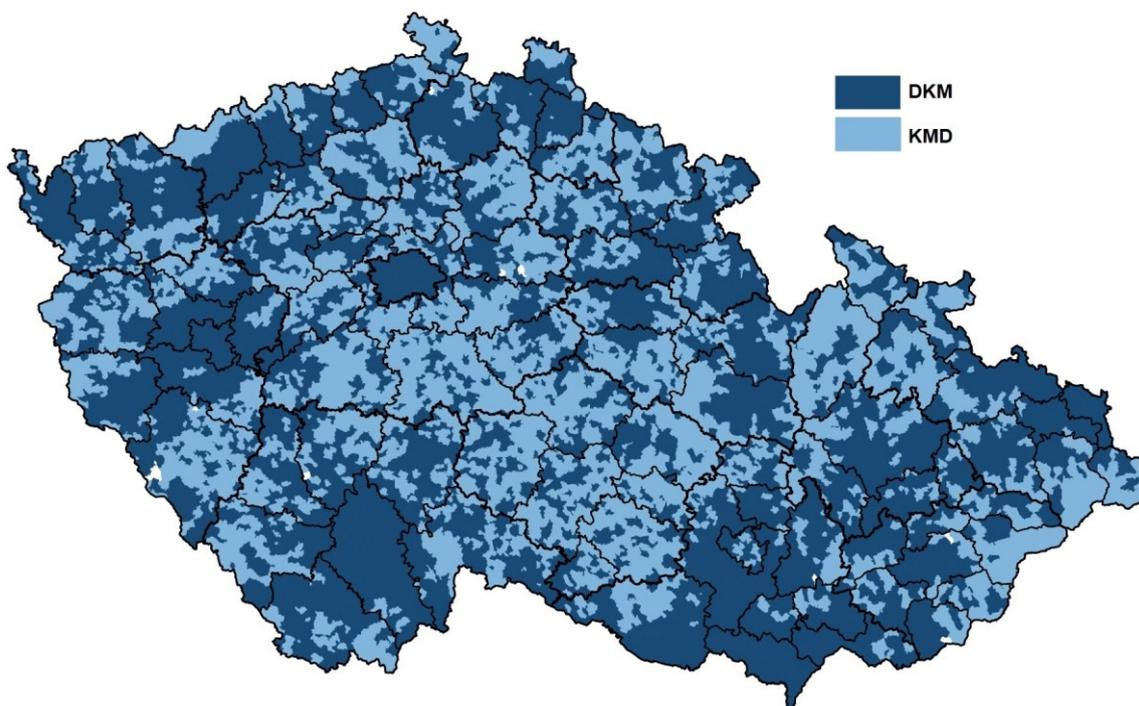
Digitization of the real estate cadastre is a basis for effective operation and administration of the real estate cadastre and for operative satisfaction of the users of the cadastral information. Cadastral maps in digital form are fundamental for administration and area decision-making. They serve not only for overview on the territorial range of material rights, but they are important as a basis for creation of information systems and applications relating to the territory as f. i. digital technical maps, spatial plans, price maps etc.

Digitization of cadastral maps achieves wide availability of maps, ensures full compliance with descriptive data on real estate, and enables high comfort when working with the map, including combination with other map sources via web map services. By December 31, 2023, the digital form of cadastral map was not at disposal only in four cadastral units from their total number of 13 076. Since 2018, the cadastral maps have been digitized, as a rule only on sites where renewal of cadastral documentation by means of new mapping or land consolidation is ongoing, will be completed in a very short time and replace then the existing cadastral map.

### Development of Digitization of Cadastral Maps between 2012-2023

Year	till 2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Digitization Completed	9 064	1 074	910	877	622	349	25	23	24	19	15	18
Total in Digital Form	9 064	10 166	11 121	11 990	12 612	12 954	12 972	12 995	13 019	13 038	13 054	13 072
Yearly Growth from the Total of 13 076 c.u.(%)		8,4	7,0	6,7	4,7	2,7	0,2	0,2	0,2	0,1	0,1	0,2
% from the Total Number	69,6	77,9	84,9	91,6	96,3	99	99,2	99,4	99,6	99,7	99,8	100

## State of Digitization of Cadastral Maps on 31. 12. 2023



### 2.3. New Cadastral Mapping and Cadastre Revision

The users of cadastral information are pointing to two areas of shortcomings of existing real estate cadastre at present. The first one is lack of accuracy of the parcel boundaries in those areas where cadastral maps digitized (KMD) based on original maps with geometry from the 1<sup>st</sup> half of the 19<sup>th</sup> century are still used and the second one is insufficient updating of registered technical data as f. i. nature and mode of land use or real estate protection.

Lack of boundaries accuracy complicates construction preparations to investors so as the activity of construction offices in the territorial or construction proceeding. It also brings problems in real estate transactions. Obsolescence of technical data complicates the use of cadastral data, especially in some decision-making processes of public administration, in property valuation and administration of property taxes.

The tools embedded in the existing Cadastral Act can solve before mentioned insufficiencies, by the renewal of cadastral documentation based on new mapping and cadastral revisions.

#### **New Mapping and Use of Land Consolidation Results**

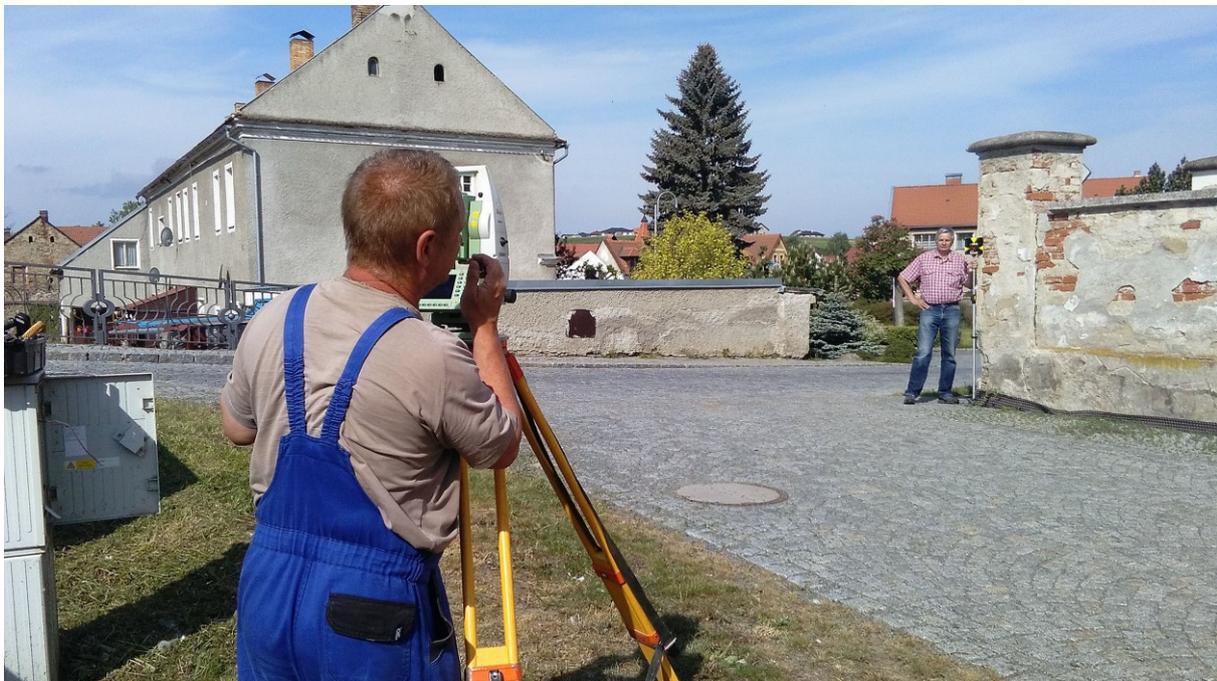
Approximately 50 % of the territory of the Czech Republic is still covered by cadastral map originated from the Stable cadastre surveying in the first half of the 19<sup>th</sup> century after 2023. Neither continuous adding changes nor realized digitization did not improve the accuracy of most boundary break points in comparison to national coordinate system, which remained on the level of 1 to 2 meters. In these cadastral units, it will be necessary to perform gradually new cadastral mapping. Out of built-up areas, the systematic accuracy improvement will be carried up with help of land consolidation.

When renewing the operation with a new mapping, the current boundaries will be investigated in the field with the participation of the owners and these will be precisely surveyed. At the same time, after discussion with the owners and relevant public authorities, other cadastre data will be updated, such as information on the nature and mode of land use. The new mapping will cover

virtually all built-up areas and forest complexes, thus areas excluded from the land consolidation. This method enables to reach needed accuracy of all cadastral maps in comparison to national coordination system, which is characterized by the coordinate positional accuracy  $m_{xy} = 14 \text{ cm}$ .

Long-term plan will be carried out supposing that land consolidation will proceed in the present range of approximately 150 cadastral units per year so as new cadastral mapping should. This work amount can be financed without extra budget claims, provided the expenditure of state budget dedicated to these activities remains at the same level.

The result of renewal of cadastral documentation by the new mapping will be the cadastral map depicting accurate parcel boundaries surveyed in the field with owners' participation. Real estate owners' involvement enables to use the renewed cadastral documentation even for property settlement of various discrepancies (not solved changes of communications location and parameters, watercourses regulation, water constructions or small constructions registered in the cadastre). Updating of nature and mode of land use will be carried out in the frame of new mapping and so the cadastral map can better serve for many decision-making processes of the public administration regarding the territorial administration.



### **Cadastral Revision**

Real estate cadastre is based on the principle of data registration according to the submitted documents. Moreover, the constitutional principle applies for registration of legal rights (the right arises only after registration) as well as Bona fide protection is applied on these registrations and so the owners' motivation not to postpone the registration is very strong. For other records (nature of land, its mode of use, preservation), only simple registration principle applies and so up-to-datedness of this information is negatively influenced because real estate owners do often not fulfil their notification duty. Sometimes it is even more advantageous for the owners not to update this information in the cadastre (f. i. because of lower property tax). It limits use of the cadastral data for many activities, which should reflect the situation in the terrain. During cadastral revision, cadastral offices find the discrepancies between cadastral data and real situation in the terrain, and remove them in cooperation with relevant public institutions and owners.

In 2023, the cadastral revision was completed in 640 cadastral units and more than 209 thousands discrepancies were improved. The most often discrepancies were merging of

superfluously registered parcels and changes in the mode and nature of land use. Information about another 22 thousands found discrepancies was recorded into the cadastre in 2023, because the owners did not submit necessary documents to the cadastral office. Information about these discrepancies are freely published on internet.

It would be possible to complete revisions in all cadastral units not included in renewal of the cadastral documentation by new mapping or based on land consolidation results by the end of 2030. Time schedule will be designed focusing on territories with greatest development.

### **Updating of Tax Data and Real Estate Data Protection**

Real estate cadastre contains at present some data regarding the property tax, the real estate evaluation so as some selected data on real estate protection (protection of monuments, spas protection, nature conservation). Registration of this data is based on documents from the public administration authorities responsible for these land specifications. In practice, this notification duty seems to be not very practical and does not ensure sufficient consistency of registered data and real state. For example, comparison of the real estate cadastre data and database of the Nature Conservation Agency of the Czech Republic showed that only at low number of parcels with stated nature conservation this information has been registered. To improve this situation, it is necessary, to implement more efficient procedures for this data updating. It could be carried out with help of the basic register for territorial identification, addresses and real estate. Its launch in 2013 created the technical conditions for crucial innovation of these registration procedures. The public authorities responsible for tax data or real estate conservation can directly register these changes into the RÚIAN. Any possible taking over of these data into the cadastre or its provision from RÚIAN in one output together with the cadastral data is technically manageable.

## **3. Electronic Services of the Real Estate Cadastre**

Many eServices are in operation in the area of the real estate cadastre, which are both free of charge services, as well as paid services providing verified documents serving as public documents. To facilitate the access to cadastral data to users' a new login portal was put into operation <https://login.ČÚZK.cz/rozcestnik.do>.

Some of provided services are available anonymously, access to other applications or outputs is allowed only after logging in via the Portal of National Point of Identification and Authentication (NBIA - <https://www.identitaobcana.cz>) or via a registered account with ČÚZK.

Information about registration into the real estate cadastre is also available on the Citizen's portal for the Czech citizens (<https://obcan.portal.gov.cz>).

### **Viewing the Real Estate Cadastre <http://nahlizenidokn.ČÚZK.cz/>**

Viewing the cadastre is one of the most visited websites of the Czech state administration. In 2023, the number of accesses increased mildly in comparison to 2022 to more than 65 million visits.

The application enables to acquire chosen information about real estates and proceedings and contributes in a significant way to increasing the transparency of the individual administrative proceedings.

The application serves also for data provision to creators and verifiers of survey sketches – enabling them access to previous surveying results – recording of detailed surveying of changes (ZPMZ). In 2023, more than 558 thousands ZPMZ were downloaded.

## Entry Proposals

The application serves for creation of the Proposal for entry in both interactive and Web Services form. The application is very intensively used; in 2023, more than 650 thousands entry proposals were created and then used for carrying out the proposal.

At the end of 2023, the ČSOB group, in cooperation with the ČÚZK, launched a pilot operation of electronic signing of mortgage and pledge contracts with the help of a qualified electronic signature of the highest level. It means another important step towards a digital process of concluding a mortgage without the need for a personal visit to the cadastral office. Pilot operation is planned until March 2024.

## Service for Monitoring of Changes

The Service for monitoring of changes in data about real estates is provided by ČÚZK to those persons who have real right to particular real estate or to participants of proceeding about such a right. The service automatically informs the user about the fact, that there occurred a change in the real estate cadastre regarding the monitored real estate. Number of its users reached already 40 424 in 2023. The service is used not only by some natural persons but also by legal persons or banks because of the information about those real estate transactions securing the provided mortgages.

## Remote Access to the Real Estate Cadastre <http://katastr.čúzkr.cz/>

Remote access (DP) enables to get the data from the real estate cadastre from the whole territory of the Czech Republic via internet. Outputs from the real estate cadastre, such as extract from the real estate cadastre and other compositions provided in this way, are formally and materially identical to the documents issued with the same timestamp by the cadastral office and are considered public documents.

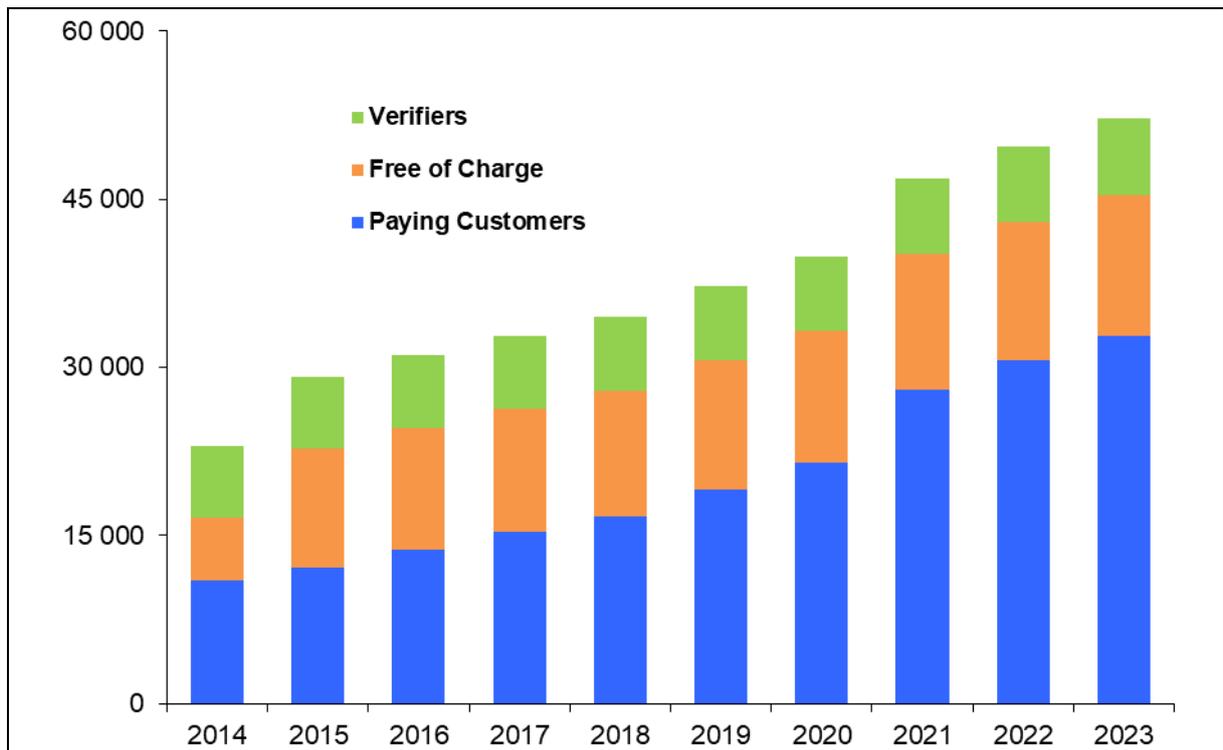
The application enables provision of outputs not only based on input of basic parameters but it also supports the visual search based on digital cadastral maps, both with help of Orthophoto CR and topographic maps as navigation tools.

The outputs are charged, but numerous groups of users from public and local administrations receive the information from the real estate cadastre in this way free of charge. Since its launch in 2001, the number of customers actively using it has been constantly growing. The yearly increase of users was nearly 5 %. The number of accounts for users was 52 193 by December 31, 2023, 12 490 out of which were free of charge and 6 855 accounts were for verifiers, particularly in the frame of CzechPOINT project. Of the paying users, the biggest user is banking sector, which uses these services for obtaining the documents needed to provide mortgages.

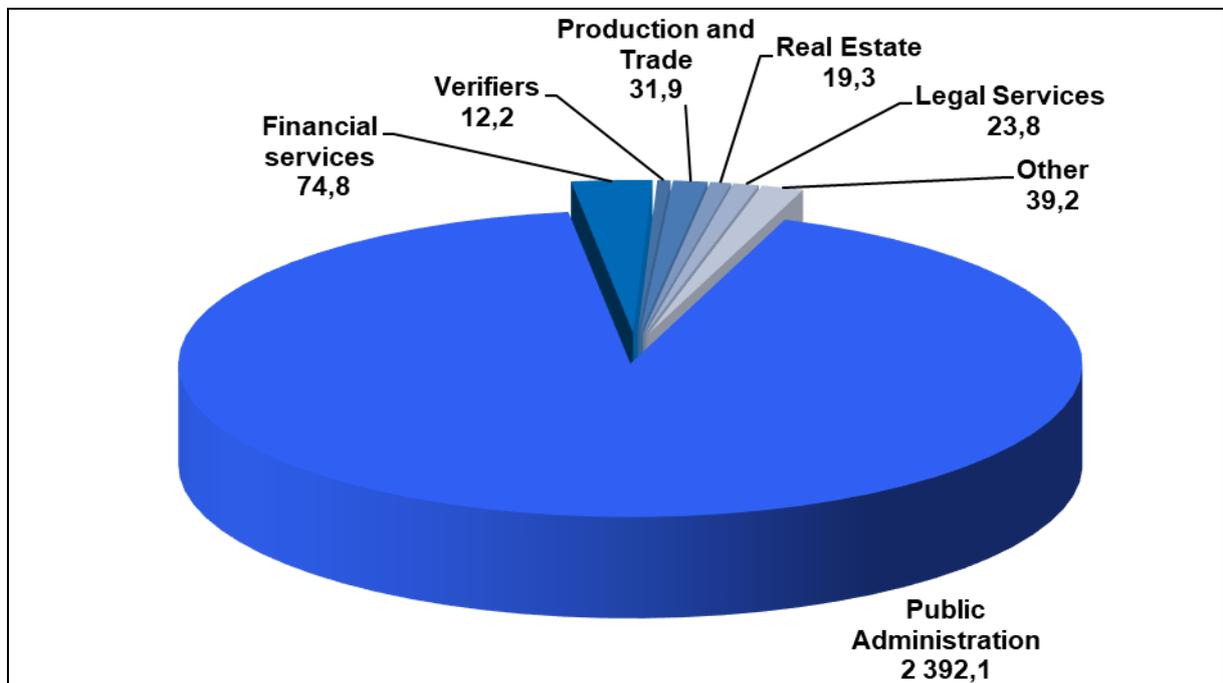
Although the number of DP users has been growing constantly, the income for data provision via this way decreased. Income of the state budget from charged customers reached in total CZK 197.9 million in 2023. More than 92 % of data were provided to the public administration. Free of charge DP is at disposal not only to municipalities and regions for performing their competency but also to governmental bodies, notaries and executors carrying out the distrains so as to insolvency administrators. The executors were provided with outputs for CZK 1 091 million in 2023. This range of service used by the executors is obviously disproportionate to the agenda they provide, but unfortunately, effective measures have not been taken yet to reduce it.

From January 1, 2016, it is possible to provide the documents from the file of documents via DP. In 2023, more than 1 million documents were downloaded via this application, in total from its launch it was more than 5.9 million documents. Digital part of the file of documents contains more than 27.7 million documents at disposal (completely available are documents from years 2014 - 2023). In case the document has not been scanned yet, it is possible to ask for it via inquiry form. Since 2016, more than 405 thousands of such requests have been solved. This process enables to deliver the document in digital form to the applicant within 2 working days.

**Development of the Number of DP Users as for the Type of Account (Fig 8)**



**The Biggest DP Users – as for the Data Value in CZK Million (Fig 9)**



### **Remote Access to the Real Estate Cadastre for Unregistered Users** <http://dpn.ČÚZK.cz/>

The application was launched in the middle of 2021 and enables acquiring the extract from the real estate cadastre, ownership overview of an individual, outputs from the collection of documents of the real estate cadastre and other electronic documents. The application does not require previous registration at ČÚZK unlike the DP to the real estate cadastre. Nevertheless, some outputs are available only after proving the identity of the applicant via NBIA.

### **Web Map Services for Cadastral Maps** <http://wms.ČÚZK.cz>

Web map services for cadastral maps enable further possibility of work with cadastral maps; the user can combine the cadastral maps layer in his computer with other datasets. This service is also free of charge.

### **Web Services for Survey Sketches**

Web services for creators and verifiers of survey sketches (WSGP) represent programme interface enabling access to cadastral data to creators of survey sketches (GP). It enables them to ask for documentation for creation of GP via internet and GP verifiers can send the verified GP directly to the particular cadastral branch office for its authorization. 1 778 customer's accounts for these free of charge services were created by December 31, 2023.

### **User Support**

The branch Helpdesk in the form of a call centre and web form ensures user support. Helpdesk solved approximately 3 200 requests from external users in 2023. Which means a mild increase by 3 % in comparison to 2022.

## **4. Register of Territorial Identification, Addresses and Real Estate (RÚIAN)**

<https://www.ruian.cz>

ČÚZK is the administrator of the Register of territorial identification, addresses and real estate, which is one of the four basic registers of the public administration. The content of basic registers defines the Act No.111/2009 Coll., on Basic registers, stating also rights and obligations connected with creation, use and operation of basic registers. RÚIAN is edited by ČÚZK in cooperation with municipalities, building offices, Czech Statistical Office (ČSÚ), cadastral offices and others. Editing takes place through the agenda information systems ISÚI (Information system of territorial identification) and ISKN.

In 2023, the development was focused on simplification and making more efficient the work dealing with complaints in municipalities and building offices. Based on the Cyber Security Act the login of ISÚI users has been revised. Further, a solution enabling updating of communal symbols (flags and emblems) via web services was prepared.

Significant change occurred in RÚIAN data provision, namely launch of a special exchange format for addresses from the whole Czech Republic both in a structured and formatted form.

The development of RÚIAN in the area of implementing other purpose-built elements (ÚÚP) is a continuous matter. In 2022, it was possible to introduce two new purpose-built elements into RÚIAN: Mining Areas (announcement date 1.4.2022) and Protected Deposit Areas (announcement date 30.11.2022). Other legislatively approved ÚÚP are estimated pedologic-ecological units (planned announcement 1.6.2024), Nature, and Landscape Protection Elements (planned announcement 1.3.2025).

ČÚZK went on in 2023 in checking of the RÚIAN data quality. The results of chosen inspections for municipalities and building authorities are published at the <https://kontrolyruian.ČÚZK.cz/>, which was enlarged in 2023 by the control alerting editors to an invalid way of using a building object. The number of errors in the registry is continuously being reduced. In 2023, the

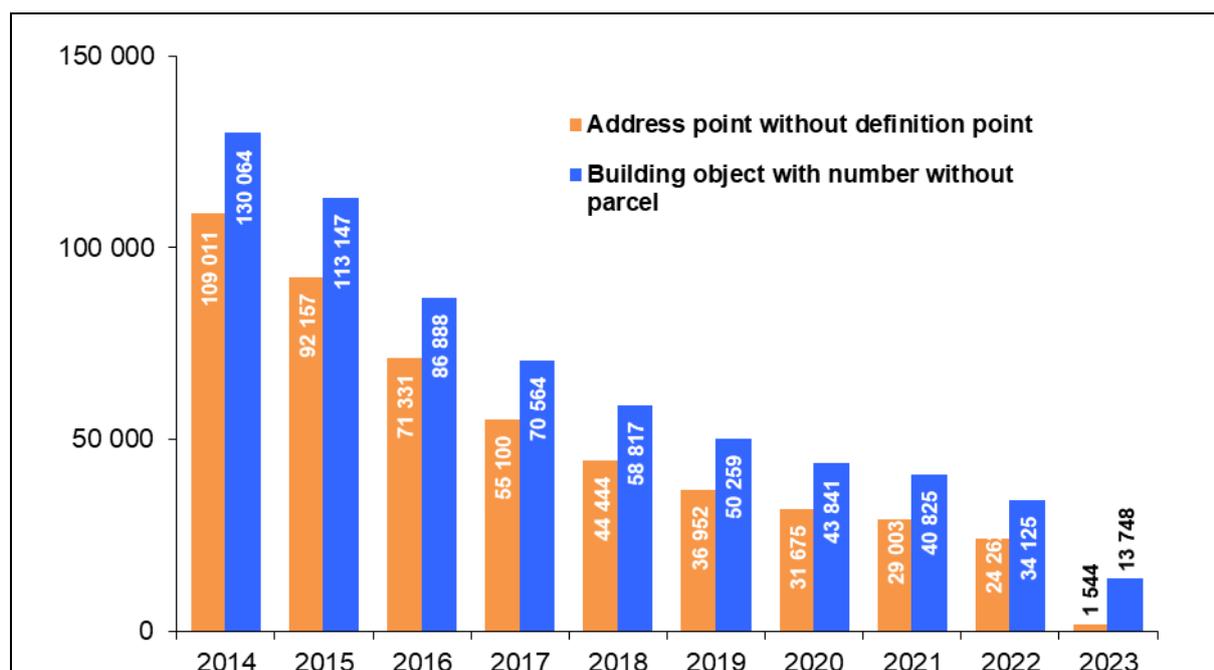
administrator of the register removed 18.5 thousand unidentifiable building objects in order to improve the quality of the data, which led to a fundamental reduction in the number of address locations without a definition point and building objects with a house number, regardless of the parcel. ČÚZK sent 5,330 complaints to editors from municipalities and building authorities, performed a mass update of zip codes for 1,033 addresses and added definition points for 3,230 thousands addresses. However, the most significant change in the database was the addition or update of selected technical-economic attributes for almost 2.5 million buildings, which was carried out based on the results of the Census of Population, Houses and Apartments from 2021.

Users of RÚIAN complaint forms published on the RÚIAN website: <https://reklamace.ČÚZK.cz/formular> also help to reduce the number of incorrectly kept data in RÚIAN. Currently, mainly financial and cadastral offices or the ČSÚ uses them. More than 10 thousands complaints were sent via this channel.

**The Content of RÚIAN at December 31, 2023 for chosen Items was following:**

Subject	Number 2022	Number 2023
Municipality	6 258	6 258
Part of municipality	15 106	15 106
Cadastral unit	13 076	13 076
Building object	4 179 237	4 179 309
Building object with the orientation/registry number	2 911 101	2 911 988
Address point	2 983 858	2 985 036
Parcel	22 537 389	22 431 125
Street	84 819	85 155
Purpose-built elements	17 145	149 830

**Errors Removal in RÚIAN (Fig 10)**



## Public Remote Access to RÚIAN Data <https://vdp.ČÚZK.cz/>

Application Public remote access to RÚIAN data (VDP) enables to view and acquire data from the basic register RÚIAN via VFR so as some data from editing agenda information systems ISÚI and ISKN.

Access to the VDP application does not need any registration. Provided VDP data are free of charge and serve solely for information.

In 2023, the registry administrator focused mainly on debugging existing functionalities, address verification, including address search using a whisperer and adding a new contextual help.

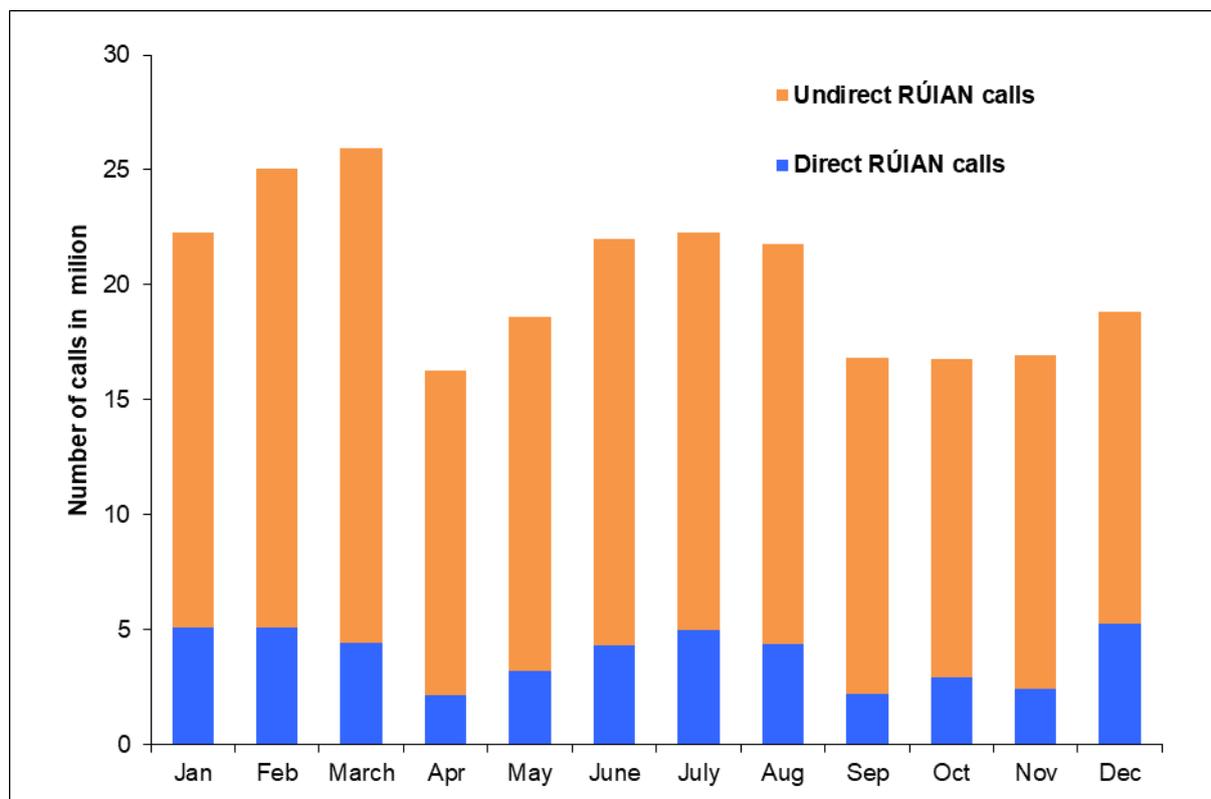
## Access to RÚIAN Data via IS of Basic Registers of Public Administration of the CR

The number of accesses to reference RÚIAN data is on average higher than 19 million accesses per month according to the statistics of the Basic registers administration (80 % are indirect calls for services of other registers). Existing valid data on addresses, territorial division, parcels or/and local names simplifies verification/updating of inputs for hundreds public administration agendas in the CR.

In 2023, the education of ISÚI editors continued through practical training, and support for users and clients is permanently provided through the ČÚZK helpdesk <https://www.cuzk.cz/ruian/RUIAN/Uzivatelaska-podpora.aspx>.

Detailed information about the RÚIAN project, including detailed methodological instructions for editors, we publish and continuously update on the project website <https://ruian.cuzk.cz>.

**Number of Accesses to RÚIAN (Fig. 11)**



## 5. Digital Map of Public Administration (DMVS)

<https://ČÚZK.cz/DMVS/O-IS-DMVS.aspx>

Digital technical maps will be important database for many professional activities in both public and private sectors. Based on the Act No 47/2020 Coll., the regions had the obligation to create digital technical maps of regions (DTM) until June 30, 2023. DTM will be important database for number of professional activities in both public administration and private sector. With regard to the postponement of the effectiveness of the Construction Act to July 1, 2024, the DTM launch date was aligned with the Construction Act. The one-year postponement allowed space to debug errors and shortcomings in the test operation.

ČÚZK is obliged to build Information system of digital map of public administration (IS DMVS), ensuring necessary central services for regional DTM and their users.

### New DTM of Regions

Regional office is going to be the administrator of the DTM. The content of the DTM is stated in the Decree No 393/2020 Coll., on Digital technical map of a region, published in 2020 by the ČÚZK.

The key is the division of DTM content into two basic data groups:

1. Objects and equipment of transport and technical infrastructure.
2. Basic spatial situation defined by the law as selected construction and technical objects and equipment and selected natural objects on the earth's surface, below or above it, which characterize the basic spatial arrangement of the territory.
- 3.

Each of these data groups has different editors and fundamentally different update principles based on the law. In general, however, the editor is always responsible for the accuracy, completeness and timeliness of the data entered. The technology for data transfer between DTM regions and DMVS will be the Unified exchange DTM format (JVF DTM).

### DMVS

In July 2023, the ČÚZK launched IS DMVS into production operation, which ensures the registration of owners, managers and operators of transport and technical infrastructure and a unified interface for updating digital technical maps. In the second half of 2023, approximately 6,000 entities were registered in IS DMVS, in the role of owner, manager or operator of transport and technical infrastructure, including information on their territorial scope. Furthermore, the preparation of the integration interface for sending update data to the DTM information systems of the regions was underway, and a map portal was launched to display regional digital technical maps. The IS DMVS also had to react to the upcoming change in legislation (Decree No. 393/2020 Coll., on digital technical maps), which tightens the conditions for providing data on transport and technical infrastructure. These will be newly provided only after prior identification and authentication of the person requesting the provision of this data. The modified functionality of download services for traffic and technical infrastructure data was implemented into IS DMVS in November 2023. In 2023, IS DMVS met all technical conditions for the start of pilot operation and now is ready to start live operation from July 1, 2024.

In 2023, the central infrastructure of ČÚZK for the operation of IS DMVS has been strengthened and preparation for updating of altimetry for creation of Orthophoto CR for needs of DMVS was finalized. At the end of 2023, the project was formally completed.

In the frame of the Coordinating Council of DMVS/DTM administrators, which is a working group of the Working Committee for Digitization of Construction Management and Spatial Planning of the Government Council for the Information Society (RVIS), regular coordination of the preparation and implementation of the IS DMVS and regional DTM project took place throughout the year. Together 10 meetings of the Coordinating Council were organized.

DMVS project is co-financed by the Integrated Regional Operational Program (IROP), Call No. 94 for Digitization of Construction Management.

## 6. Land Surveying Activities in the Public Interest

Main task of the state land surveying service is administration of national geodetic control and creating basic standardized geographic datasets and map products particularly for support of activities of the state and local administration of the Czech Republic. Fulfilling this task in the ČÚZK branch is in responsibility of the Land Survey Office (ZÚ).

### 6.1. Geodetic Control

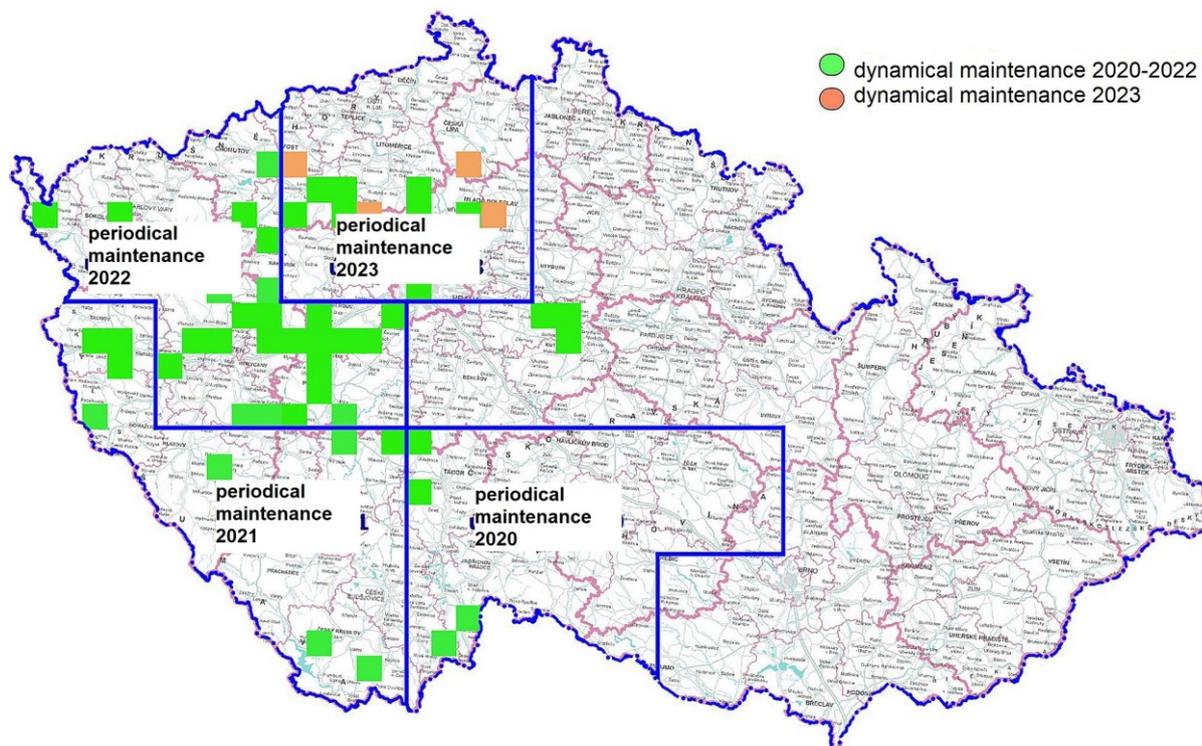
Geodetic control of the Czech Republic include fundamental geodetic control points (ZBP) and the network of permanent stations GNSS CR (CZEPOS).

By the end of 2023, ZÚ registered following numbers of geodetic control points in the database:

69 154 centres of trigonometric (ZBPB) and densification points,  
29 894 associated points,  
1 314 levelling lines of the Czech state levelling network (ČSNS) being in total 24 725 km long,  
125 257 levelling points (82 437 out of them are ČSNS points), and  
462 gravity points.

In the area of ZBP administration ZÚ focused in last years, particularly, on so-called dynamic maintenance based on defects reporting on single ZBP points sent to ZÚ by users. In 2023, in total 2061 cooperating users were registered. Dynamical maintenance relates to 60 points in locations chosen based on the density of reports. In 2023, the maintenance of 513 significant geodetic control points went on.

#### Dynamical Maintenance of ZBP Points in Previous Years



As part of ensuring the management and development of the fundamental altimetry point field (ZVBP), the levelling polygon of the points of the Basic Geodynamic Network (ZGS): 5 Praha -

24 Plzeň – 18 Medvědí skála – 28 Teplice – was targeted using the very precise levelling method (VPN). The following ZGS points were targeted by GNSS, VPN and gravimetric methods: 18 Medvědí skála, 28 Teplice and 5 Praha.

Geodetic data on the points of the ground control points - position, altimetry and gravity, data on densification points and points of the detailed altimetry control are in the Database of Point Fields (DBP). The data can be searched on the ČÚZK Geoportal using the Geoviewer application, or via the WMS Point Field viewing service or the WFS Point Field download service.

In 2023, the stage of development of the interface between DBP and RÚIAN was completed, which is intended for registering protected geodetic point marks, or protective zones of the geodetic point mark in RÚIAN. As of July 1, 2023, all the protection zones of geodetic control points, as well as the protection of the marks of these points in the form of purpose-built territorial elements, were published in RÚIAN.

### Czech Positioning Network GNSS – CZEPOS <http://czepos.cuzk.cz/>

There were no changes in the number and position of the stations in 2023. The network solution uses data from together 55 stations, 28 of them located on the territory of the Czech Republic (23 located on roofs of cadastral offices and 5 external) and 27 in the cross-border areas of neighbouring countries. After modernization of CZEPOS receivers, completed in 2019, the corrections are provided for all currently available GNSS frequencies, namely American NAVSTAR GPS, Russian GLONASS, European Galileo, Chinese BeiDou, and for regional Japanese QZSS.

In the frame of international cooperation the data exchange between border GNSS CZEPOS stations and state GNSS networks of surrounding countries (Austrian APOS, Polish ASG-EUPOS, German SAPOS® and Slovak SKPOS®) has been carried.

There were 2 625 registered CZEPOS network users by December 31, 2023, it means grow of 254 users in comparison to the end of 2022.

### Overview CZEPOS Map



## 6.2. Maintenance and Documentation of the State Border

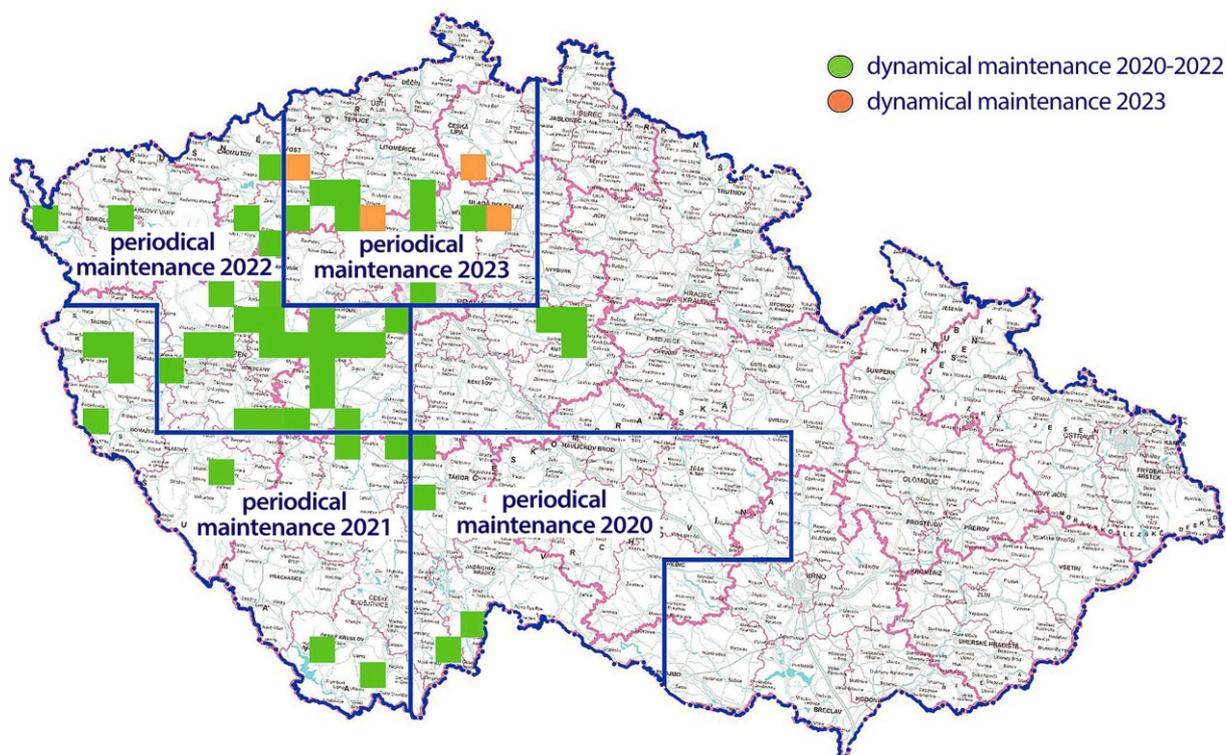
In 2023, state border maintenance was carried out with a total extent of 113 km and 1,745 border signs, namely on the state borders with Germany (Bavaria and Saxony) and on the state borders with Austria. Further, updating of coordinates of state border monuments and unmarked break points of state border in uniform reference system ETRS89 for the EuroGeographics project SBE (State Boundaries of Europe) and other cross-border projects went on.

## 6.3. Fundamental Base of Geographic Data (ZABAGED®)

ZABAGED® is a digital geographic model of the territory of the Czech Republic. In 2023, ZABAGED® contained 139 types of geographical features (included 3 types of ZABAGED® elevation part) represented by vector graphic and descriptive part with more than 400 types of descriptive and qualitative attributes. Selected types of features (hydrography, communications) contain in its descriptive part the identifiers (integration keys) for the connection to the databases of their expert administrators.

Permanent attention is given to updating in the area of ZABAGED® planimetry administration including spatial refinement and content enlargement based on users' requirements. Regular updating of ZABAGED® at the whole territory of the state using Orthophoto ČR and aerial photos went on together with investigation of selected information at the public administration bodies and field investigation. The updating cycle of ZABAGED® is maximum six years; in 2023, the sixth cycle was completed, based on the principle of so-called areal update. It means that the territory with quicker dynamics of change is updated at shorter interval than the standard one. In 2023, together 1 008 map sheets of the Base topographic map CR in the scale of 1 : 10 000 (ZTM 10) were updated in this way.

### State of Areal Updating of ZABAGED® by the End of 2022



Similarly as in previous years, the continuous updating went on. The significant types of features have been updated in the area of the whole Czech Republic at least once a year, some of them even four times a year. Their cooperating administrators collect information about changes

The year 2023 closed a period of several years of targeted positional refinement of ZABAGED® data. A project of systematic refinement of buildings and other construction objects was concluded in the scope of the entire territory of the state, even in the territory where the digitization of the cadastral drawing has not been completed yet.

In 2023, development activities continued, including activities aimed at the planned creation of the Basic 3D model of the territory of the Czech Republic as part of the Concept for the introduction of the BIM method in the Czech Republic. Testing was underway and experiences from other states and state mapping institutions were sought as well as in the form of personal transfer of experience, primarily with representatives of mapping agencies from Bavaria - Landesamt für Digitalisierung, Breitband und Vermessung (LDBV) and Estonia - Maa-amet.



## 6.4. Altimetry

ZABAGED® includes also altimetry data. Currently, altimetry is being published, the primary source of which is data from airborne laser scanning (LLS), which took place between 2009 and 2013, and these data are updated locally according to any changes in the area. The altimetry is available in several forms:

- Digital terrain model of the 4<sup>th</sup> generation (DMR 4G) – regular square network of elevation points (GRID) 5m x 5m,
- Digital terrain model of the 5<sup>th</sup> generation (DMR 5G) – irregular triangular network (TIN) of elevation nodal points, and
- Digital surface model of the 1<sup>st</sup> generation (DMP 1G) – earth surface included objects above it (buildings, vegetation etc.).
- Contour lines with the basic interval 1 m originated from the DMR 5G, vector representation of the digital relief model, containing attributes of highlighted contour lines with the 5 m interval.

Altimetry data are updated from data obtained by LLS or special aerial measurement imaging (LMS), within the framework of cooperation with the Ministry of Defence of the Czech Republic. The L410FG-Turbolet military aircraft is alternately installed with ZÚ-owned sensors, either Leica ALS80 laser scanner or Leica ADS100 digital three-line photogrammetric camera.

## 6.5. State Map Series

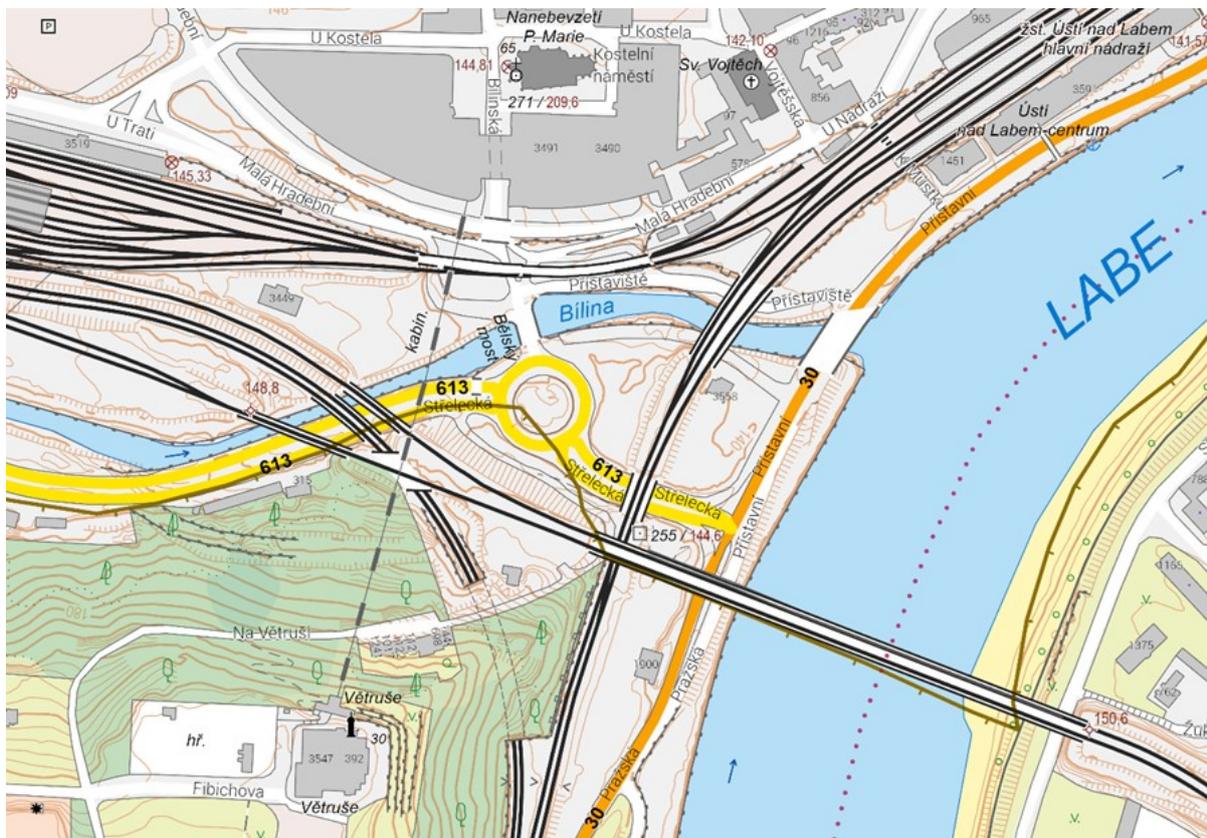
In 2023, several significant changes occurred in the area of state map series (SMD). The first change results from the amendment to Act No. 200/1994 Coll., on Land surveying, by which the

SMD produced by the Land Surveying Office was included among open data. Thus, from the second half of 2023, users can use SMD without restrictions according to their needs within the principles of the CC BY 4.0 license, i.e. only indicating the origin of the data.

In 2023, the significant innovation was the issuance of a new government regulation No. 159/2023 Coll., on the Establishment of geodetic reference systems binding on the entire territory of the Czech Republic, databases of geodetic and geographic data and state map series created for the entire territory of the Czech Republic and the principles of their use. Among other things, this government regulation introduces new basic state map series produced by Land Survey Office, which replace the 1: 5 000 State Map and Basic Maps of the Czech Republic. Specifically, these new basic topographic maps of the Czech Republic (ZTM) are created in scales 1: 5 000, 1: 10 000, 1: 25 000, 1: 50 000, 1: 100 000 and 1: 250 000 and displayed in the coordinate system of the Unified Trigonometric Cadastral Network (ZTM/S-JTSK). The second group are basic topographic maps CR in scales 1: 10 000, 1: 25 000, 1: 50 000, 1: 100 000 and 1: 250 000 shown in the European Terrestrial Reference System 1989 in the universal transverse Mercator map of the meridian zones (ZTM/ETRS89).

ZTM ČR are topographic maps processed on ZABAGED®, Geonames, geodetic control database and DMR 5G data. Compared to the previous Basic maps of the Czech Republic (ZM ČR), they have richer content and key. The creation of the Basic Topographic Map of the Czech Republic 1: 5 000 (ZTM 5) resulted in a detailed topographic map that can already be considered a map between large and medium scale. The creation of this map was made possible by positional refinement and content enrichment of ZABAGED®, resulting in a topographical map based on real data in the field.

### Sample of the Raster Map ZTM 5/S-JTSK



Another major innovation is the very completion and publication of ZTM CR. The new form of SMD began to be born based on the “Concept for the development of land surveying in the years 2015 to 2020” already in 2016 and 2017, when the project plan for the transformation of the state map series intended for public use was created. This was gradually followed by the creation of

new maps. The pilot production of ZTM 5 has started at Pardubice workplace in 2018, and since 2019, regular production has been underway. In 2020, the creation of ZTM 10, ZTM 25, ZTM 50 and ZTM 100 began, and a year later also ZTM 250. These maps are created in the Department of Cartography and Polygraphy at the detached workplace of the ZÚ in Sedlčany. The completion of the ZTM5/S-JTSK maps was carried out in late 2022/2023. For scales 1 : 10 000 to 1 : 250 000, the ZTM/ETRS89 variant was also derived in 2023, and the creation also began ZTM 5/ETRS89, but due to more work, completion is not planned until 2025.

Both map variants (S-JTSK and ETRS89) are published in different forms from July 1, 2023, as either PDF print files with the complete content of the map sheet, including coordinate networks, frame and out-of-frame data, or as raster files that they are also used by the web map services of the ČÚZK Geoportal. ZTM/S-JTSK ČR are further published as vector data of cartographic models in DGN and SHP format.

Another cartographic product, Data250, had its premiere in 2023. It corresponds to the accuracy and degree of generalization of the scale 1 : 250 000. Data250 replaced the original database Data200. Even the geographical model of the territory of the Czech Republic Data50 experienced certain changes related to the enrichment of the content and the improvement of the positional accuracy of the data.

### Number of Map Sheets ZTM ČR

Title	Number of map sheets
ZTM 5/S-JTSK	16 301
ZTM 10/S-JTSK	4 194
ZTM 25/S-JTSK	717
ZTM 50/S-JTSK	202
ZTM 100/S-JTSK	60
ZTM 250/S-JTSK	12
ZTM 10/ETRS89	4 695
ZTM 25/ ETRS89	803
ZTM 50/ ETRS89	222
ZTM 100/ ETRS89	66
ZTM 250/ ETRS89	12

## 6.6. Orthophotographic Representation of the Czech Republic

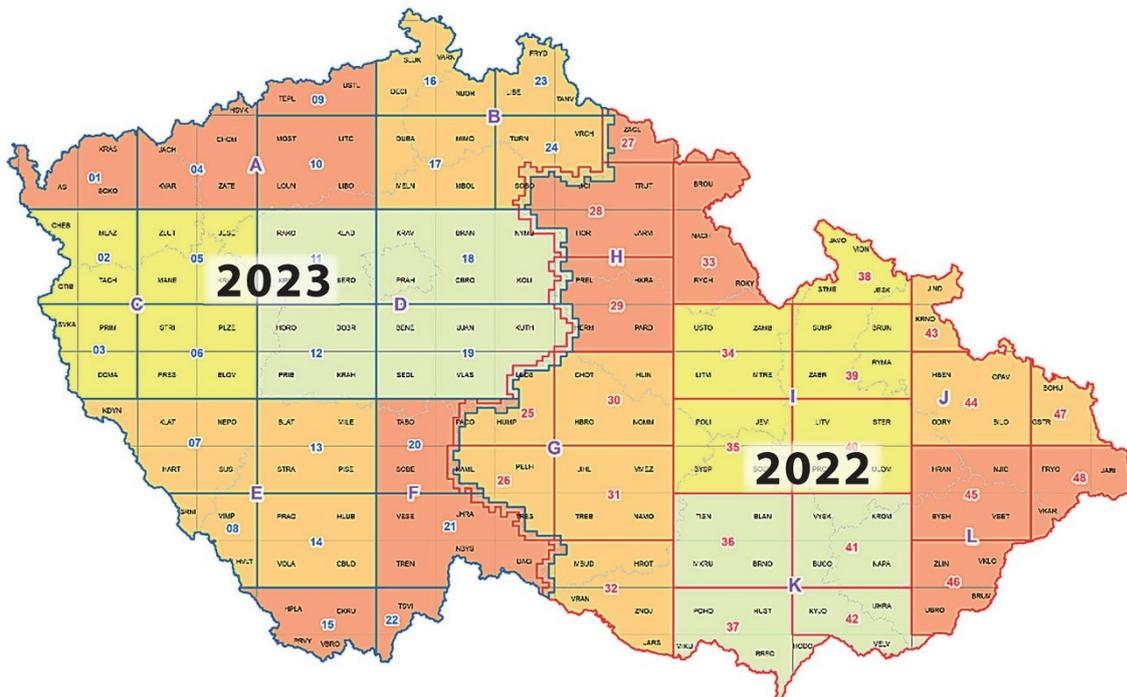
Orthophoto CR is created by the orthogonalization of aerial photographs. The private subjects based on the frame agreement are carrying out aerial photography and orthophoto processing is ensured by the ZÚ in cooperation with the Military Geographic and Hydro-meteorological Office (VGHMÚř).

In 2023, the western half of the CR was completed, completing so already sixth edition of aerial photographs and Orthophoto CR in two-year period. Photography was launched on 4<sup>th</sup> May; last pictures have been taken on 12<sup>th</sup> August in 2023. Together 42 673 pictures were handed over by the provider.

Airborne photography taken from the western part of the republic served as a basis for updating of the Orthophoto ČR on 8 589 map sheets of ZTM 5. Orthophoto ČR is provided in datasets, further via viewing services and based on individual orders in the printed form. Data are in raster format JPEG and are georeferenced in the coordinate system S-JTSK or WGS 84. The accuracy of the Orthophoto ČR with pixel size 12.5 cm has been verified by many control

measurements and it reaches on well-identified points the positional accuracy of 0.25 m on the terrain level.

### Aerial Survey Photography of the Czech Republic in 2022 – 2023



Beside the up-to-date orthophoto also file data of the archival black-and-white orthophotos from years 1998 – 2001 and colour orthophotos from 2003 are provided. Archival orthophotos are published via WMS viewing service as well.

Since 2011 ZÚ cooperates with VGHMÚř in the area of scanning old aerial photographs besides provision of updated aerial photos and Orthophoto ČR. Scanned photographs together with newer photos taken already by the digital cameras can be viewed in the application Archives <https://ags.ČÚZK.cz/archiv/> and can be distributed as the raster datasets. By the end of 2023 aerial photographs from years 1936-1938, 1940, 1942, 1946-1969, 1971, 1974, 1975 and 1992-2023 were available to users.

### Development of the Territory in the Area of Highway Construction (2014-2022)



## 6.7. Standardization of Geographical Names

The results of standardization activities in the area of geographical names are kept in the database of geographical names of the Czech Republic Geonames and in the World Names database with standardized Czech names of states and further names outside the Czech Republic.

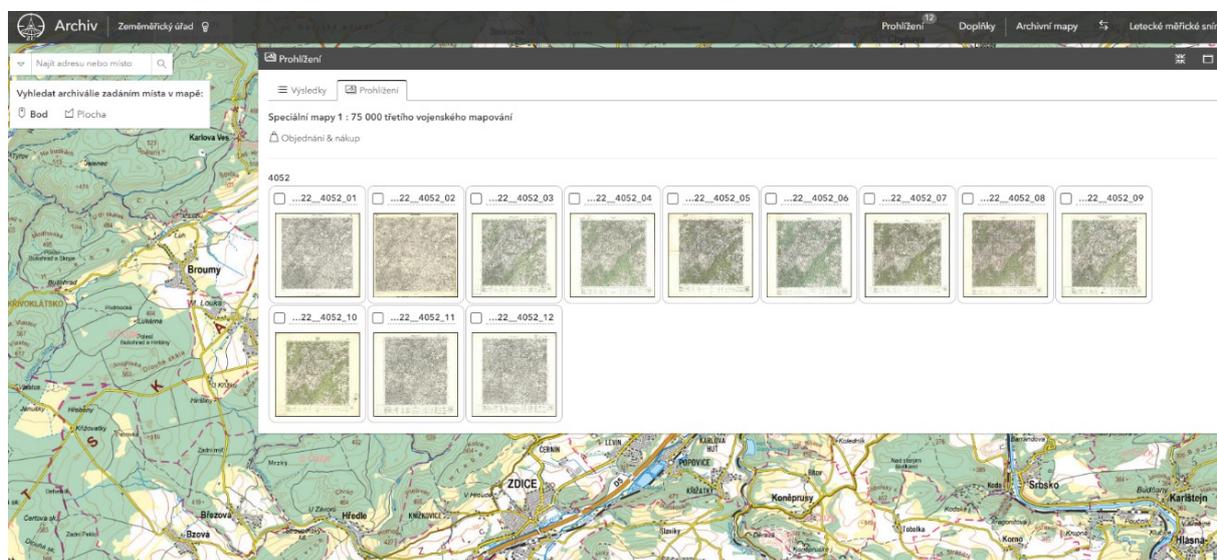
In 2023, updating of the Geonames database was going on, harmonized with updating of ZABAGED® together with digitization of cadastral maps. After completing the data integration in both mentioned applications, geographical names have been connected directly to the objects, and set into the database only once without regard to the number of their occurrence in the map. In accordance with ZABAGED® updating, geographic names were updated on 1 118 map sheets of ZTM 10 and on 51 map sheets of ZTM 50 in 2023. In cooperation with cadastral branch offices, the updating of geographical names was carried out in 612 cadastral units.

## 6.8. Archival maps

<http://archivnimapy.ČÚZK.cz>

Central archives of land surveying and cadastre (ÚAZK) is a public specialized archive, the main activity of which is taking over and registration of branch archival documents, their proceeding and systematic digitization which enables making them public in the largest range both to the professional and non-professional public. Metadata on the contents of all archive funds and collections are stored in a unified database during archival processing, and archives are systematically scanned for remote access purposes. In 2023, in total 31 411 raster maps were scanned together with 3 730 copies of non-map material. Selected parts of the archival database, even scans in some cases, are published in the application Vademecum <https://uazk.cuzk.cz/vademecum/>.

### Application Archive – Environment for Viewing of Archival Maps



## 7. Provision of Data, Services and OpenData

ČÚZK provides data, which are collected based on legal obligations in various formats and coordinate systems. It also provides data according to open format standards for open data and through viewing and downloading services.

All published datasets are updated continuously. Updates of data and services for publication are performed continuously for data sets of the real estate cadastre and RÚIAN, quarterly for ZABAGED® data and medium-scale map works, and annually for other data sets. The data is

provided based on a license, in most cases it is the standardized license CC-BY 4.0. The license associated with a given data file is always part of the metadata.

### Interface for Downloading Data via ATOM



Stahovací služby Atom

Nápověda

## Stahovací služby Atom

INSPIRE

Katastrální mapa

RÚIAN

Ostatní

Vyhledávání

Stahovací služba Atom pro data Zákř: Všechny CRS Hledat datovou sadu... Vyhledat  Prostorové omezení



Dvěma katastrální mapy a mapy potencionálního katastru se zobrazení sč měřítko 1:25 000. Podrobnější informace k používání mapy a aktualizaci jejího obsahu najdete [v nápovědě \(1/2\)](#). Klikat na vlnitý proužek vzhledem k poměru zobrazení a velikosti vyvolání mapy pro vyvolání mapy pomocí vlnitý proužek.

Výsledky

zavřít

request: 29ms ; processing: 0ms ; render: 5ms

Aktualizace: 4.3.2024 14:05:55

Počet sad: 10

#### S-JTSK

Základní topografická mapa ČR 1 : 5 000 - DGN, S-JTSK - mapový list: Svitavy 0507-A-03-1		26.7.2022 12:17:55	dgn	1814 kB
Základní topografická mapa ČR 1 : 5 000 - DGN, S-JTSK - mapový list: Svitavy 0507-A-03-2		26.7.2022 12:17:55	dgn	1280 kB
Základní topografická mapa ČR 1 : 5 000 - DGN, S-JTSK - mapový list: Svitavy 0507-A-03-3		26.7.2022 12:17:55	dgn	1628 kB
Základní topografická mapa ČR 1 : 5 000 - DGN, S-JTSK - mapový list: Svitavy 0507-A-03-4		26.7.2022 12:17:55	dgn	5701 kB
Základní topografická mapa ČR 1 : 5 000 - DGN, S-JTSK - mapový list: Svitavy 0507-A-04-1		26.7.2022 12:17:54	dgn	2073 kB
Základní topografická mapa ČR 1 : 5 000 - DGN, S-JTSK - mapový list: Svitavy 0507-A-04-3		26.7.2022 12:17:53	dgn	1166 kB
Základní topografická mapa ČR 1 : 5 000 - DGN, S-JTSK - mapový list: Svitavy 0507-A-08-1		26.7.2022 12:17:49	dgn	1434 kB
Základní topografická mapa ČR 1 : 5 000 - DGN, S-JTSK - mapový list: Svitavy 0507-A-08-2		26.7.2022 12:17:49	dgn	3778 kB
Základní topografická mapa ČR 1 : 5 000 - DGN, S-JTSK - mapový list: Svitavy 0507-A-09-1		26.7.2022 12:17:48	dgn	944 kB
Základní topografická mapa ČR 1 : 5 000 - DGN, S-JTSK - mapový list: Svitavy 0507-A-09-3		26.7.2022 12:17:48	dgn	703 kB

All data files, services, applications and map compositions provided by ČÚZK are equipped with metadata, information about data or services, according to which it is possible to search, compare and subsequently decide on the appropriate use of data or services. Metadata are available on the ČÚZK Geoportal, from where they are harvested to the National Geoportal INSPIRE and further provided to the European INSPIRE Geoportal.

If the data is provided as open data, i.e. in a machine-readable format without restrictions on use (except information about the source), the metadata is also published in the National Open Data Catalogue in accordance with the Act on Free Access to Information.

## 7.1. INSPIRE

ČÚZK branch is a key provider of basic datasets for the Infrastructure for spatial information in the EU (INSPIRE- see Directive 2007/2 / EC). According to the Act No. 123/1998 Coll., and § 4 of the Act No. 200/1994 Coll., ČÚZK provides basic data sets, which are harmonized in accordance with the INSPIRE data specification in GML format. Above these datasets network services have been created, which enable searching, viewing, downloading or transformation of data and their provision via Geoportal ČÚZK. Data are provided in the coordinate systems S-JTSK and ETRS89.

Based on the approved strategy of INSPIRE implementation is ČÚZK gestor of one third of INSPIRE national data sets. The theme Parcels (CP) is published from ISKN, the themes Buildings (BU), Addresses (AD) and Administrative units (AU) are published from RÚIAN. From ZABAGED® we publish Transport network (TN), Hydrology (HY) and Land use (LU) themes, from Geonames it is the Geographical names (GN), from DMR 4G and DMR 5G it is the theme Elevation (EL) for GRID and TIN data models, and Orthoimagery (OI) is published from the Orthophoto CR database. The Geographical grid systems (GGS) are being prepared from the data of geodetic control. All datasets are continuously updated. Based on the approved INSPIRE implementation strategy ČÚZK is the gestor of approximately one third of National INSPIRE datasets.

INSPIRE services are implemented to the same extent as national services, i.e. WMS, WFS, ATOM, WCS.

Data download services are implemented in the form of WFS and WCS services, which allow direct access to data, and from ATOM services, which are used to download pre-prepared data available as open data. In 2023, the compatibility of INSPIRE download services was supported to meet validation tests on the European portal, to increase the quality of services, which is regularly monitored by the European Commission.

## 7.2. Open Data

Data sets are also provided in accordance with the requirements of the Act No 106/1999 Coll., on Free access to information, in machine-readable format without significant restrictions on use, i.e. as open data. Based on the amendment to the Land Surveying Act, from July 1, 2023 the range of open data provided was expanded to include products of the Land Survey Office. In particular it is Basic topographic maps, Orthophoto ČR, ZABAGED data and INSPIRE datasets derived from them and altimetry data. Thus, 66 series of datasets and more than 427 thousand data files are provided. Metadata exists for each file.

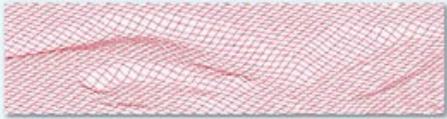
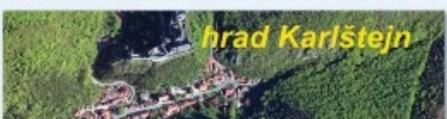
ČÚZK open data is provided in accordance with open formal standards. The local open data catalog, which provides metadata about open data, is harvested daily to the National Open Data Catalogue (NKOD).

The data provided for the INSPIRE are harmonized according to the requirements of the European Commission and are provided to the same extent as in the entire European Union.

In 2023, we have also prepared an amendment to our local ČÚZK catalogue (LKOD), which fulfills the NKOD. The main modification consists in replacing approx. 137 thousands data sets with approx. 30 data series linked to the services (ATOM, WFS and WCS) providing the

datasets. With the amendment, we responded to the increase in the number and volume of provided open data of the ČÚZK from July 1, 2023.

**Otevřená data**

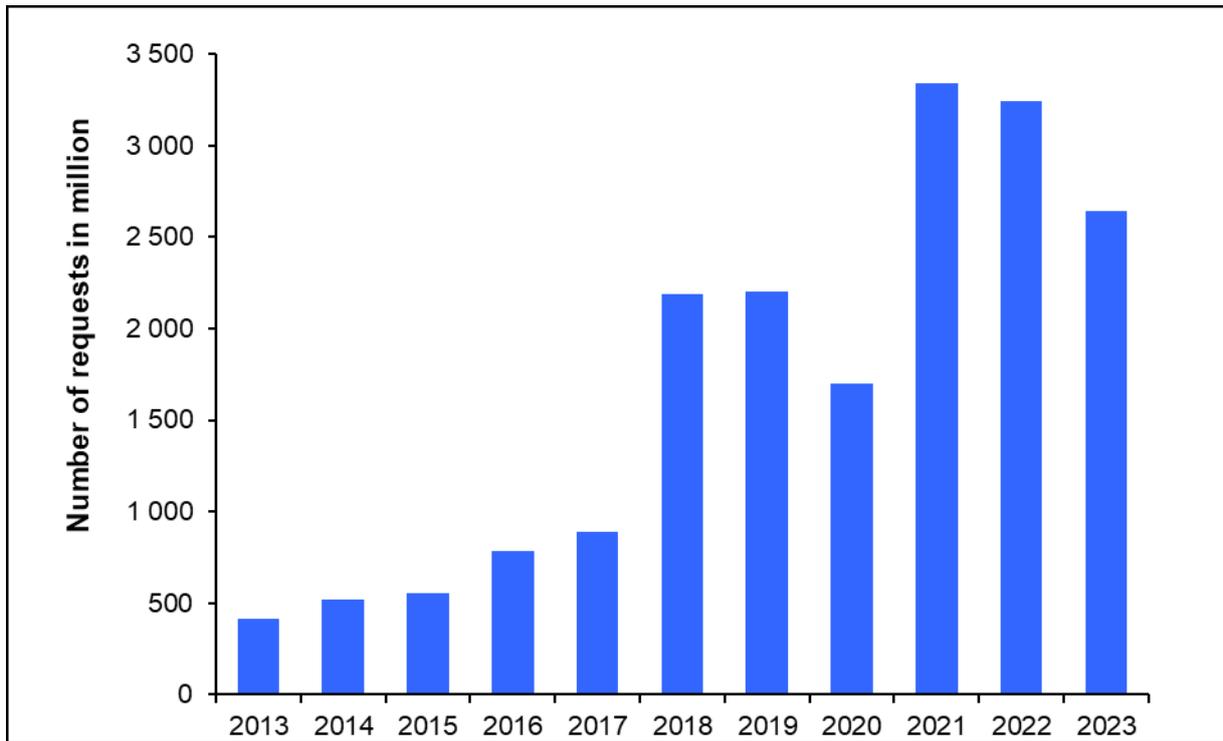
<p><b>Katastr nemovitostí</b></p>  <p>Katastr nemovitostí České republiky</p>	<p><b>RÚIAN</b></p>  <p>Registr územní identifikace, adres a nemovitostí</p>
<p><b>ZABAGED® – polohopis</b></p>  <p>Základní báze geografických dat České republiky</p>	<p><b>ZABAGED® – výškopis</b></p>  <p>Výškopis České republiky</p>
<p><b>Ortofoto</b></p>  <p>Ortofotografické zobrazení České republiky</p>	<p><b>Mapy</b></p>  <p>Státní mapové dílo</p>
<p><b>Bodová pole</b></p>  <p>Databáze bodových polí České republiky</p>	<p><b>Geonames</b></p>  <p>Databáze geografických jmen České republiky</p>
<b>Ostatní datové sady</b>	
<p><b>Letecké měřické snímky</b></p>  <p>Archivní i aktuální letecké měřické snímky</p>	<p><b>Archiválie</b></p>  <p>Archiválie Ústředního archivu zeměměřictví a katastru</p>

### 7.3. ČÚZK Geoportal

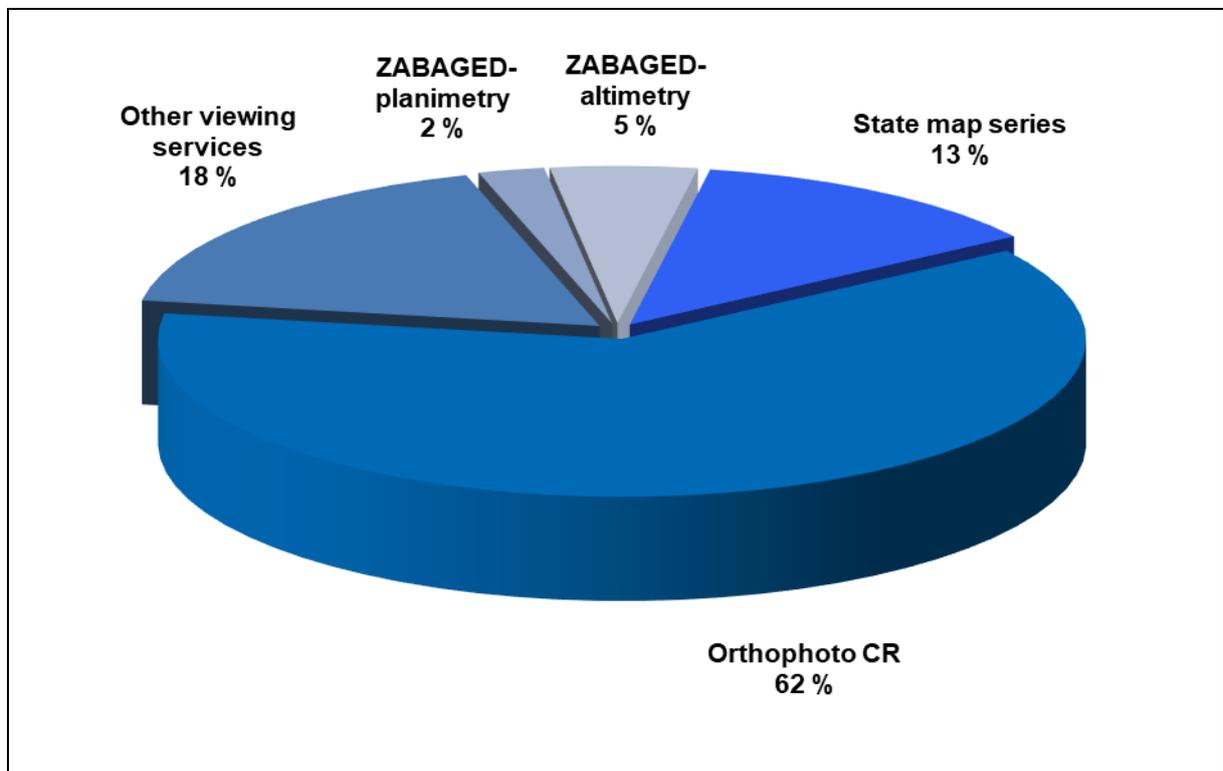
<https://geoportal.ČÚZK.cz/>

The ČÚZK Geoportal enables centralized access to map products and services of the branch. It is possible to find information (metadata) on spatial data, services and applications in responsibility of the branch in one place, it enables viewing and ordering electronic or printed data and services. Network services are used also in geographic information systems, map portals and web applications of other providers. The results of the obligations resulting from the INSPIRE Directive are provided via ČÚZK Geoportal further.

Increase in Number of Accesses to all Network Services from 2013 to 2023 (Fig. 11)



Access to Viewing Services of ČÚZK Geoportal (Fig 12)



Via the online store (Eshop application), which is part of the ČÚZK Geoportal, it is possible to order data that are not distributed in the form of open data, i.e. mainly aerial survey images and archives. However, the Eshop is also intended for ordering and distributing open data in larger volumes, when uploading data to a data carrier is more appropriate than online transmission. Non-standard services over open data can also be ordered through the online store - delivery in a different format or obtaining analytical information. The more extensive availability of data from the second half of 2023 had a visible impact on the use of network services, when the year-on-year decrease in the number of queries for web map services was 15 %. Thus, by opening up data, there has been some saving as the trend of the constant need to strengthen the infrastructure to provide network services has been stopped.

In 2023, approx. 10 thousand slices of open data were provided through the Geoviewer and 41 TB of open data in total, 2.5 million data files either by direct download or on user data carrier.

## 8. Economics and Human Resources

### 8.1. Employees and Education

By December 31, 2023 together 4 833 persons were employed in the ČÚZK branch, 4 476 out of them were civil servants and 357 ordinary employees. Neither educational and age structure nor the share of women in the branch has significantly changed in the long-term perspective. Traditionally prevailing share in educational structure have employees, who reached the secondary school education (55.0 %), second place belongs to the employees with University degree (41.1 %). The most numerous age group was created by the employees aged 51-60 (36.1 % from all) and further by employees aged 41-50 (33.8 % from all). The ratio of these two groups has reversed compared to 2022, and the age structure shows gradual aging of the workforce.

**Physical State of Employees by 31.12. 2023**

ČÚZK Branch	Age Structure						Women	Graduated
	to 30	31-40	41-50	51-60	61 and more	In total		
Civil Servants	198	645	1532	1602	499	4476	76,5 %	43,1 %
Employees	12	25	103	141	76	357	70,9 %	15,7 %
<b>Total</b>	<b>210</b>	<b>670</b>	<b>1635</b>	<b>1743</b>	<b>575</b>	<b>4833</b>	<b>76,1 %</b>	<b>41,1 %</b>

One of key tasks in the management of human resources was carrying out tenders for civil service vacancies. In 2023, in total 722 tenders were prepared in the ČÚZK for vacant service positions (at some positions repeatedly); based on their results 364 successful candidates for civil service were chosen either for civil service position or appointed to the civil service position head; 40 tenders were due to be completed in the beginning of 2024. Together 50.4 % of all tenders for service position carried out in 2023 were successful and the applicant was chosen. Some civil servant positions were successfully occupied based on ordinary employee transfer without tender in accordance with the Act on Civil service, and the final successful number is then 53.0 %. The number of carried out tenders was significantly higher than in 2022 (by 50) and the success rate decreased by 6.0 %. In 2023, the obligation to so-called re-competition of heads of all offices in the branch was reflected in the total number of implemented tenders for the filling of civil servant positions. Of the 18 carried out tenders for directors of cadastral offices, the Land

Surveying Office and land surveying and cadastral inspectorates, 16 directors defended their positions. In two cases, new persons were appointed as heads of cadastral offices, as the existing directors (at the Cadastral Office for the Moravian-Silesian Region and the Cadastral Office for the Karlovy Vary Region) retired.

Civil service positions can be temporarily occupied by the ordinary employees according to the § 178 of the Act on Civil service. Together 58 such tenders were carried out in 2023, 75.9 % of which were successful.

During 2023 in total 333 civil servants and 109 ordinary employees terminated their employment. The rate of fluctuation was 9.1 % in 2023 that is 0.5 % higher than in 2022 and during previous years, it has an increasing tendency.

#### Fluctuation Rate in Previous Years

Year	Terminated Employment	Rate of Fluctuation
2023	442	9.1 %
2022	422	8.6 %
2021	398	8.0 %
2020	299	6.0 %
2019	417	8.3 %
2018	374	7.4 %

By December 31, 2023 the number of women in managerial positions was 351 (57.5 %) in the ČÚZK branch from the total number of 610.

#### Share of Women in Leading Positions by 31.12.2023

Management Type	Civil Servants			Employees		
	Number of Heads	Women out of Them	Women Share	Number of Heads	Women out of Them	Women Share
Head of the Staff Office	23	5	21.7 %	0	0	-
Section Director	13	8	61.5 %	0	0	-
Department Director	134	62	46.3 %	2	1	50.0 %
Division Director	421	264	62.7 %	17	11	64.7 %
<b>Total</b>	<b>591</b>	<b>339</b>	<b>57.4 %</b>	<b>19</b>	<b>12</b>	<b>63.2 %</b>

In 2023, a regular service evaluation of civil servants was not carried out based on the internal regulations.

Another main priority in the area of the human resources was education of employees. It was carried out in 2023 based on the approved Plan of education in the ČÚZK in accordance with stated individual goals for personal development of civil servants. Personnel departments of individual administrative offices prepared many educational activities for their employees focused

on the problems of real estate cadastre, human resources management, legislation and law, economics and accounting, IT and other areas of professional education. Moreover, the ČÚZK personnel department prepared or participated in preparation of 23 specialized team workshops for chosen workers from all branch offices as well as for the internal lecturers. Based on the good practices from previous years of pandemic situation caused by COVID-19 most workshops were carried out in a hybrid environment, both in person and on-line.

In the period from January 1 to December 31, 2023, in total 135 tests from general part of civil service tests were carried out in the ČÚZK. In the same period, 149 tests were carried out from the professional part of civil service tests namely branch No 55, land surveying and real estate cadastre that falls within the scope of ČÚZK. Of the total number, 12 cases involved employees or civil servants who did not have a prescribed requirement for an official examination in the given service branch. Two applicants were not successful in the general part of the test and one in the professional part. Two applicants have repeated the test in 2023. The number of carried out general tests was 32 less in general and 33 in professional part in comparison to 2022. Further 23 branch employees passed the professional tests from other branches of civil service in other offices, namely service branches No 3, 19, 22, 27, 28, 63 and most often 37.

## **8.2. Granting Official Authorization for Verification of Results of Land Surveying Activities**

Within granting official authorization for certification of the results of surveying activities professional competence exams for authorization were held in seven terms in 2023 in accordance with section 14 of the Act on Surveying and mapping (February, May, October and November).

The total number of completed applications was 132, the official authorization was newly granted to 84 applicants and 20 applicants enhanced their existing authorization. The other cases were solved as follows: 8 applicants did not pass the exam repeatedly and their applications were refused and 19 applicants took the application back. Eight participants did not succeed. One application was refused because of inadequate education.

In 2023, no official authorization was deleted from the registry.

The Czech Chamber of Surveyors was established on July 1, 2023. ČÚZK handed over to the Czech Chamber of Surveyors the list of officially authorized land surveying engineers (ÚOZI) valid as of June 30, 2023. It also handed over other documents related to ÚOZI exams – list of exam questions, list of members of examination commissions, etc. Starting on July 1, 2023, ČÚZK stopped organize examinations of professional competence to grant official authorization for verifying the results of surveying activities and granting official authorization.

## **8.3. Economics**

The approved state budget for chapter 346 of the Czech Office for Surveying, Mapping and Cadastre for the year 2023 set revenues in the amount of CZK 1,550.7 million and expenditures in the amount of CZK 3,905.6 million. The tax revenue budget included administrative fees for CZK 1,250.0 million and its fulfilment reached the volume of CZK 1,076.8 million, i.e. 86.2 %. Compared to 2022, there was a decrease in the collection of administrative fees by CZK 76 million, caused by the reduced number of initiated deposit procedures. Non-tax revenues in 2023 were set at CZK 280 million, and due to the reduced public interest in providing data from remote access, they were fulfilled in the amount of CZK 261.2 million, i.e. at 93.3 %. Income from the budget of the European Union was adjusted by budgetary measures to the amount of CZK 90.1 million for three projects co-financed by the EU. These were following: the project of Information System of Digital Maps of Public Administration (DMVS) co-financed within the framework of the IROP, the renovation of the KÚ building for the Zlín Region within the framework of OPŽP and financial security of the RÚIAN 2020+ project from the National Recovery Plan. Real revenues from the EU budget of CZK 49.2 million were given to the DMVS project.

In 2023, the department's expenditure budget was adjusted by nineteen budgetary measures under the competence of the Ministry of Finance. During the year, there was a total increase in the expenditure budget by CZK 89.3 million, mainly due to a corresponding increase in income and expenditure for the above-mentioned EU projects, for the provision of aerial surveying in the amount of CZK 10.6 million and for institutional support for VÚGTK, v. v. i. in the amount of CZK 13.2 million. On the other hand, expenses were transferred to the budget of the Ministry of the Interior for the payment of services for the administration of basic registers in the amount of 0.7 million CZK and to the budget of the Ministry of Internal Affairs and Communications in the amount of 24.2 million CZK to strengthen pension insurance benefits. The Ministry of Finance also approved several budget measures, which made the required changes to the offices (cadastral, inspectorates, land surveying) system by shifting funds between the salaries of employees in employment relationships, the salaries of employees in official positions and other payments for work performed. In addition to these budgetary measures approved by the Ministry of Finance, the offices carried out eleven budgetary measures within the competence of the department, which they used mainly for transfers from investments to operating expenses, between program actions and, at the end of the year, for transfers between non-tax revenues. As part of the permitted exceeding of binding indicators, entitlements from unconsumed expenses were used in the amount of CZK 160.0 million, of which the amount of CZK 123.9 million was used for program expenses, including expenses for EU projects, and CZK 0.6 million was used as an extra-budgetary resource from the FKSP fund for asset reconstruction.

The total utilization of the 2023 expenditure budget was 3,985.7 million CZK, and the largest part consisted of funds for salaries of employees at work positions, salaries of employees in an employment relationship, work performance agreements, severance pay and severance pay, including mandatory insurance premiums and FKSP in total volume of CZK 2,931.9 million. These expenditures accounted for 74 % of the chapter's total expenditures. The average monthly income in the branch reached CZK 37,753 in 2023, i.e. a year-on-year increase of 4.6 %.

The second largest part of the expenses of chapter 346 of the ČÚZK was expenses of an operational nature of CZK 704.7 million. It was mainly for data processing and services related to information and communication technologies in the amount of CZK 195.7 million and postal services in the amount of CZK 145.4 million, which compared to the year 2022 (CZK 155.6 million), recorded a decrease. Operating expenses for the purchase of water, fuel and energy increased only slightly to CZK 101.8 million (CZK 100.1 million in 2022) thanks to cost-saving measures. Other operating expenses were used for renting buildings and computer equipment (CZK 36.0 million), building repairs and maintenance (CZK 32.8 million) and expenses for the purchase of materials (CZK 41.5 million). Compensation for wages during illness was drawn for CZK 27.0 million, which is almost a third decrease compared to last year (CZK 37.5 million). Due to non-payment of non-tax revenues, the ČÚZK had to commit operating expenses of 19.3 million CZK. The remaining part of current expenses was used for the operation of buildings, catering for employees, travel expenses for employees, and training and education services for employees, as well as expenses for data and voice telecommunications services and a membership fee to the international organization EuroGeographics.

A significant part of the expenses (CZK 336.0 million) was investment and non-investment expenses for the financing of programs managed in the EDS/SMVS program financing information system, i.e. for the acquisition and restoration of tangible and intangible assets of the department. The share of these expenses in the expenses of the chapter was 8.4 %. A substantial part of investment expenditure was represented by expenditure on ICT. It was mainly software equipment (CZK 99 million), and the purchase of computer technology (CZK 92.5 million), as well as expenditure on machinery and equipment (CZK 30.7 million), in particular for measuring equipment, for reconstruction of buildings (CZK 79.6 million) and at least for the renewal of transport equipment (CZK 12.7 million).

## Revenues and Expenditures of the State Budget - Chapter 346 ČÚZK

Index/ Year	2019	2020	2021	2022	2023
<b>Revenues of the chapter (in CZK thousands)</b>	880 856	1 452 676	1 854 299	1 490 690	1 387 158
Out of it: revenues for administration fees	620 995	1 170 170	1 491 282	1 152 849	1 176 816
Income from EU budget	9 418	16 547	22 763	44 938	49 188
<b>Total expenditure of chapter</b>	3 540 266	3 606 067	3 668 161	3 685 598	3 985 714
Out of it: projects co-financed from EU budget	20 473	26 165	68 434	61 308	186 654
Current expenses without non-investment	3 302 312	3 399 240	3 392 578	3 499 054	3 649 756
Including: wage resources	1 992 878	2 058 158	2 044 192	2 091 690	2 159 013
Insurance and FKSP	715 280	735 934	730 050	746 105	772 868
Other material expenditure	594 154	571 055	618 336	661 259	704 664
Expenditure on research, development and innovations	0	0	0	0	13 211
Program expenditure	237 954	240 920	275 583	186 544	335 958
Including: non-investment	42 781	34 093	52 651	13 949	21 406
Investment	195 173	206 827	222 932	172 595	314 552
<b>Number of employees in Sector</b>	4 956	4 849	4 847	4 823	4 755
ČÚZK	135	137	141	141	141
Cadastral Offices	4 358	4 261	4 259	4 232	4 168
Land Survey Office	379	370	366	368	368
Survey and Cadastral Inspectorates	84	81	81	82	78

## 9. Inspection and Supervisory Activity

### 9.1. Professional Inspection and Supervision

Inspection of state administration of the real estate cadastre, supervision over the certification of results of land survey activities used for the real estate cadastre and state map series, and decision-making on appeals against first instance decisions of cadastral offices are delegated by law to the 7 surveying and cadastral inspectorates (ZKI).

Only some data from the complete ZKI activities statistics for the year 2023 are published here. ZKI received in total 32 complaints and 305 other submissions. The extent of decision-making agenda on appeals against decisions of KÚ decreased mildly in comparison to 2022 (244 appeals delivered in 2023 as opposed to 268 appeals delivered in 2022). The quality of decision-making activities of cadastral offices as first step authorities worsened slightly in 2023 (42.1 % KÚ decision were proved illegal as opposite to 40.3 % in 2022). The number of appeals in matters regarding correction in cadastral documentation decreased by 11.0 % in comparison to 2022 (137 appeals delivered in 2023 as opposed to 154 delivered in 2022). The number of appeals in matters regarding objections against the content of renewed cadastral documentation increased by 22.0 % last year (50 in 2023 as opposed to 41 in 2022). Finally the number of delivered appeals against procedural decisions of KÚ decreased by 11.5 % in 2023 in comparison to 2022 (46 in 2023 as opposed to 52 in 2022).

ZKI performed in total 1 085 documented inspection actions (the decrease of 17.1 % occurred in comparison to 2022, when 1 309 inspections were performed). In the framework of supervisory activity regarding certification of the results of land survey activities ZKI performed in total 163 documented supervisory actions in 2023 (decrease by 34.5 % in comparison to 2022, when 249 actions were performed). The reason for the reduction in the number of documented inspection actions and supervisions was the implementation of a time-consuming unified investigation, which related to the verification of procedures for determining location coordinates and delineating land boundaries. In 9 from 11 cases (21 in 2022) in the subsequently conducted administrative proceedings ZKI decided that the verifier of the result of land surveying activities had committed an administrative offence of infringement of order in the sphere of surveying in 2023 and imposed fines at a total of CZK 290.0 thousand (CZK 368.0 thousand in 2022). ZKI also received following requests:

9 applications for measures against inaction,  
2 requests for renewal of proceedings,  
3 requests for review proceedings,  
11 requests for information pursuant to Act No. 106/1999 Coll., on Free access to information,  
114 requests for extradition of the authorization to verify the results of surveying activities, and  
18 applications for the issue of a service card for entry to real estate.

Systematic inspection activity of ZKI in 2023 focused mainly on:

- compliance with the deadline for proving the documentation to eliminate non-compliance in the frame of cadastre revision,
- procedures dealing with determination of location coordinates and delineating land boundaries,
- checking the implementation of cadastre revisions together with methodological assistance provision to KÚ,
- checking the implementation of cadastral documentation renewal by new mapping together with methodological assistance provision to KÚ

## Complaints

Inspectorates	Not resolved at 1.1.	Received after 1.1.	In total	Forwarded	Legitimate	Not legitimate	Still being resolved
in Brno	-	5	5	3	-	2	-
in Č. Budějovice	1	2	3	-	-	3	-
in Liberec	-	5	5	2	-	3	-
in Opava	-	5	5	2	1	2	-
in Pardubice	-	2	2	1	-	1	-
in Plzeň	-	1	1	-	-	1	-
in Praha	-	12	12	5	1	6	-
<b>Total</b>	<b>1</b>	<b>32</b>	<b>33</b>	<b>13</b>	<b>2</b>	<b>18</b>	<b>-</b>

## Other Submissions according to the Part IV of the Inspection Rule

ZKI	Not resolved at 1. 1.	Received after 1. 1.	In total	Referral for no jurisdiction	Resolved	Still being resolved
in Brno	3	70	73	12	56	5
in Č. Budějovice	5	56	61	4	51	6
in Liberec	-	16	16	-	16	-
in Opava	-	28	28	3	24	1
in Pardubice	1	42	43	2	41	-
in Plzeň	-	20	20	1	18	1
in Prague	1	73	74	11	62	1
<b>Total</b>	<b>10</b>	<b>305</b>	<b>315</b>	<b>33</b>	<b>268</b>	<b>14</b>

## ZKI Decisions on Appeals against KÚ Decisions

Matters	Not resolved at 1.1.	Received after 1.1.	In total	Appeal rejected	KÚ decision changed	KÚ decision repealed and proceeding terminated	KÚ decision repealed and returned to KÚ	Decision annulled	Still being resolved	Faulty and Forwarded proceedings
Correction of errors in the cadastre	15	137	152	78	18	-	34	4	14	4
Objections to revised cadastral documentation	7	50	57	29	5	1	18	-	3	1
Infringements of order in the sphere of the cadastre	-	-	-	-	-	-	-	-	-	-
Procedural	4	46	50	22	2	-	17	2	4	3
Changes in the boundaries of cadastral districts	-	2	2	1	-	-	1	-	-	-
Administrative fees	-	5	5	4	-	-	-	1	-	-
Rejection of applications for submission of information	-	1	1	1	-	-	-	-	-	-
Other	-	3	3	-	-	-	2	1	-	-
<b>Total</b>	<b>26</b>	<b>244</b>	<b>270</b>	<b>135</b>	<b>25</b>	<b>1</b>	<b>72</b>	<b>8</b>	<b>21</b>	<b>8</b>

ČÚZK (as relevant central administrative office) performed in 2023 inspection of delegated powers conferred on the regional institutions and Prague-city in the area of RÚIAN. In 2023, together 4 inspections were carried out in regional offices (South Bohemia, Karlovy Vary, Vysočina and Central Bohemia). General information for the year 2023 about their results is published on the ČÚZK website in accordance with the § 26 of the Inspection Rules.

## 9.2. Financial Inspection

ČÚZK carries out public inspections in the subordinated bodies according to the Act No. 320/2001 Coll., on Financial inspection in public administration (further only Financial Act) in accordance with the Act No. 255/2012 Coll., on Inspection (Inspection order) based on the ČÚZK president's credentials.

According to the approved plan and schedule of financial inspections for 2023, the inspection group of ČÚZK carried out complex public administration inspections at following 9 inspected bodies:

KÚ for the Region Ústí nad Labem, KÚ for the Region Karlovy Vary and all 7 ZKI (Pardubice, Brno, Plzeň, Liberec, Opava and České Budějovice).

During public administration inspections, partial deficiencies were detected in the inspected entities, which were to be rectified, or to prevent repetition, the inspected persons submitted proposals for corrective measures to the president of the ČÚZK. The adopted measures related in particular to:

- compliance with generally binding and internal legislation when deciding on the non-use of state property, removing it from property and accounting records and carrying out ecological liquidation, improving the performance of financial control during the awarding of public contracts,
- procedures for verifying the identity of applicants for the provision of data from the real estate cadastre,
- and ensuring updatedness, complexity and interconnectedness of newly issued internal regulations.

By carrying out comprehensive public administration inspections, no cases of incomplete or inconclusive accounting, nor unauthorized use of public funds was detected in any of the inspected subjects. The internal control system of subordinated subjects is adequate and sufficiently effective, and creates adequate conditions for fulfilling the conditions of legality, expediency, economy and efficiency in the performance of public administration and spending of public funds. It provides an important information function in providing information to relevant levels of management.

## 9.3. Internal Audit

Internal audit is a part of the internal inspection system in the ČÚZK, Land Survey Office and cadastral offices based on the Financial Act No. 320/2001 Coll. Internal auditors, who are directly subordinated to the head of the service office, ensure the performance of the internal audit. The internal audit function in all ZKIs is, in accordance with the Financial Act, replaced by an annual public-administration inspection carried out by the ČÚZK inspection group.

In 2023, there were performed together 72 audits. In accordance with the relevant methodology of the Ministry of the Interior of the Czech Republic, internal audit plans included the implementation of internal reviews of setting criteria for improving the quality management system in service offices.

Out of the total number of performed internal audits were

- 12 financial audits, focused mainly on the audit of management and accurate presentation of assets in financial, accounting and other statements,

- 36 system's audits, which examined the management of public funds and the financing of activities of subordinated offices,
- 14 performance audits that dealt with the effectiveness, economy and expediency of chosen operations and of adequacy of the internal control system,
- 10 others, otherwise focused audits.

Not one of the audits carried out in 2023 revealed deficiencies with a significant risk for the management of public funds. The reports and received recommendations from the audits were discussed with the responsible employees and the head of the service office. Recommendations from the audits carried out in 2023 will be subject to subsequent internal audit review.

## 10. International Cooperation

ČÚZK actively participates in the work of international organizations being active in the field of the real estate cadastre, land registration and land surveying administration. Besides, it also actively cooperates with all neighbouring countries in the area of mutual data and information exchange based on bilateral agreements. It systematically ensures the interoperability of spatial data and related services according to European rules to enable their wide use in cross-border and European projects and solutions (f. i. in EUROSTAT). ČÚZK also prepares professional programs and excursions for foreign students or branch experts.

In 2023, conferences, workshops and other professional meetings were held with in-person participation comparable to the years before the epidemic.

ČÚZK is an active member of the organization EuroGeographics (EG), which associates mapping agencies and cadastral offices of European countries. EG enables experience exchange and mutual cooperation; it systematically develops the cooperation with the European Union bodies on building of the united infrastructure for spatial data in Europe. EG contributes to it by creating of pan-European products with harmonized parameters for all European countries, f. i. EuroRegionalMap, EuroBoundaryMap, EuroGeoNames, EuroSpec and Core Reference Data (CRD). EG negotiates experts' involvement from member organizations into modifications of harmonization provisions included implementing rules of the INSPIRE Directive and helps to implement them on the particular member states level. The EuroGeographics General Assembly, the meeting of the heads of European mapping and cadastral agencies, was held in Valetta (Malta) with more than 110 participants from 89 organizations in 35 European countries and another 11 guests. EG organized a series of weekly workshops focusing on various areas of interest from the activities of its members. The same form of the on-line workshops have the KEN (Knowledge Exchange Network) meetings, followed in some cases by the webinar for wider audience (Quality KEN).

ČÚZK continued its active participation in the European section of UN-GGIM (United Nations Commission for Global Management of Geospatial Information established in 2011). In 2023, the 10<sup>th</sup> Plenary meeting was held in Brussels (Belgium) with an active representation of ČÚZK. The meeting topic were not only the themes connected with the European section jurisdiction, whose goal is mainly the promotion of the Globalization of geodetic foundations and geoinformatics based on reliable and sustainable information of national mapping authorities and agencies, but also the activities of the entire UN-GGIM Commission.

In 2023, the implementation of the INSPIRE Directive continued and ČÚZK representatives took part in both online webinars and the MIG (Maintenance and Implementation Group) technical workshop, which took place face-to-face in Brussels (Belgium) in November 2023 together with the INSPIRE conference.

ČÚZK regularly monitors the activities of the Working Party on Land Administration (WPLA), working under the auspices of UNECE, which is engaged in land and real estate information and related thematic. In 2023, the representative from the ČÚZK participated in the 13<sup>th</sup> Plenary

meeting of the WPLA, where the working plans for further years have been approving among others.

The first meeting of the Permanent Committee for Cadastre in EU (PCC) was in 2023 held as a hybrid meeting in Gävle (Sweden) with participation of two representatives from ČÚZK and together 73 delegates. The main theme was "Security and prosperity - the role and contribution of cadastral offices". The second meeting was held in Madrid (Spain) in November 2023 with the participation of one representative of the ČÚZK and another 102 delegates with the topic "The contribution of the cadastre to the welfare state: real estate taxation and other services".

38<sup>th</sup> meeting of cadastral service providers of succession state of the former Austro-Hungarian Empire, namely Croatia, the South Tyrol, Austria, Slovakia, Trentino, Hungary and the Czech Republic was held in Ptuj in Slovenia with three ČÚZK representatives. The topic of the meeting was "Knowledge for effective land administration".



In the field of geographical names, the ČÚZK sent its representative to the 3<sup>rd</sup> Meeting of the Working Group of Experts on Geographical Names held in the United States (New York) in 2023, and to the 20<sup>th</sup> Meeting of the Baltic Division held in Poland (Warsaw).

The preparation of the professional magazine Geodetic and Cartographic Review (GaKO) returned to the standard mode, when both (Czech and Slovak) editors met regularly to prepare each issue.

Some other international activities continued to be implemented either entirely virtually or as hybrid meetings.

## 11. Research and Development

ČÚZK performs the function of the founder of the Research Institute of Geodesy, Topography and Cartography, v.v.i. The main activities of the VÚGTK are:

- following applied and basic research in geodesy, land surveying and cadastre branch,

- development and testing of new methods, procedures and programs, and specialized consultations in the area of creation and management of the ISKN, photogrammetry and remote sensing of the Earth,
- geodesy, geodynamics, engineering, metrology and standardization, state map series creation and maintenance, development of special tools, equipment and measuring systems.

In the frame of metrological requests for the ČÚZK department and activities connected with its membership in international association EURAMET, accredited calibrating laboratory is in operation in VÚGTK together with the authorized metrological centre. The Institute is also the accredited educational body and operator of the Land Surveying Library®.

In the course of 2023, VÚGTK participated in the solution of 10 projects from four domestic providers (Technological Agency CR-TA, Ministry of Education, Youth and Sports, Ministry of Culture, Ministry of Industry and Trade) and 5 international projects (2x GSA, 1x H2020 and 1x ESA/EUSPA). One of the most important projects was the project focused on improving the services of Galileo system for use in the real estate cadaster. This project was initiated by the Council of European Surveyors (CLGE), with 14 institutions from a number of European countries participating in it. Projects of the Beta 2 TA CR program were also significant, within the framework of which the research needs of the ČÚZK department were secured, or projects aimed at solving BIM issues in the CR. In 2023, two long-lasting projects under NAKI-III program were launched.

In 2023, the GIS and Real Estate Cadastre research department also participated in the administration and maintenance of the applications MicroGEOS and MapOO used in the ČÚZK within the administration of the cadastre and new mapping.

In 2023, ODIS research department and the Land Surveying Library® were solving the projects of the Ministry of Culture focused on large-format archival. At the same time, the international project MERIT was launched in the field of mobility, within the framework of which two long-term internships for foreign researchers will be implemented in 2024.

Land Surveying Library® has a unique and exclusive status not only in the Czech Republic but also in the international scale as for its documentation fund and specialization in the branches of geodesy, geography, geodynamics, metrology and real estate cadastre. It is connected to many activities of interlibrary cooperation and provides scientific information resources from the area of its competence. The library provides the background for scientific activities not only for all employees of the institute but also to professionals and to public.

Basic and applied research in the fields of geodesy and geodynamics has long been provided by research unit 24 geodesy and geodynamics located at the Pecný Geodetic Observatory in Ondřejov. As part of an applied research project supported by TAČR, absolute gravity measurements were carried out here, and an international project aimed at independent monitoring of the EGNOS and Galileo navigation systems was launched, which was supported by EUSPA. In 2023, in cooperation with Italian partners, the ESA project aimed at verifying and refining the global model of tidal phenomena and improving the estimation of the risk of volcanic activity or earthquakes based on analyses of GNSS observations was successfully completed. Applied research in geodesy and geodynamics was focused on the development and use of accurate data processing for accurate determination of spatial position and other related parameters, on the development of metrological bases for gravity and spatial measurements and on monitoring the stability of the position of reference GNSS stations in the Czech Republic. As part of the contract research, the project "Preservation of the state standard of gravitational acceleration" was solved for the ÚNMZ, where the department in particular ensured participation in the key comparative measurement of absolute gravimeters in the USA.



The Research Department of Metrology and Engineering Geodesy solved the long-lasting project "Preservation of the state standard (SE) with a length of 25 m to 1450 m". In addition to research activities, the department focused on ensuring the operation and development of an (accredited) calibration laboratory. In 2023, calibration activities were carried out mainly for customers from geodetic, construction and engineering companies and state-established organizations.

VÚGTK ensures extensive scientific international cooperation, the need for which results from the global character of geodesy. The institute has been contributing to international scientific services and programs for a long time. For example, it participates in the activities of the International Geodetic Association by providing data from the geodetic observatory and analytical centre.

The year 2023 was the first year of implementation of the long-term concept of the development of the institute for the years 2023-2027, which follows on from the concept of the development of the institute for the years 2018-2022. The Ministry of Education, Youth and Sports (MŠMT) evaluated VÚGTK in 2023 as a unique research organization with a transnational impact, effectively managing the funds obtained and creating results with a broad social impact.

## **Annual Report 2023**

Český úřad zeměměřický a katastrální

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