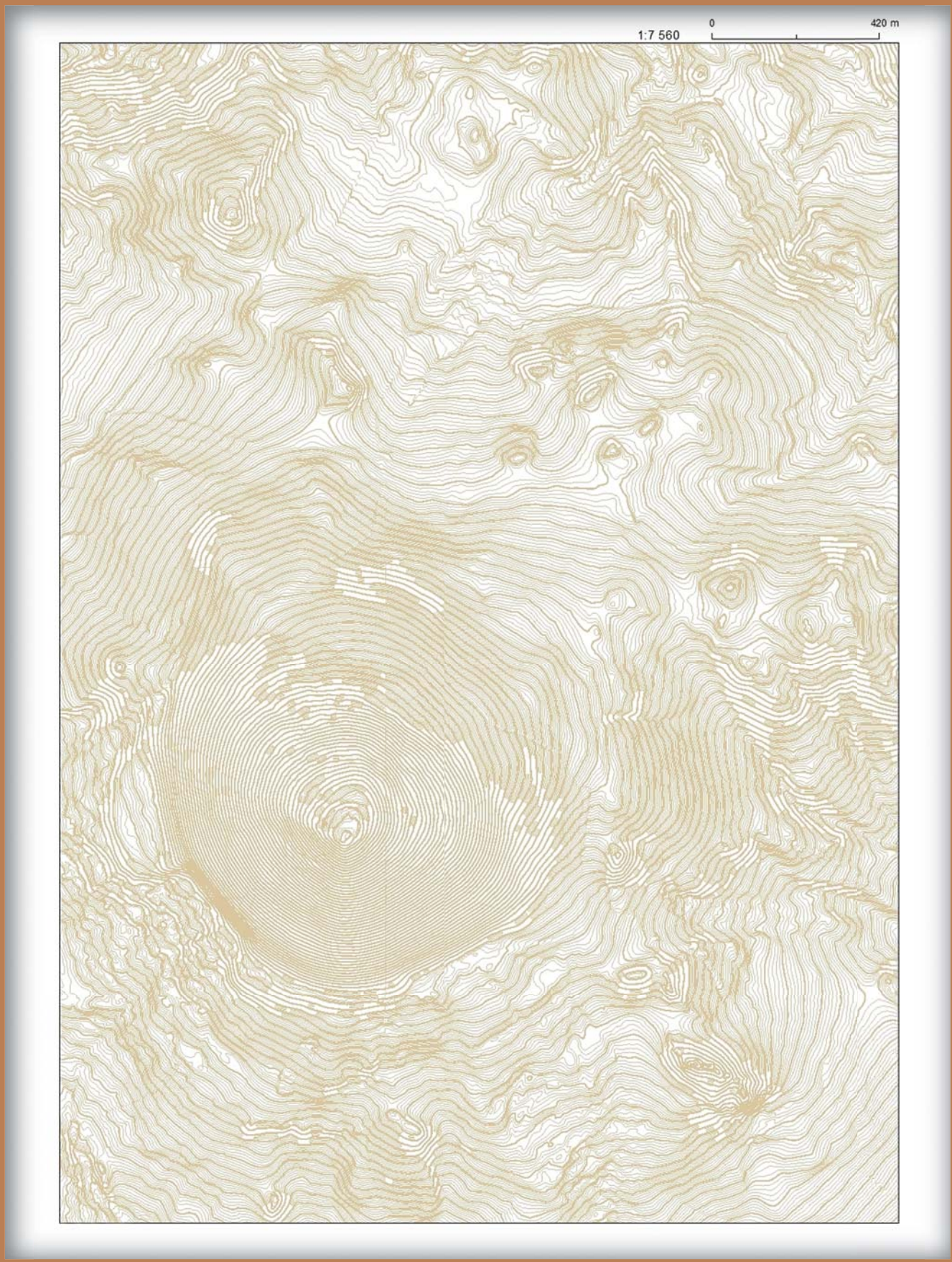
Český úřad zeměměřický a katastrální

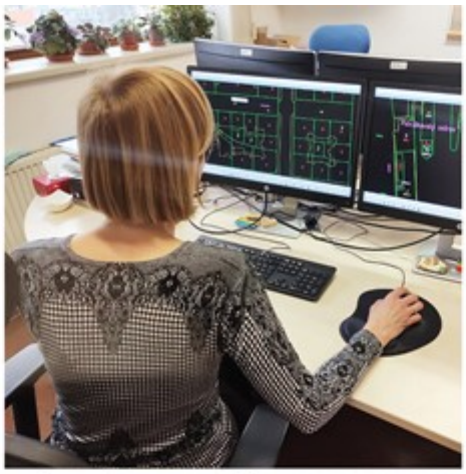


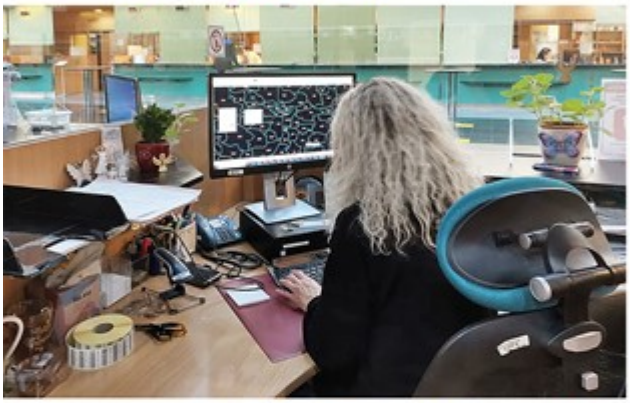
ANNUAL REPORT 2021

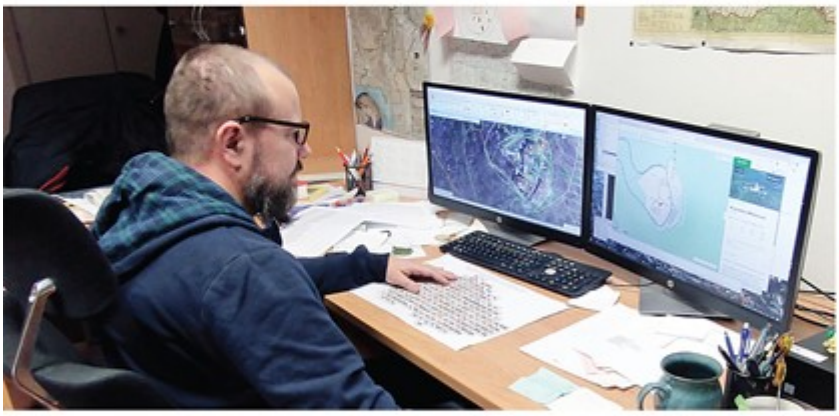
Annual Report
of the Czech Office for Surveying, Mapping and Cadastre
for 2021

Prague, 2022

CONTENT



INFORMACE


32

10:15:57


INTRODUCTION

The activity of state administrative bodies of the real estate cadastre managed by the Czech Office for Surveying, Mapping and Cadastre (ČÚZK) was negatively influenced by the restrictions caused by the situation connected with the COVID-19 pandemic when fulfilling its tasks in the field of real estate cadastre administration and performance of surveying activities in the public interest in 2021.

Due to the high degree of digitization of the real estate cadastre, the restrictions did not affect the provision of data from the real estate cadastre, which is carried out mainly electronically. The use of electronic outputs has further increased due to restrictive measures.

In 2021, cadastral offices performed the records of ownership and other rights to real estate without significant extension of time limits. In times of emergency, the cadastral offices used mainly the rotation of groups of employees at workplaces, thus reducing contacts between employees and minimizing the risk of spreading the disease. Work from home was used, which can be performed with a full connection to the departmental network by approximately a quarter of the total number of employees in the department.

During the previous year, there was 20 % yearly increase in the number of transactions on the real estate market. Records and deletion of liens also increased by 28 % as in comparison to 2020 due to the development on the mortgage market. Cadastral offices received in total 1 038 696 proposals for entry of owners´ and other rights to real estate in 2021. Registrations of rights did not worsen in 2021 due to accepted organizational measures, although cadastral offices faced in emergency times significant capacity outages. Average deadlines were 23 days in all regions. The number of completed registrations or deletions based on record and notation mildly decreased year-on-year to 401 133. The number of delivered requests regarding the verification of the survey sketches increased yearly and reached 171 678. Data provision was carried out mainly in the electronic way using the remote access to the real estate cadastre. ČÚZK performed nearly 19 million requests for information, representing mild increase in comparison to 2020.

In 2021, we successfully renewed the cadastre documentation by new mapping or by taking over the results of land readjustments in 269 cadastre units with very poor quality maps, and checked the compliance of technical data of the cadastre with the reality with help of revisions in 535 cadastre units. Particularly this activity was being limited in the spring and autumn months due to the state of emergency.

State administration of land surveying and real estate cadastre is responsible also for important land surveying products and services, which co-create the national geoinformation infrastructure necessary for task fulfilment of the public administration. These activities are mainly carried out in the field and that is why they were less influenced by the emergency in 2021. The care for existing geodetic control points went on together with all planned land surveying works on the state borders. Both continuous and periodical update of the Fundamental base of geographical data (ZABAGED®) went on and the Orthophoto ČR was updated on the western half of the state territory. Most products are provided via remote access from Geoportal ČÚZK.

More information on results of work of land surveying and cadastral offices in 2021 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 based on 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, p.r.i (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.

The new Cadastral Act was adopted in connection with the overall recodification of the private law and took into account many new provisions regarding real estate brought about by this recodification. The principal change is the brand new definition of the term “real estate” and application of the principle “superficies solo cedit”, according to which the building is a part of the parcel.

Since its adoption, the Cadastral Act has been amended twelve times, but it was mostly a minor change due to the adoption of other laws. In 2021 two amendments of the Cadastral Act occurred.

With effect from 1 February 2022, the Act No. 261/2021 Coll., which amends certain acts in connection with the further electronization of public authority procedures, will repeal paragraphs 3 to 8 in Section 32 of the Cadastral Act. The issue of data provision from the basic register of inhabitants, from the agenda information system of inhabitants and from the agenda information system of foreigners for the purposes of cadastre administration will be newly addressed by the tools enshrined in the Act No. 111/2099 Coll., on Basic registers. The second amendment of the Cadastral Act (made by the Act No. 371/2021 Coll., amending the Act No. 48/1997 Coll., on Public health insurance with effect from 1 January 2022), added a new type of note to the Cadastral Act – on the issuance of a decision on the establishment of a lien by health insurance company (section 23, paragraph 2, letter k) of the Cadastral Act.

The legislation on entries in the Land Registry, including the implementing decrees, can be considered as successful and does not require substantial changes in the near future.

Real estate cadastre in the Czech Republic is administered with help of the information system. The Information system of the real estate cadastre (ISKN) 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. ISKN also uses interconnection with Document management system (DMS) in which both electronic and scanned paper documents used for registration to the real estate cadastre have been stored.

2.1. Main Tasks of Cadastral Offices and Their Statistics

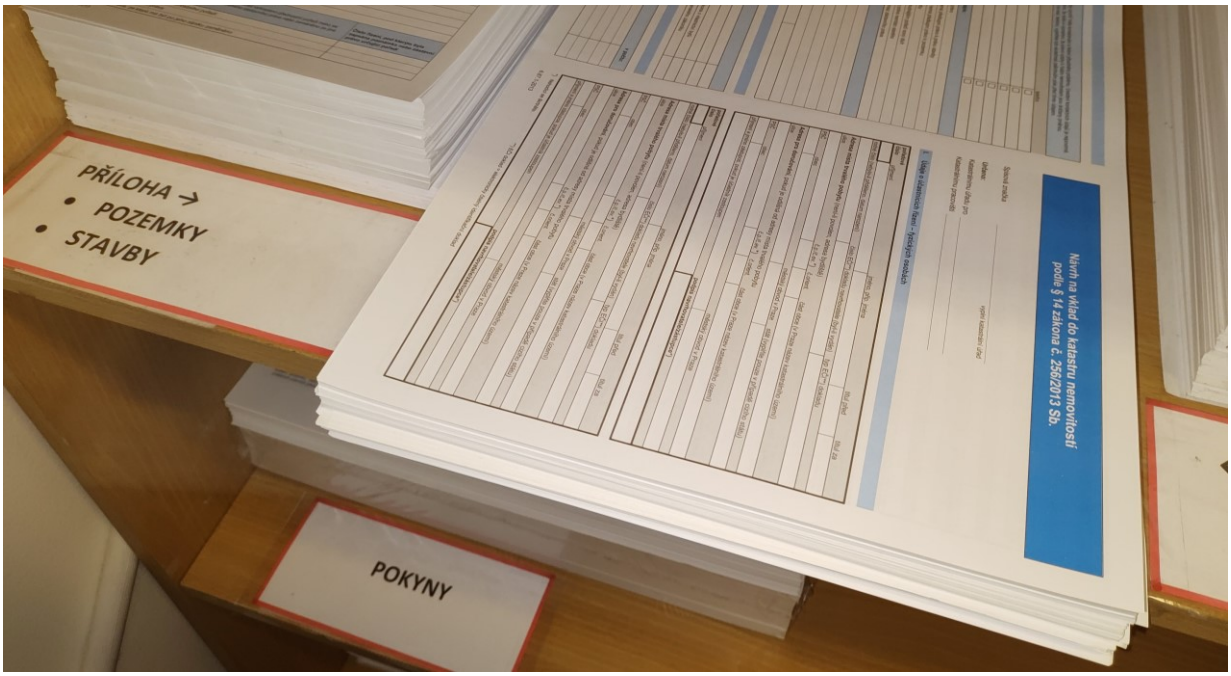
Main task of cadastral offices is recording of proprietary and other rights to real estate and other data.

Entries of Proprietary Rights into the Real Estate Cadastre

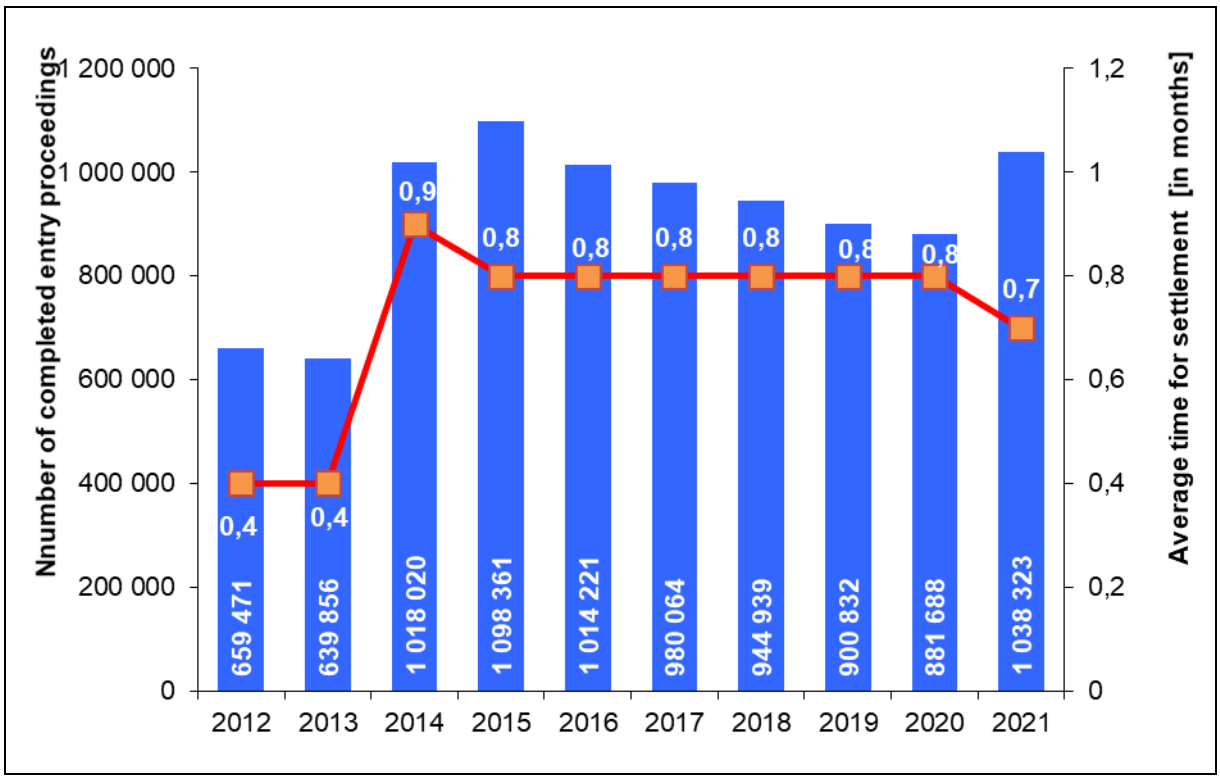
Registration of all material rights, rights agreed as material so as lease and tenure are being performed in the way of entry regardless of its constitution – based on either the contract, or other way.

In 2021, the number of accepted proposals for entries of rights by cadastral offices was 1 038 696, which means increase of 20 % in comparison to 2020. The share of mortgages on the total number of entries did not change year-on-year. Number of completed proposals for entry of proprietary right was 1 038 323 and yearly average time for completing of application for entry increased mildly (from 22 to 23 days).

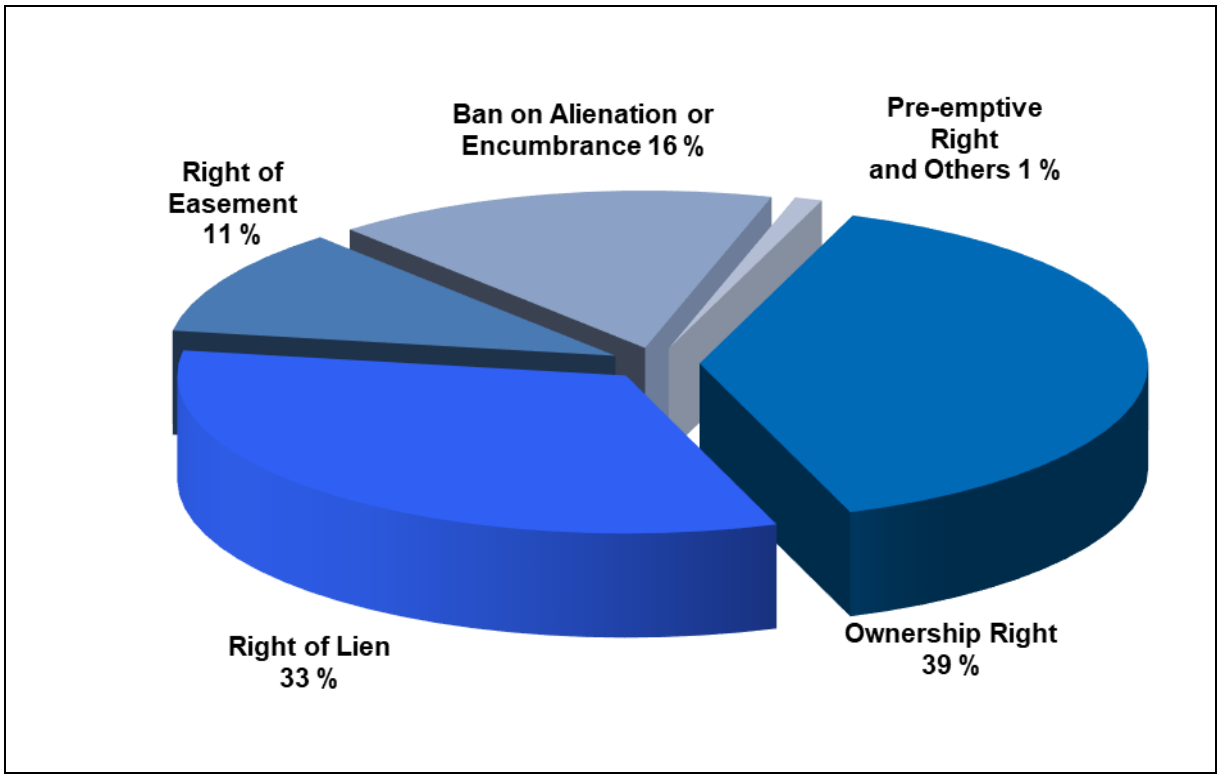
From the total number of yearly requests for entry in 2021, 96 % entries of rights were approved, the rest of administrative proceedings were refused or interrupted. In 2021, the number of refused entries mildly decreased, as you can see in Fig 3.



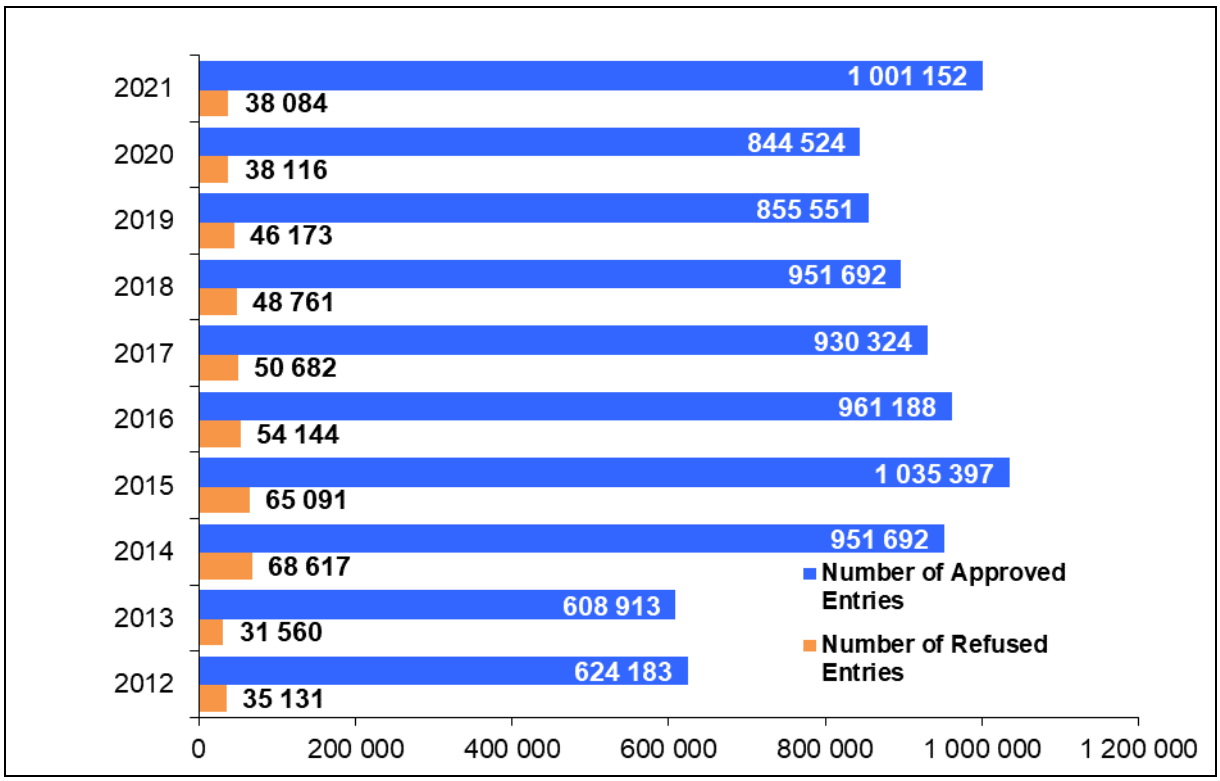
Registration of Rights to the Cadastre (Fig 1)



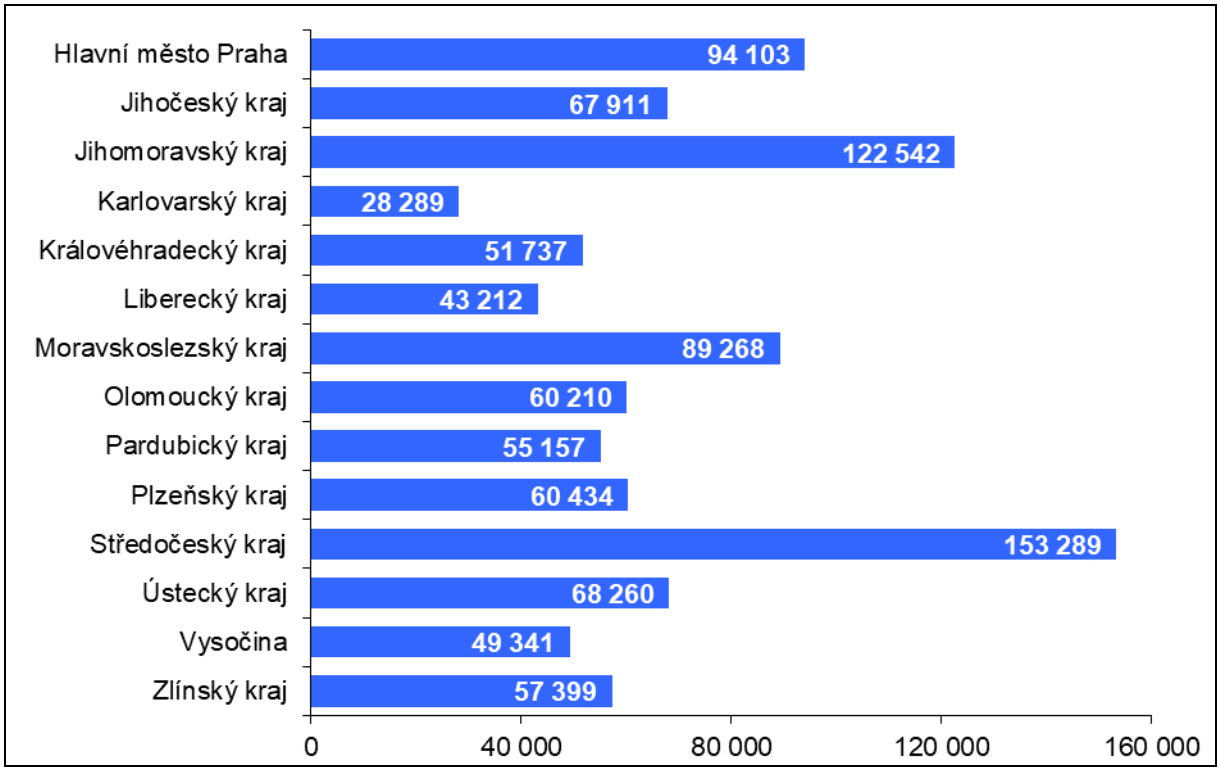
Share of Different Types of Rights Recorded by Entry into the Cadastre (Fig 2)



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



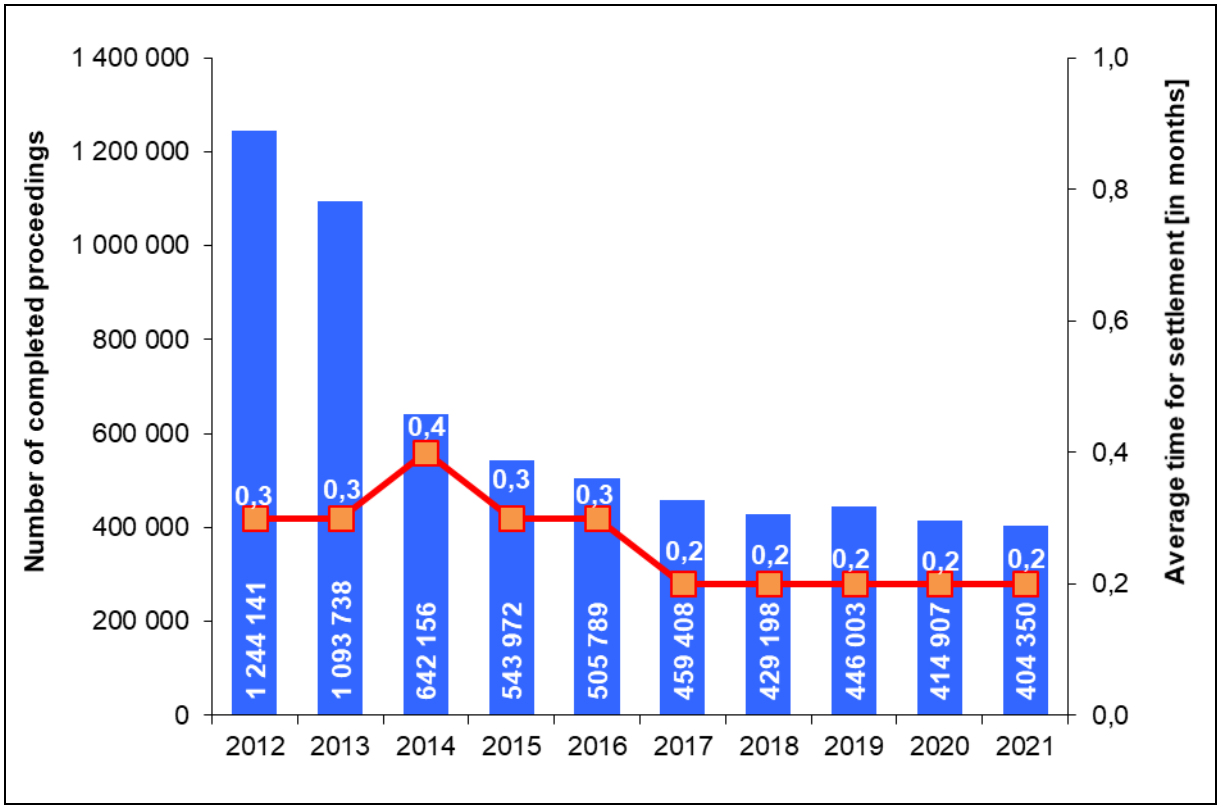
Number of Entries in Single Regions of the Czech Republic in 2021 (Fig 4)



Registration by Record and Note and Others

Cadastral offices performed also other registrations into the real estate cadastre. In 2021, in total 401 133 submissions for registration by record and by note were delivered to cadastral offices, which means that the number of these records decreased yearly by 2 %. In total 404 350 submissions were completed and the average time has not changed year-on-year.

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



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 taken from the Basic register of inhabitants (ROB) and about legal entities that are taken from the Basic register of persons (ROS). In 2021, in total 126 686 changes in addresses of permanent residence and registered offices of legal entities and changes in names were taken over from ROB and ROS. Furthermore, in 2021, 212 873 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, 33 125 changes in real estate data were taken over in 2021, mainly due to the real estate cadastre revisions.

Provision of Information from the Real Estate Cadastre

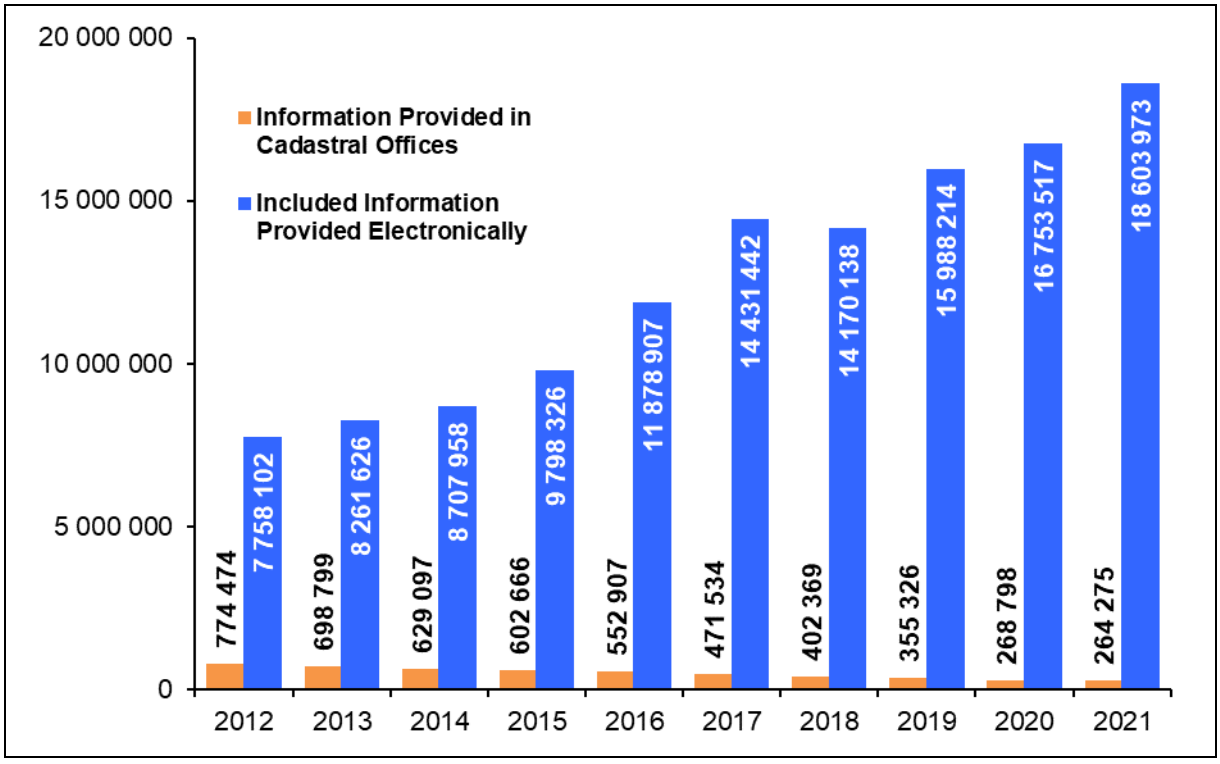
Individual workplaces of cadastral offices provide clients with information from the cadastre over the counter during office hours. All outputs from the cadastre (extracts from the real estate cadastre, copies of cadastral maps, copies of documents stored in document funds in case they are digitized) 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 did not change in 2021, whilst the number of applicants for information from the real estate cadastre increased in 2021 – more than 98 % 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) 168 000 outputs from the real estate cadastre and more than 6 800 map copies were issued in 2021. Another 62 000 outputs were carried out through 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 and a snapshot of the cadastral map. The completion of the digitization of cadastral maps thus ensures the provision of cadastral information in almost every municipality, even for persons who do not themselves use internet services. Professional users, such as banks and real estate agencies have been more and more oriented towards acquiring information by means of remote access via internet services, and so the trend of continuous decrease of information provided at the desks of cadastral offices goes on. The electronic statements from the real estate cadastre are since 2006 marked with an electronic mark and considered as public documents.

Information Provision from the Cadastre (Fig 6)

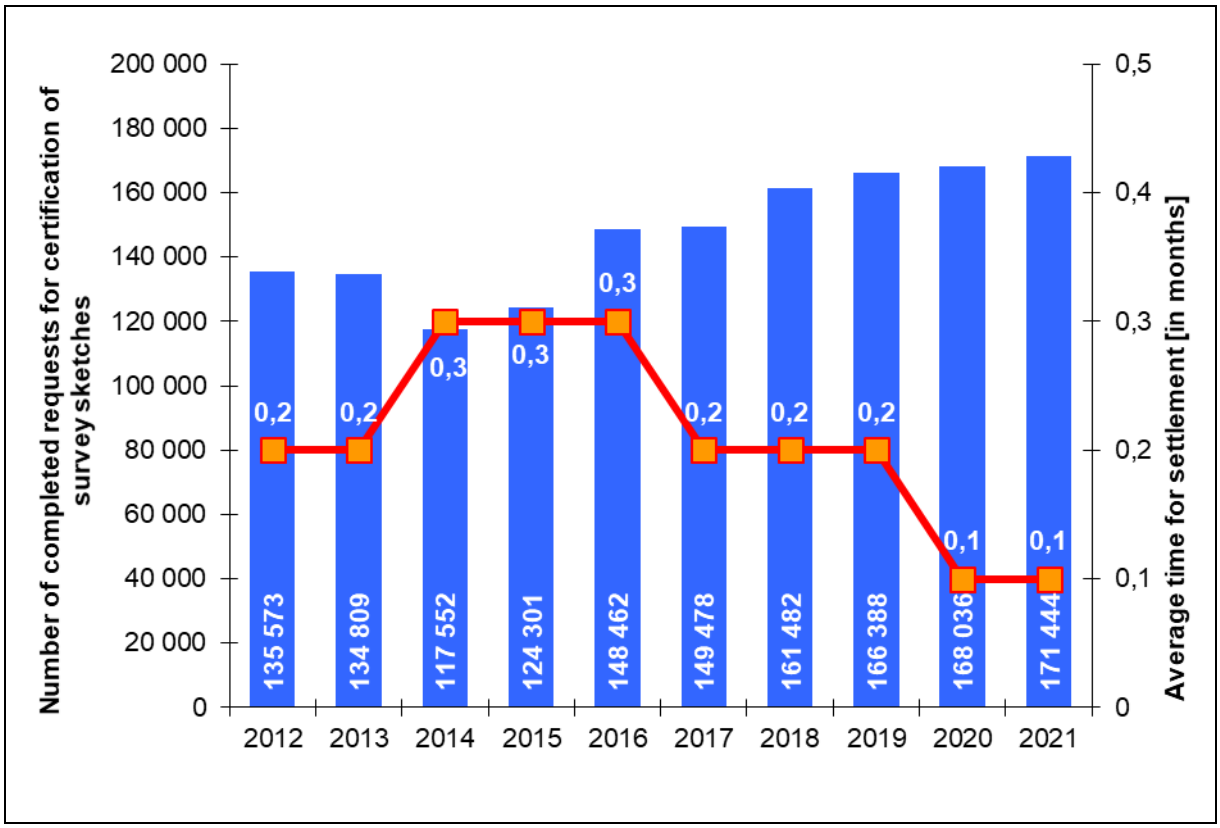


Certification of Survey Sketches

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. Solely private geodetic companies make them. They create important part of documentation for maintaining of cadastral maps, thus every survey sketch has to be certified by an authorised surveyor who is officially authorised to certify the results of surveying activities by the ČÚZK under Section 14 of Act No. 200/1994 Coll., on Surveying and mapping. 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.

The number of survey sketches is still very high in the Czech Republic (in 2021 increase of 1 % in comparison to 2020) and despite it, the average time for checking and certification of survey sketches by the cadastral offices remained on the same level as in 2020. 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.

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



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.

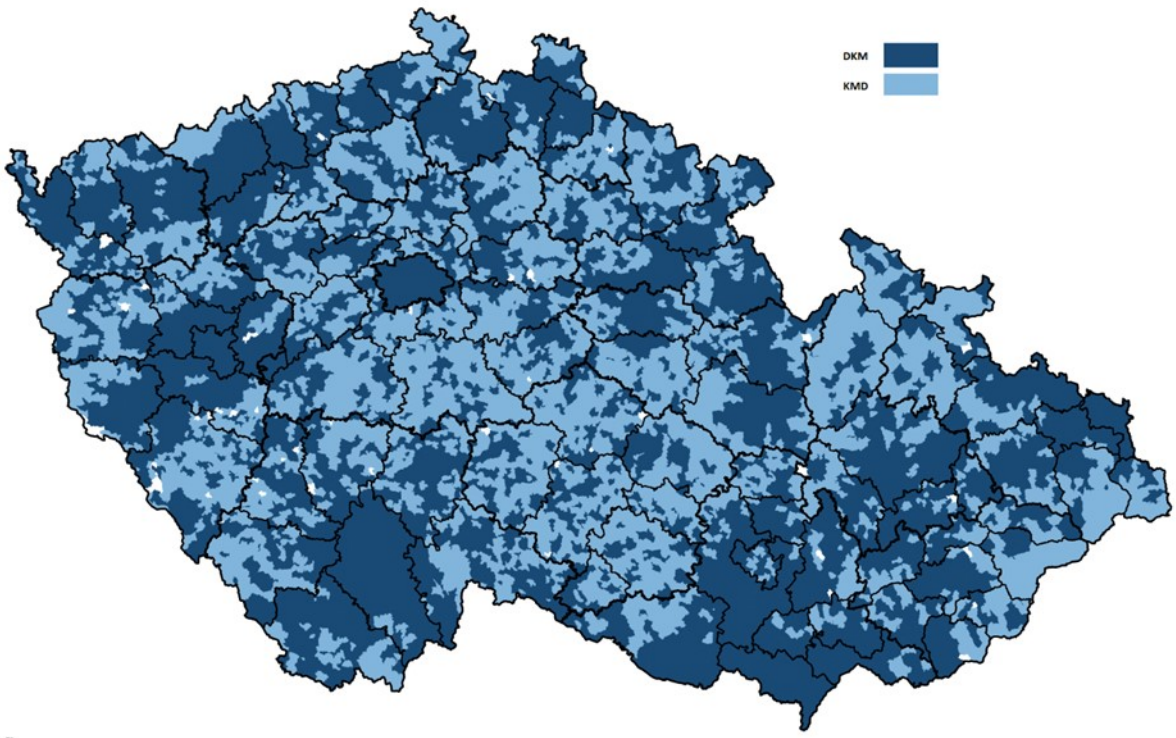
Development of Digitization of Cadastral Maps between 2010-2021

Year	till 2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Digitization Completed	6845	1 094	1 127	1 074	910	877	622	349	25	23	24	19
Total in Digital Form	6 845	7 939	9 064	10 166	11 121	11 990	12 612	12 954	12 972	12 995	13 019	13 038
Yearly Growth from the Total of 13 075 c.u.(%)		8,5	8,7	8,4	7,0	6,7	4,7	2,7	0,2	0,2	0,2	0,1
% from the Total Number	52,5	61	69,6	77,9	84,9	91,6	96,3	99	99,2	99,4	99,6	99,7

Accurate digital cadastral maps (DKM) surveyed after 1927 in national coordinate system JTSK covered 49 % of cadastral units by December 31, 2017, cadastral maps digitized (KMD) from graphic maps based on the Stabile cadastre in the first half of 19th century covered 50 % of cadastral units.

By December 31, 2021, the digital form of cadastral map were not at disposal only in 37 cadastral units, which is 0.3 % from their total number of 13 075. 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.

State of Digitization of Cadastral Maps on 31. 12. 2021



2.3. New Cadastral Mapping and Cadastre Revision

In the area of the technical data of the cadastre, it is gradually following up on forthcoming completion of digitization of cadastral maps with further innovations. 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 1st half of the 19th 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 because of unclear area, which is important parameter for setting the price and does not help to keep good neighbour relations regarding the boundary surveying in the field – the discrepancies can be in some cases in meters. Obsoleteness 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, thus procedures not being used in practice sufficiently in previous years because of the digitization priority.

New Mapping and Use of Land Consolidation Results till 2023

During the renewal of the documentation by the new mapping, the existing boundaries are marked in the field and then precisely surveyed. At the same time updating of further cadastral information (such as mode or nature of land use) is carried out following the negotiation with the owners and with particular public institutions. In 2021, the digital form of cadastral map was at disposal at 99.7 % of cadastral units or at major part of them. Only in 37 cadastral units (out of 13 075) digital cadastral map has not been completed at the complete cadastral unit. Nearly all cases refer to cadastral units with land consolidation in rural areas in process or in those places, where the renewal of cadastral documentation will be in progress based on the new mapping and where the bad quality of original maps did not enable mere digitization. Cadastral offices follow the progress in land consolidation and excluded parts will renew by new mapping.

In further 252 cadastral units the digital maps have to be completed in smaller parts of them. It relates to areas touched recently by land consolidation where either land consolidation will have to be completed or the renewal by the new mapping finalized in parts of cadastral units excluded from land consolidation, and thus by the end of 2023.

Cadastral office for	Total number of c. u.	Without digital map		Digital map only at a part of c. u.	
Prague-City	112	0	0,0 %	0	0.0 %
South Bohemia region	1 624	4	0,2 %	51	3.1 %
South Moravia region	892	1	0,1 %	35	3,9 %
Karlovy Vary region	566	1	0,2 %	2	0,0 %
Hradec Králové region	961	0	0,0 %	9	0,9 %
Liberec region	508	4	0,8 %	11	0,8 %
Moravia-Silesia region	616	0	0,0 %	6	1,0 %
Olomouc region	769	2	0,3 %	8	1,0 %
Pardubice region	790	1	0,1 %	16	2,0 %
Plzeň region	1 396	14	1,0 %	43	3,1 %
Central Bohemia region	2 075	6	0,3 %	34	1,6 %
Ústí region	1 060	1	0,1 %	13	1,2 %
Vysočina region	1 263	3	0,2 %	18	1,4 %
Zlín region	443	0	0,0 %	6	1,4 %
Total	**13 075**	**37**	**0,3 %**	**252**	**1,9 %**

New Mapping and Use of Land Consolidation Results – Long-term Outlook

Digitization of cadastral maps enables wide accessibility of maps, ensuring full conformity with descriptive data on real estates. High comfort in work with map was achieved included combination with other maps via web services. Nevertheless, approximately 50 % of the territory of the Czech Republic will still be covered by cadastral map originated from the Stable cadastre surveying in the first half of the 19th 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. The new mapping will cover virtually all built-up areas and forest complexes, thus areas excluded from the land consolidation. Those parts of cadastral units already solved during land consolidation are renewed based on their results. 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 cm.

Long-term plan will be carried out supposing that land consolidation will proceed in the present range of approximately 200 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 2021, the cadastral revision was completed in 535 cadastral units and more than 152 000 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 20 000 found discrepancies was recorded into the cadastre in 2021, because the owners did not submit necessary documents to the cadastral office. Information about these discrepancies are published on internet free.

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.

POVINNOST PODAT PŘIZNÁNÍ
K DANI Z NEMOVITÝCH VĚCÍ

V důsledku revize může dojít ke změně skutečností rozhodných pro správné stanovení daně z nemovitých věcí. Takovou okolností jsou zejména údaje o druhu pozemku, výměře, sloučení pozemků nebo jejich přečíslování, případně nalezení nezlegalizovaných staveb.

Podle zákona č. 338/1992 Sb., o dani z nemovitých věcí, ve znění pozdějších předpisů, je poplatník povinen daň nově přiznat **do 31. ledna následujícího zdaňovacího období** (roku) po roce, ve kterém došlo ve srovnání s předchozím zdaňovacím obdobím ke změně okolností rozhodných pro vyměření daně.

Bližší informace k celé oblasti daně z nemovitých věcí jsou k dispozici na internetových stránkách www.financnisprava.cz.

Pro samotné podání daňového přiznání lze s výhodou využít internetovou aplikaci provozovanou Finanční správou ČR na Daňovém portále (elektronická podání), která automaticky disponuje individuálně stanovenými parametry nutnými pro správný výpočet daně (např. koeficienty podle obecně závazných vyhlášek, průměrné ceny zemědělské půdy).

PŘIZNÁNÍ
k dani z nemovitých věcí na zdaňovací období roku

POVINNOSTI VLASTNÍKŮ
DLE KATASTRÁLNÍHO ZÁKONA

Povinnosti vlastníků jsou dány § 37 katastrálního zákona. U revize katastru jsou to zejména povinnosti:

- ✓ zúčastnit se na výzvu katastrálního úřadu jednání
- ✓ ohlásit katastrálnímu úřadu změny údajů katastru týkající se jejich nemovitostí, a to do 30 dnů ode dne jejich vzniku, a předložit listinu, která změnu dokládá
- ✓ na výzvu katastrálního úřadu předložit ve stanovené lhůtě příslušné listiny pro zápis do katastru

Pokud vlastník neplní povinnosti dle § 37 katastrálního zákona, může svým jednáním (a to i pasivním) naplnit skutkovou podstatu správního deliktu dle § 57 katastrálního zákona.

KATASTRÁLNÍ ÚŘAD PRO KARLOVARSKÝ KRAJ
Katastrální pracoviště Sokolov
Boženy Němcové 1932
356 01 Sokolov
e-mail: kp.sokolov@cuzk.cz

REVIZE
KATASTRU NEMOVITOSTÍ

Pokud jste obdrželi tento informační leták, s největší pravděpodobností ve vaší obci dochází k přípravným pracím na revizi katastru nemovitostí.

KATASTRÁLNÍ ÚŘAD PRO KARLOVARSKÝ KRAJ
web: http://cuzk.cz/

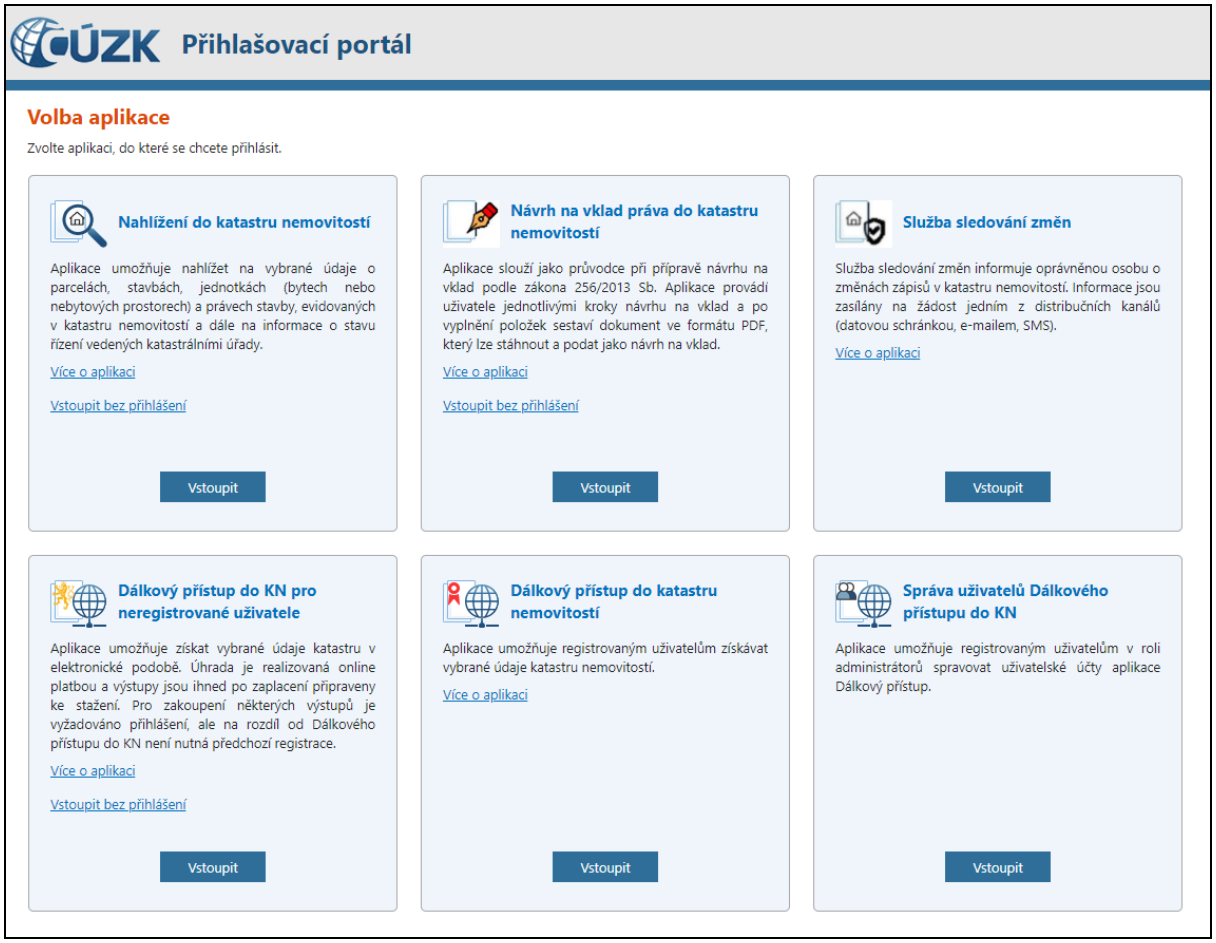
Updating of Tax Data and Real Estate Data Protection

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 are 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 have been launched 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.cuzk.cz/rozcestnik.do.



It is immediately clear from the introductory signpost whether the application is available for entering even without a login. If login is chosen, the application offers all available methods. 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).

Entry Proposals

The application serves for creation of the Proposal for entry in both interactive and WebServices form. The application is very intensively used; in 2021, more than 900 000 entry proposals were created via it. WebServices were enlarged and support for getting information from the Registry of Inhabitants enabling easier filling in the proposals was added.

Service for Monitoring of Changes

The Service for monitoring of changes in data about real estates is provided by ČÚZK according to § 55, art.6 of the Cadastral Act, 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 37 433 in 2021.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.cuzk.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.

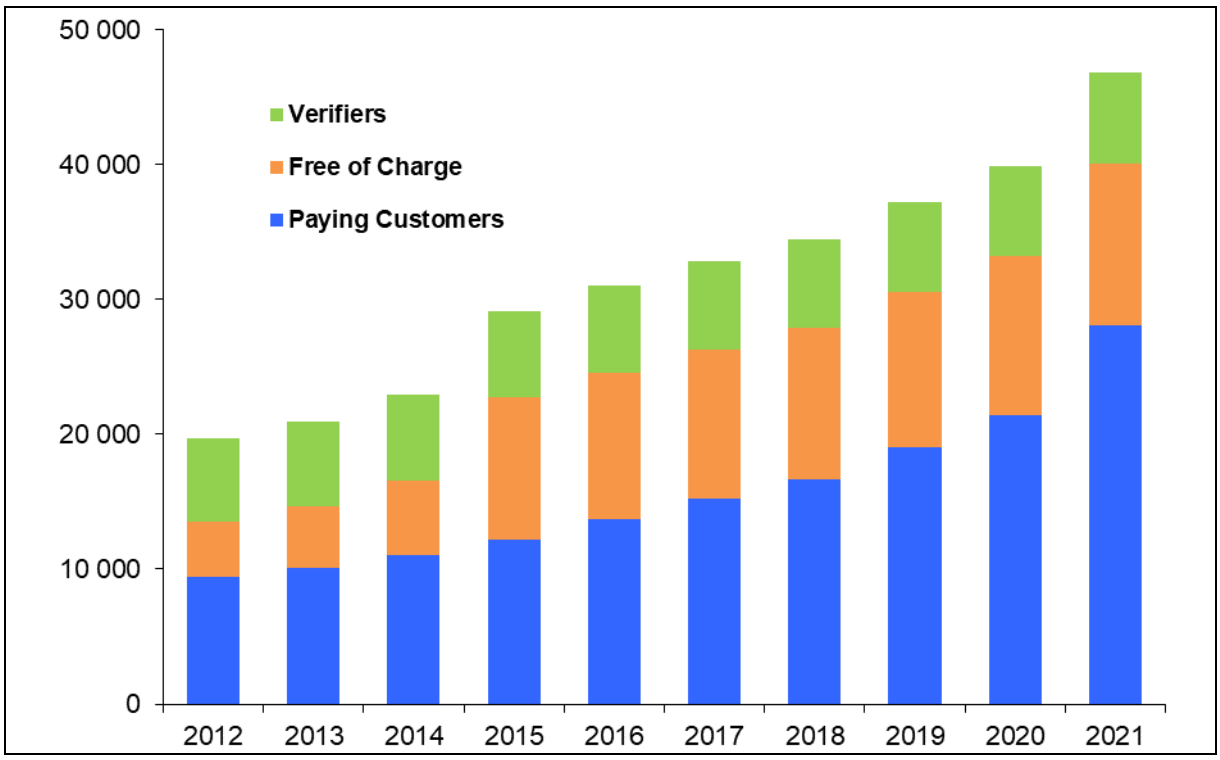
The application enables provision of outputs not only based on input of basic parameters but it also supports the visual search based on digital cadastral maps, both with help of Orthophoto CR and topographic maps as navigation tools.

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 18 %. The number of accounts for users was 46 858 by December 31, 2021, 12 088 out of which were free of charge and 6 724 accounts were for verifiers, particularly in the frame of CzechPOINT project.

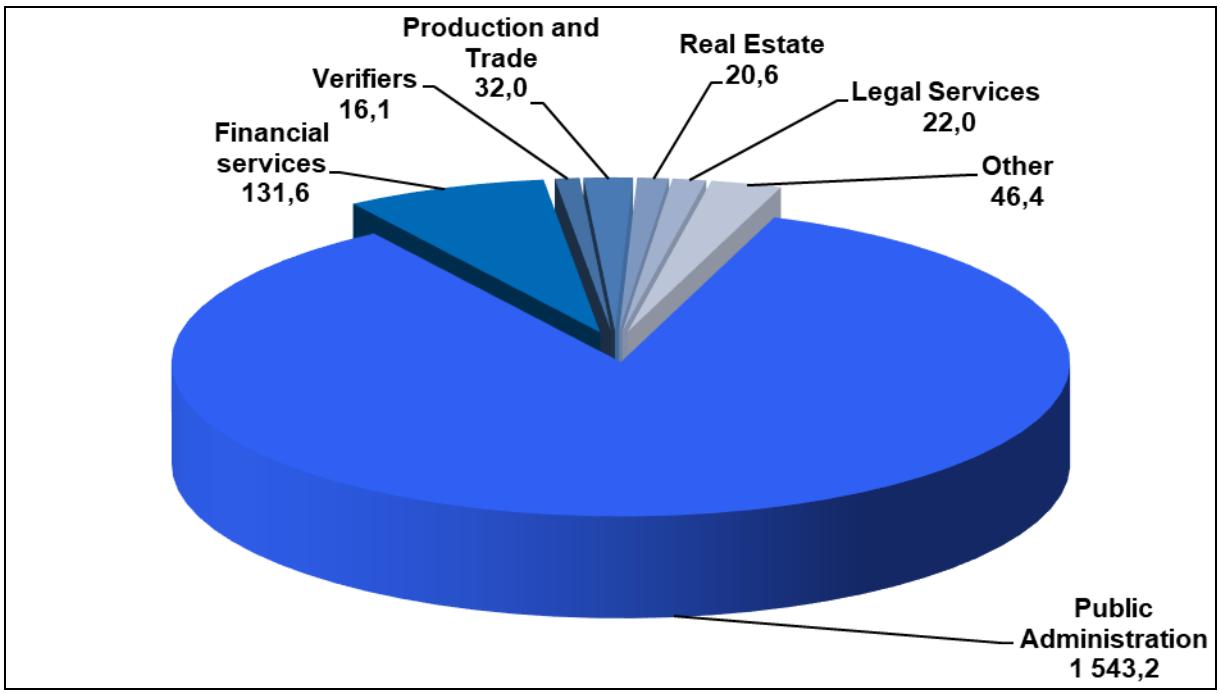
From January 1, 2016, it is possible to provide the documents from the file of documents via DP. In 2021, more than 835 000 documents were downloaded via this application, in total from its launch it was more than 3.9 million documents. Digital part of the file of documents contains more than 22.4 million documents at disposal (completely available are documents from years 2014 - 2021). In case the document has not been scanned yet, it is possible to ask for it via inquiry form. More than 278 000 of such requests were solved in 2019. This process enables to deliver the document in digital form to the applicant within 2 working days.

The number of DP users has been growing constantly, so as the income for data provision via DP service. Income of the state budget from charged customers reached in total CZK 261.7 million in 2021. The biggest charged user of DP service is the bank sector, which uses it for acquiring of necessary documentation for mortgage provision. However, 85 % 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 892 million in 2021. This range of service use by the executors is obviously disproportionate to the agenda they provide, but unfortunately, effective measures have not been taken yet to reduce it.

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.cuzk.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.

Viewing the Real Estate Cadastre http://nahlizenidokn.cuzk.cz/

The Viewing 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 2021, more than 450 000 ZPMZ were downloaded.

Viewing the cadastre is one of the most visited websites of the Czech state administration. In 2021, the number of accesses increased significantly in comparison to 2020 to more than 63 million visits.

Web Map Services for Cadastral Maps http://wms.cuzk.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. In that way he gets access to brand updated data via internet and has to take care neither about the storage of map copies in his data storage nor about their updating. 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. 1 606 customer´s accounts for these free of charge services were created by December 31, 2021.

User Support

The branch Helpdesk in the form of a call centre and web form ensures user support. Helpdesk solved approximately 4 100 requests from external users in 2021.

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 is defined in the Act Nr.111/2009 Coll., on Basic registers, stating also rights and obligations connected with creation, use and operation of basic registries. RÚIAN is edited by ČÚZK in cooperation with municipalities, building offices, Czech Statistical Office (ČSÚ) and cadastral offices.

Editing takes place through the agenda information systems ISÚI (Information system of territorial identification) and ISKN.

Development in the first half of 2021 was focused on technological change of RÚIAN and ISÚI and in July was rapidly improved the performance of the application.

In the second half of 2021, the development focused on modifications of the application in connection with the introduction of special-purpose territorial elements (ÚÚP) into RÚIAN. Introduction of further ÚÚP is a continual process. In 2021, significant progress was reached in the legislation. The amendment of the Mining Act No 88/2021 Coll. was approved. The process of implementation of the introduction of mining areas and protected deposit areas into RÚIAN as ÚÚP is finalized, with effect from 16 March 2022 and 16 September 2022, respectively. In October 2021 the Invasion amendment No 364/2021 Coll. was approved, introducing protected sites as ÚÚP into RÚIAN, the effectiveness of the protections in RÚIAN is set until 1 March 2025.

In 2021, intensive training of RÚIAN editors´ via practical trainings went on. Nevertheless, their number had to be limited significantly because of the COVID-19 measures. The organization of regular seminars and personal consultations at building authorities was also influenced. However, great attention is still paid to methodological support, within the available options, as the unification of procedures eliminates the occurrence of errors in the RÚIAN database. Detailed information about the RÚIAN project including detailed methodical instructions for editors are published and continuously updated on the project website https://ruian.cuzk.cz.

ČÚZK went on in 2021 in checking of the RÚIAN data quality. The results of chosen inspections for municipalities and building authorities are published via the application at the https://kontrolyruian.cuzk.cz/ .

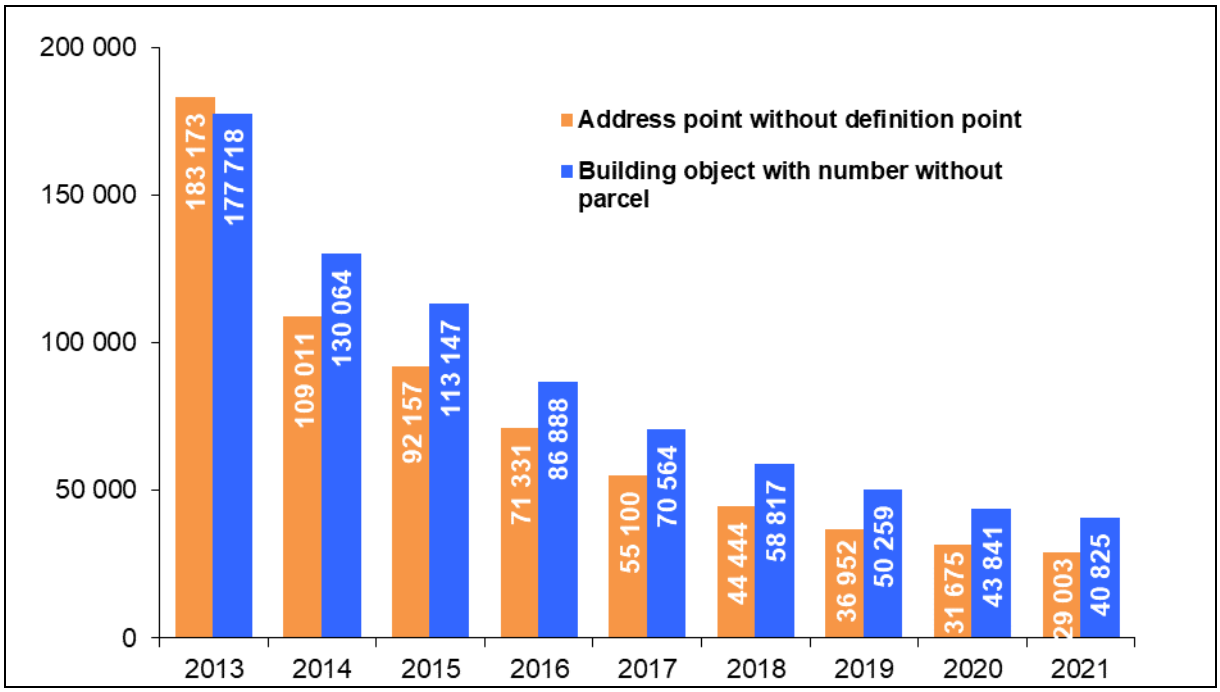
The number of errors is continuously successfully decreasing. The number of address points without definition points decreased by 9 % and the number of buildings without identification parcel by 7 %.

Users of RÚIAN complaint forms published on the RÚIAN website: https://reklamace.cuzk.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.

The Content of RÚIAN at December 31, 2020 for chosen Items was following:

Subject	Number 2020	Number 2021
Municipality	6 258	6 258
Part of municipality	15 104	15 105
Cadastral unit	13 075	13 076
Building object	4 123 396	4 152 198
Building object with the orientation/registry number	2 875 410	2 893 886
Address point	2 947 741	2 966 352
Parcel	22 656 087	22 616 437
Street	83 726	84 293

Errors Removal in RÚIAN (Fig 11)



Public Remote Access to RÚIAN Data https://vdp.cuzk.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. Only data shared via the Information System of Basic registers have a reference character.

Application contains following functionalities:

- Search for existing and cancelled elements
- Depiction of detailed infromation about chosen element included its map position
- Export element complexes in PDF, CSV and XML formats and data provision in VFR exchange fromat
- Information provision about chosen element back at a specific date in the past
- Address verification included address search based on incomplete information

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 10 million accesses per month according to the statistics of the Basic registers administration. 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. Data selection as well as frequency or volume of accesses differs according to the type and responsibility of the authority. (20 % of such active agendas means 80 % accesses).

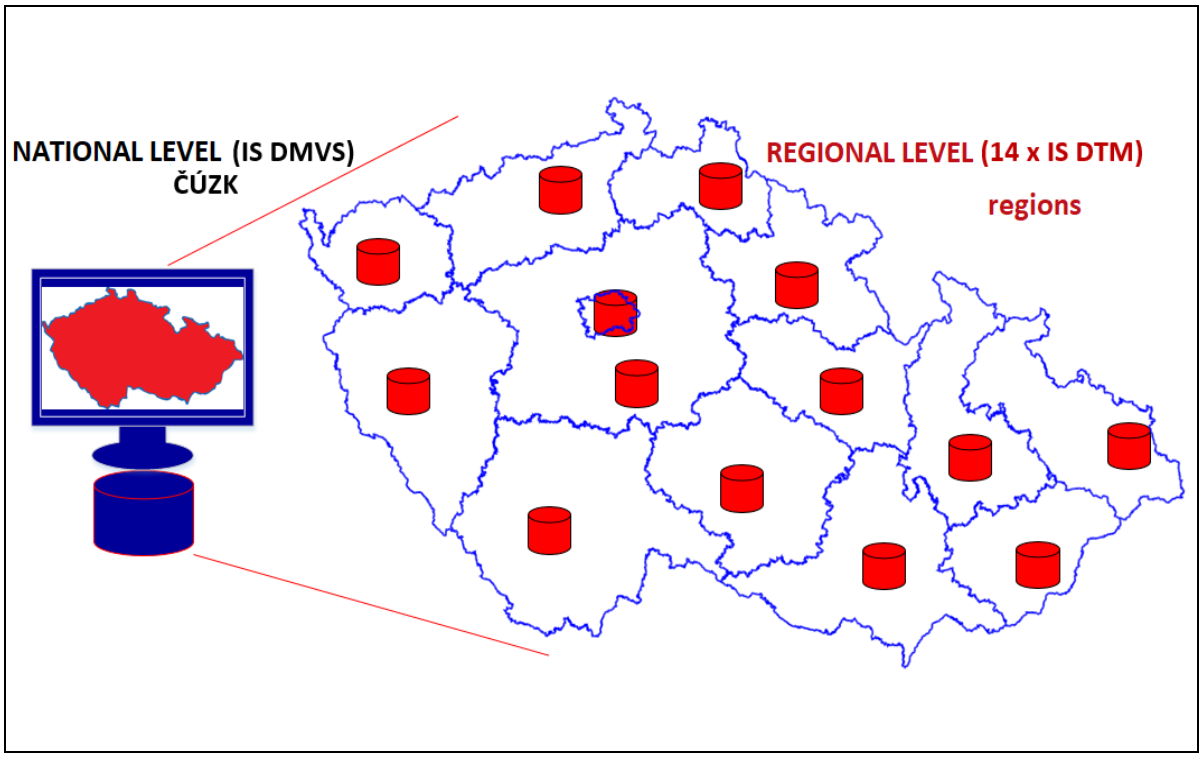
5. Digital Map of Public Administration (DMVS)

https://cuzk.cz/DMVS/O-IS-DMVS.aspx

Based on the Act No 47/2020 Coll., the regions have the obligation to create digital technical maps of regions (DTM) until 30 June 2023. DTM will be important database for number of professional activities in both public administration and private sector.

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.

Solution Architecture of Digital Technical Maps



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 CUZK.

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.

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.

Digital Map of Public Administration

CUZK task is to publish a digital map of public administration (DMVS), which consists of orthophotomap, cadastral maps and technical maps of regions. In addition to making DMVS data available, the new information system managed by the CUZK will provide records of

owners, administrators and operators of transport and technical infrastructure, records of authorized editors and an interface for sending update data to all information systems of DTM regions.

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

In 2021, an aerial survey of the western half of the Czech Republic was carried out as part of the DMVS project to create an orthophoto with resolution of 12.5 pixels. Furthermore, the central infrastructure of CUZK for the operation of IS DMVS was strengthened and a contract was signed with the supplier of the information system.

Digital Map of Public Administration

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

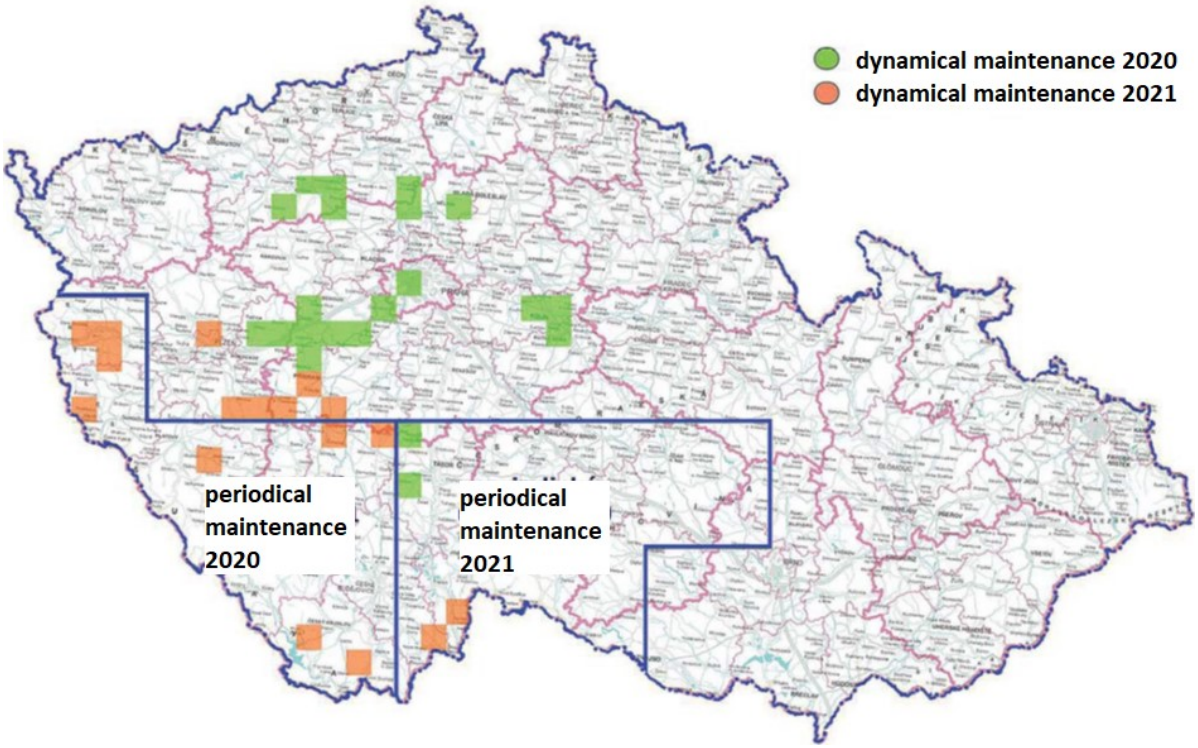
Geodetic control is a set of theories, equipment, technologies and services enabling clear spatial and time assignment and documentation of geographical objects and features in binding reference systems with defined accuracy. Basic frame for the geodetic control of the Czech Republic are fundamental geodetic control points (ZBP) being divided into horizontal, vertical and gravity geodetic control. Taking into account the development of technologies of global navigation satellite systems (GNSS) the fundamental geodetic control comprises also the points

of the network of permanent stations GNSS CR (CZEPOS) that create the fundamental reference frame for horizontal and time assignment of geodetic surveying by means of satellite geodesy.

By the end of 2021, ZÚ registered in the database following numbers of geodetic control points:

69 226 centres of trigonometric (ZPBP) and densification points,
30 106 associated points,
1 314 levelling lines of the Czech state levelling network (ČSNS) being in total 24 721km long,
119 237 levelling points (82 585 out of them are ČSNS points), and
462 gravity points.

Dynamical Maintenance of ZBP Points in Previous Years



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 2021 in total 1 902 cooperating users were registered. Dynamical maintenance relates to 80 points in locations chosen based on the density of reports. In 2021, the maintenance of 491 significant geodetic control points went on after its suspension in 2012 and launching again in 2020. In the frame of special vertical control administration (ZNS), resp. levelling networks, the reconnaissance of the external parts of ZNS Most was carried out in total length of 240 km.

Administration and development of the fundamental gravity geodetic control points (ZTBP) was ensured by completing the Uniform gravimetric network with the results of relative gravimetric surveying of gravimeters on the main gravimetric base; the maintenance of 72 points was completed. For purpose of densification and inspection of gravimetric mapping relative gravimetric measurements were carried out on 120 points.

Using new technologies of satellite geodesy enables continuous accuracy improving of reference systems both at the continental and global levels. Parallel activities occurred for integration of national reference systems with the goal of realization of unified reference frames at both the European and global levels. ZÚ as the administrator of geodetic control in the CR ensures both theoretical and practical activities, some supporting documents and data with the goal of

positioning points of geodetic control in new reference systems, particularly, in the frame of European projects. Further ZÚ publishes information about realized reference systems and provides the development of transformation services that enable precise transformation of points' coordinates between geodetic reference systems, which are mandatory in the state territory, and reference frames in European Union.

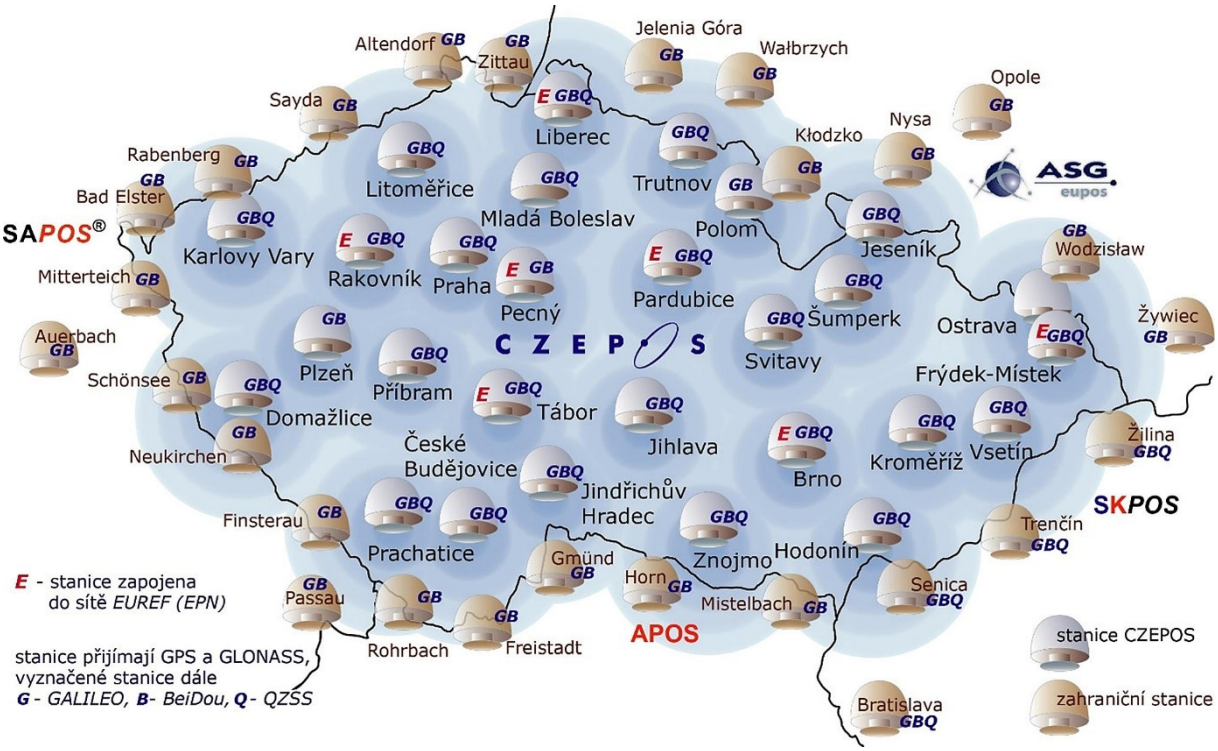
In accordance with the provision "Analysis for stating of uniform reference positional and altimetry coordinate system including the transformation method" (one of the outputs of GeoInfoStrategy in the Czech Republic till 2020), the accurate transformation relations between reference systems were enlarged by the possibility of transformation from/to WGS 84. The accuracy of the transformation from ETRS89 (in the realization ETRF2000) and WGS 84 (in realization G873) is characterized by the mean error in position m_p = 4.0 cm. Before mentioned transformations were implemented into the new version of transformation programme ETJTZU 2019 and its calculation module and updated also in the transformation services of Geoportal ČÚZK.

In the frame of international relations and cooperation ZÚ participates in projects, dealing both with geodetic control initiated by the sub-commission of International geodetic association for European reference systems (EUREF) and with European network of permanent stations GNSS (EUPOS). For purpose of unified adjustment of coordinates of EUPOS stations, the EUPOS processing centre was regularly provided with bulk data from GNSS surveying (SINEX) from the CR territory based on the CZEPOS monitoring. ZÚ participates significantly in this way on the definition and accuracy improvement of the European geodetic frame.

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

CZEPOS is the network of GNSS permanent stations spread on the whole territory of the Czech Republic. CZEPOS stations are located on roofs of cadastral offices, and record the data from GNSS signals 24 hours a day. Users can get them in the form of corrections enabling to specify GNSS measurements. CZEPOS services are in continuous operation since 2005.

Overview CZEPOS Map



There were no changes in the number and position of the stations. 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 the 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.

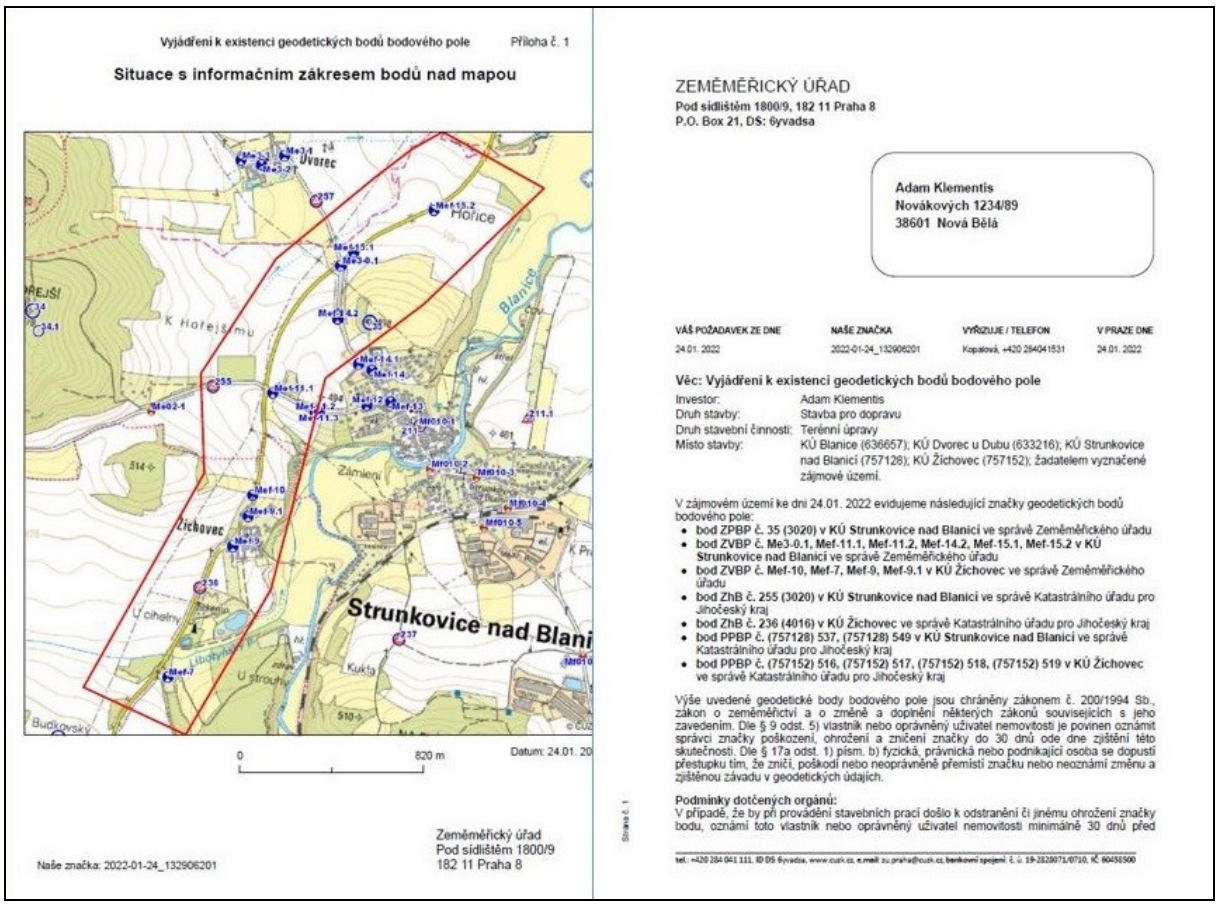
In the frame of international cooperation the data exchange between border GNSS CZEPOS stations and state GNSS networks of surrounding countries (Austrian APOS, Polish ASG-EUPOS, German SAPOS® and Slovak SKPOS®) has been carried.

The users can verify availability and quality of the provided CZEPOS services and products on the internet website in on-line regime. There were 2 148 registered CZEPOS network users by December 31, 2021, it means grow of 134 users in comparison to the end of 2020.

Database of Geodetic Control Points http://bodovapole.cuzk.cz/

Database of geodetic control points (DBP) contains geodetic data on points of fundamental horizontal, vertical and gravimetric control, data on densification and minor vertical control points. Database serves as the basic tool either for CR geodetic control administration or for the geodetic public providing them with basic reference data for follow-up geodetic surveys and setting-out in the territory of the CR. Information about the geodetic points can be found on the ČÚZK Geoportal via application Geoviewer or via viewing services WMS Geodetic control or download service WFS Geodetic control; access to data is public and free.

Output from the Application Geodetic Control Statement



Vyjádření k existenci geodetických bodů bodového pole Příloha č. 1

Situace s informačním zákresem bodů nad mapou

Strunkovice nad Blani

0 820 m

Datum: 24.01. 20

Zeměměřický úřad
Pod sídlištěm 1800/9
182 11 Praha 8

Naše značka: 2022-01-24_132906201

ZEMĚMĚŘICKÝ ÚŘAD
Pod sídlištěm 1800/9, 182 11 Praha 8
P.O. Box 21, DS: 6yvadsa

Adam Klementis
Novákových 1234/89
38601 Nová Bělá

VÁŠ POŽADAVEK ZE DNE	NAŠE ZNAČKA	VYŘIZUJE / TELEFON	V PRAZE DNE
24.01. 2022	2022-01-24_132906201	Kopalová, +420 284041531	24.01. 2022

Věc: Vyjádření k existenci geodetických bodů bodového pole

Investor: Adam Klementis
Druh stavby: Stavba pro dopravu
Druh stavební činnosti: Terénní úpravy
Místo stavby: KÚ Blanice (636657); KÚ Dvorec u Dubu (633216); KÚ Strunkovice nad Blanicí (757126); KÚ Žichovec (757152); žadatelem vyznačené zájmové území.

V zájmovém území ke dni 24.01. 2022 evidujeme následující značky geodetických bodů bodového pole:

- **bod ZPBP č. 35 (3020) v KÚ Strunkovice nad Blanicí** ve správě Zeměměřického úřadu
- **bod ZVBP č. Me3-0.1, Mef-11.1, Mef-11.2, Mef-14.2, Mef-15.1, Mef-15.2 v KÚ Strunkovice nad Blanicí** ve správě Zeměměřického úřadu
- **bod ZVBP č. Mef-10, Mef-7, Mef-9, Mef-9.1 v KÚ Žichovec** ve správě Zeměměřického úřadu
- **bod ZhB č. 255 (3020) v KÚ Strunkovice nad Blanicí** ve správě Katastrálního úřadu pro Jihočeský kraj
- **bod ZhB č. 236 (4016) v KÚ Žichovec** ve správě Katastrálního úřadu pro Jihočeský kraj
- **bod PPBP č. (757128) 537, (757128) 549 v KÚ Strunkovice nad Blanicí** ve správě Katastrálního úřadu pro Jihočeský kraj
- **bod PPBP č. (757152) 516, (757152) 517, (757152) 518, (757152) 519 v KÚ Žichovec** ve správě Katastrálního úřadu pro Jihočeský kraj

Výše uvedené geodetické body bodového pole jsou chráněny zákonem č. 200/1994 Sb., zákon o zeměměřictví a o změně a doplnění některých zákonů souvisejících s jeho zavedením. Dle § 9 odst. 5) vlastník nebo oprávněný uživatel nemovitosti je povinen oznámit správci značky poškození, ohrožení a zničení značky do 30 dnů ode dne zjištění této skutečnosti. Dle § 17a odst. 1) písm. b) fyzická, právnická nebo podnikající osoba se dopustí přestupku tím, že zničí, poškodí nebo neoprávněně přemístí značku nebo neoznámí změnu a zjištěnou závadu v geodetických údajích.

Podmínky dotčených orgánů:
V případě, že by při provádění stavebních prací došlo k odstranění či jinému ohrožení značky bodu, oznámí toto vlastník nebo oprávněný uživatel nemovitosti minimálně 30 dnů před

Users can also inform about the defected points of horizontal and vertical control via implemented application so as view the Statistics of provided geodetic data according to the categories of respective points in another application. There exist also the application Geodetic control statement, which enables finding out to users or owners of real estate, whether and which geodetic points are located in the territory touched by building activity.

6.2. Maintenance and Documentation of the State Border

Land survey activities for maintenance and verification of state borders are based on agreement with the state border documentation administrator, which is the Ministry of Interior. The actual performance of surveying activities, their scope and specific material content is different for state borders with individual neighbouring states. They are completely subject to tasks arising from international agreements on state borders and their documentation, which is administered in agreement between both partners. The international border commission coordinates processing of documentation for maintenance of state border markers, verifying state borders and updating border documentation. All state borders have just been under regular examination.

In 2021, 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 boundary of Europe) and other cross-border projects went on. The ETRS89 coordinates of 57 break points of state border were updated based on surveying carried out in 2020.

6.3. Fundamental Base of Geographic Data (ZABAGED®)

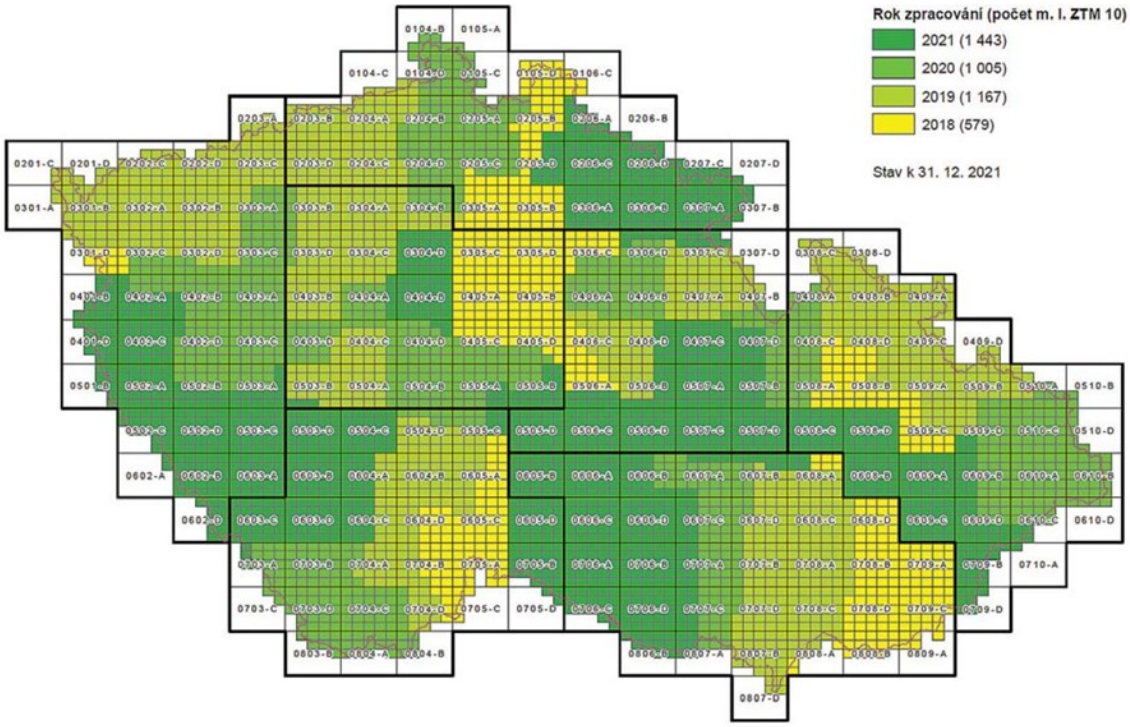
ZABAGED® is a digital geographic model of the territory of the Czech Republic. In 2021, ZABAGED® contained 134 types of geographical features (included 3 types of ZABAGED® elevation part) represented by vector graphic and descriptive part with more than 400 types of descriptive and qualitative attributes. 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.

In 2021, significant milestone was reached in database content improvement, because of systematic accuracy improvement of the position of buildings and other constructions based on the existing drawing in ISKN, Orthophoto ČR, data of airborne laser scanning and other available sources. The assumed goal of the project was fulfilled, namely to acquire the layer of pedestal contours of buildings and other constructions, corresponding to the physical reality, with the positional accuracy characterized by the mean positional error m_p = 1.0 m. This solution should ensure, besides increasing of positional accuracy of building depiction in ZABAGED®, a higher degree of harmonization with ISKN or RÚIAN data. Improved buildings were continuously integrated into ZABAGED®.

Permanent attention is given to updating in the area of ZABAGED® administration. 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 2021, the fifth 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 2021 together 1 443 map sheets of the Base topographic map CR in the scale of 1 : 10 000 (ZTM 10) were updated in this way.

Similarly as in previous years, the continuous updating went on. The significant types of features have been updating in the area of the whole Czech Republic at least once a year, some of them even four times a year. Information about changes are collected from their cooperating administrators. More detailed information about the condition of the continuous areal updating are regularly published on the ČÚZK Geoportal in the section ZABAGED® - planimetry.

State of Areal Updating of ZABAGED® by the End of 2021



Database administration were already fully operated in the new system APV ZABAGED 2014+.System was delivered and put into operation in last year, basic technological innovation was carried out and hardware and software for database administration was renewed.

6.4. Altimetry

At present the newest and most accurate elevation data at the whole Czech Republic territory are result of the multiannual common project of Ministry of Agriculture and Ministry of Defence that was completed in years 2009 – 2013. Based on the airborne laser scanning data following three elevation models were created:

Digital terrain model of the 4th generation (DMR 4G) – regular square network of elevation points (GRID) 5mx5m,

Digital terrain model of the 5th generation (DMR 5G) – irregular triangular network (TIN) of elevation nodal points, and

Digital surface model of the 1st generation (DMP 1G) – earth surface included objects above it (buildings, vegetation etc.).

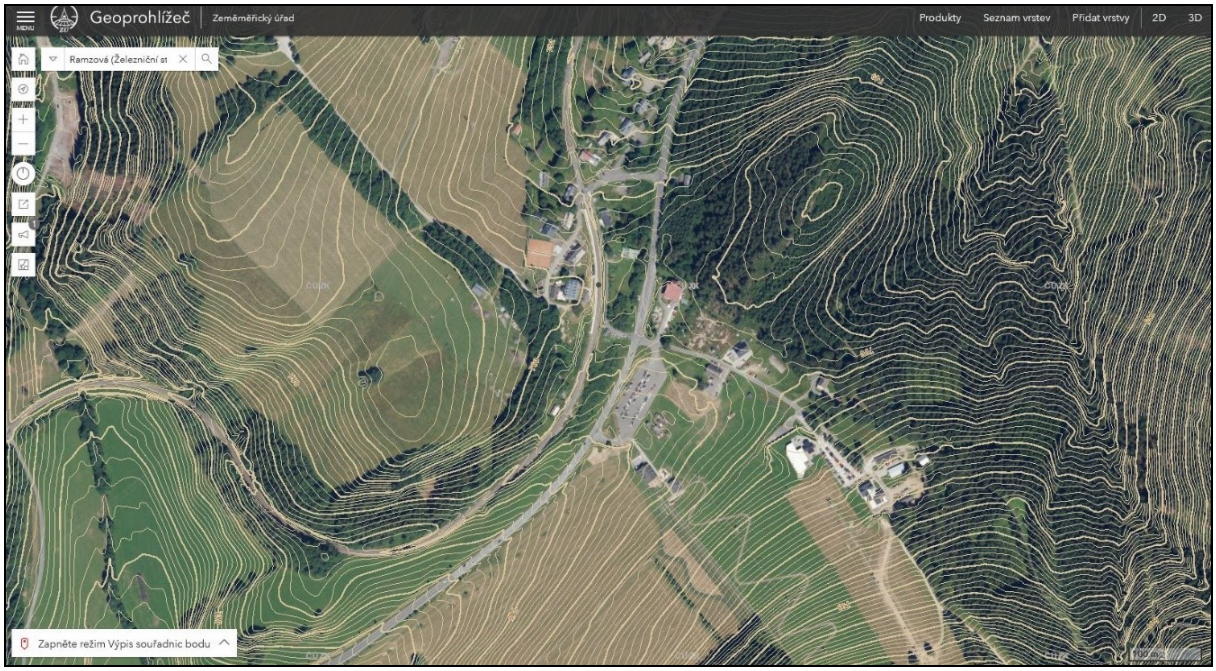
Before mentioned models are used for orthophoto processing, contour line creation used in state map series, for refinement of ZABAGED® planimetric components or for creation of flood maps. DMP 1G is used for visibility analyses and possibly also in military applications. DMR and DMP are continuously updated both based on data acquired by the airborne laser scanning or by the special aerial photographing. In cooperation with the Czech Ministry of Defence the ZÚ instruments, either laser scanner Leica ALS80 or digital three line photogrammetric camera, are used in the military plane L410FG-Turbolet.

In 2021, significant task in the area of altimetry data administration was fulfilled. Based on DMR 5G data creation of a new comprehensive dataset of contour lines was completed in 2021 with the contour lines interval of 1m. It is the vector representation of the digital terrain model with the attributes of highlighted contour lines. This dataset is suitable for altimetry visualisation in the large-scale maps and suitably complements the Orthophoto CR.

Elevation data are beside the contour lines version still published in the form of text files suitable for further elaboration or via web application Altimetry analyses, which enables expressing of the

terrain in different way, as for instance slope steepness, orientation towards cardinals or different kinds of shaded terrain. The possibility of reading the point height in the map, the tool for construction of the height profile along the defined line, dynamic function of vertical profile of chosen route or visibility between two points is also at disposal. The application enables also to count the approximate volume of the construction pit or causeway.

Contour Lines with Basic Interval of 1 m (visualisation above Orthophoto CR)



6.5. State Map Series

Apart from cadastral maps, state map series represent sets of basic and medium scale thematic map series. The fundamental state map series (SMD) is a cartographic work with a widely usable content, coherently showing the territory according to unified principles, created and issued by the state administration body in the public interest. The sources of topographic content of the fundamental state map series are particularly ZABAGED® and Geonames. Modern technology of database cartography and digital print ensures processing of the quality of map outputs and gradual reduction of their updating cycle.

Base maps of the Czech Republic (ZM) at scales 1 : 10 000 to 1 : 100 000 have been created since 2010 from two digital databases, Data10 and Data50, which are part of the modern information system of state map series. Due to the preparation of the fundamental State map series, ZM 10 – ZM 100 were not comprehensively updated in 2020 within the current publishing plan (EP). The creation of the existing ZM ČR in printed form was stopped as well. However, ZM ČR data were continuously updated throughout the Czech Republic according to current changes in the communication network or large construction objects, administrative unit boundaries were modified and street names were maintained, mainly for the publication of file data and viewing services via ČÚZK Geoportal.

In 2021, were updated 11 titles of base and thematic maps according to the frame of the ČÚZK EP, which contained also maps of map layouts of the new SMD series in preparation for both coordinate systems used for their publishing, namely S-JTSK and ETRS89.

The production of the new edition of State map 1: 5 000 (SM 5) was going on with the intention of serving especially for the purposes of urban planning. The conception of the new SM 5 is an automate visualisation of chosen object types based on the data from the real estate cadastre,

ZABAGED®, Geonames and Database of geodetic control points. In 2021, in total 16 262 map sheets were published with the validity of January 1, 2021.

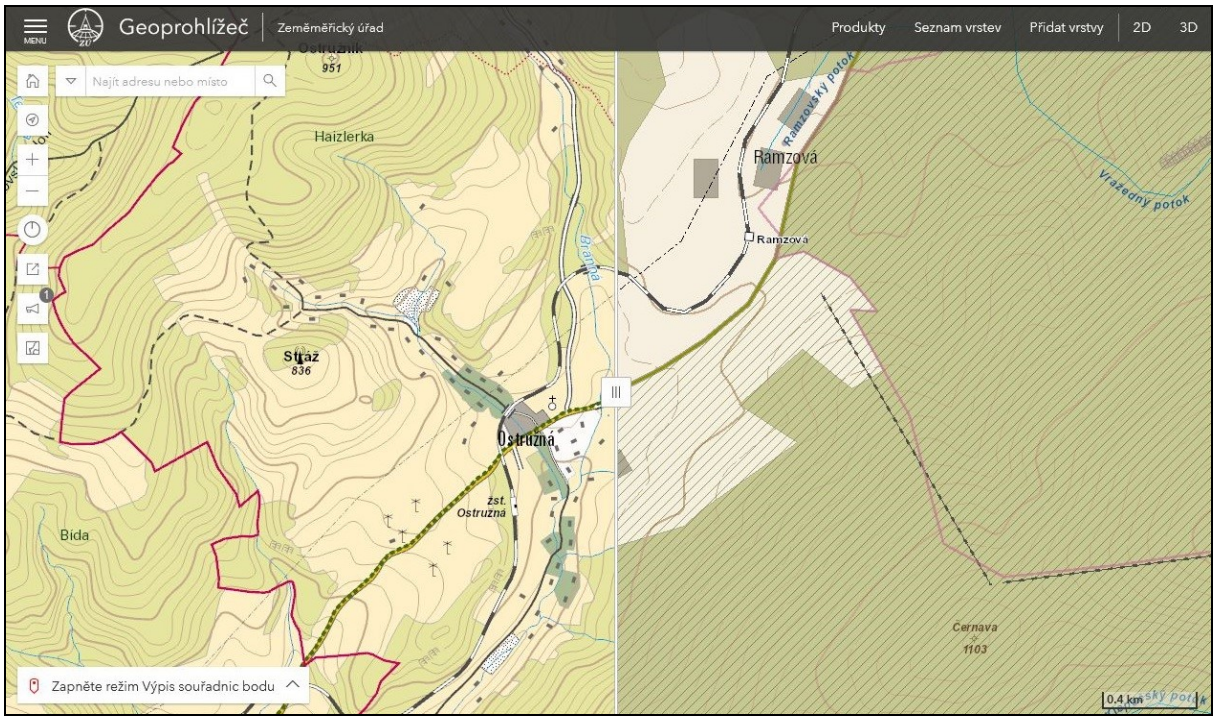
In the first quarter of the year 2021, the digital geographical models of the territory Data50 and Data200 were updated. Mentioned projects are provided even from 2019 as open data.

Updating of Base and Thematic State Map Series based on the EP 2021

EP Title for 2021	Number of Map Sheets
Map of Administration Units ČR 1 : 200 000	13
Map of Administration Units ČR 1 : 500 000	1
Map of Administration Units ČR 1 : 1 000 000	1
Map of Administration Units ČR 1 : 2 000 000	1
Map Layout of ZTM/S-JTSK 1 : 500 000	1
Map Layout of ZTM/S-JTSK 1 : 1 000 000	1
Map Layout of ZTM/S-JTSK 1 : 2 000 000	1
Map Layout of ZTM/ETRS89 1 : 500 000	1
Map Layout of ZTM/ETRS89 1 : 1 000 000	1
Map Layout of ZTM/ETRS89 1 : 2 000 000	1
Road Map of the ČR 1: 50 000	8

According to the Development concept of SMD creation of the Basic topographic map in the scale of 1: 5 000 (ZTM 5) and new medium scale map series went on. In the case of ZTM 5 the production has been in operation already three years. By the end of 2021 together 6 900 map fields and 4 011 map sheets with frame and marginal data were completed. Creation of data for the scales 1 : 10 000 to 1 : 100 000 went on the second year. By the end of 2021 cartographic data for 2 327 map sheets of ZTM 10, 353 map sheets of ZTM 25, 101 map sheets of ZTM 50 and 19 map sheets of ZTM 100 were successfully prepared. During the year, the creation of data for ZTM 250 has been launched as well. In addition to the processing of topography for all the above-mentioned maps, attention was also focused on the completion of cartographic processing of altimetry in the form of contour lines. From the DMR 5G source data, contour lines with basic intervals of 2 m, 5 m and 10 m were processed for the newly emerging SMD. The altimetry was enriched with additional contours. Only errors after automatic generation or adjustment of contour lines when crossing a watercourse and, of course, final checks were solved manually. Publication of new edition of fundamental state map series is due in 2023.

Data50 (left) and Data200 (right) published by Geoviewer Viewing Service

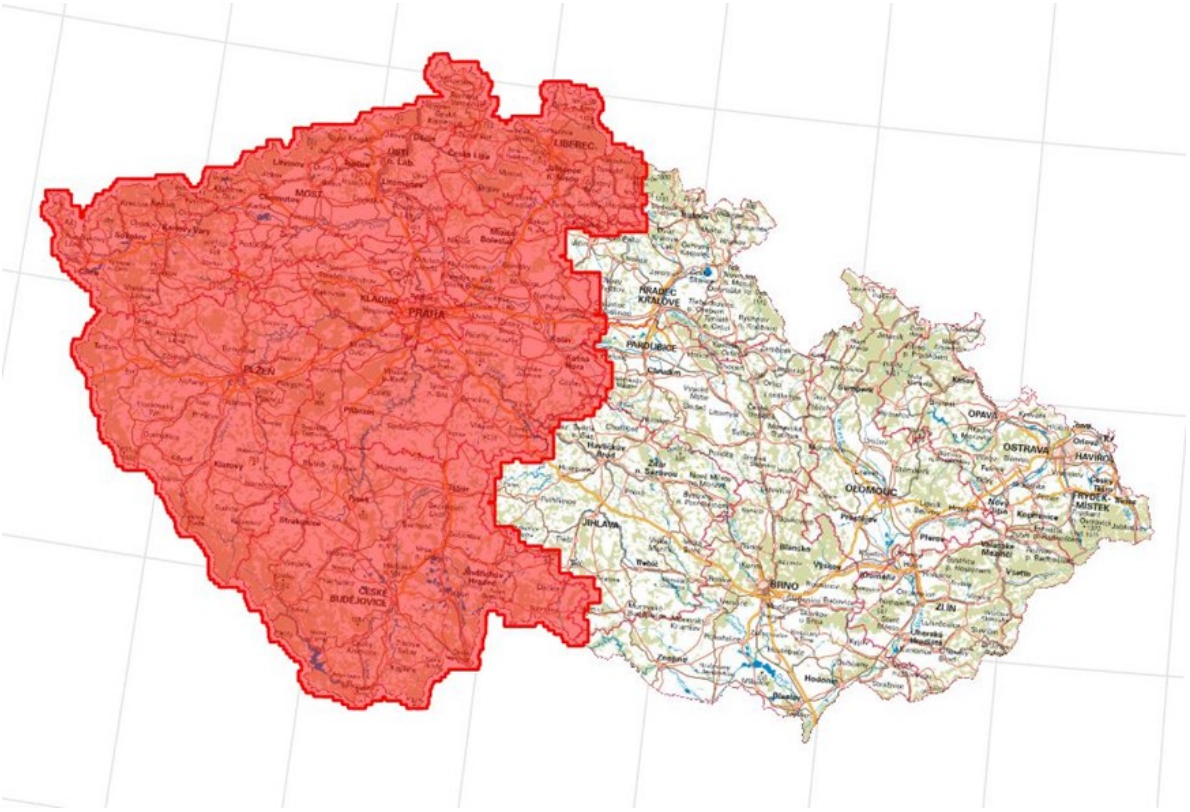


6.6. Orthophotographic Representation of the Czech Republic

Orthophoto CR created by the orthogonalization of aerial photographs has been widely used in various information systems. The private subjects based on the frame agreement are carrying out aerial photography. Orthophoto processing is ensured by the ZÚ in cooperation with the Military Geographic and Hydro-meteorological Office (VGHMÚř). At present, the aerial photographs are taken solely by digital cameras, which enables simplification of data processing and improvement of their photo interpreting quality. Since 2012 the aerial photographing of the CR territory has been realized in two-year cycle, in 2021 the western half of the CR was completed, following photographing of the eastern part. Unlike the previous years, the boundary between East and West bands was changed. Division between East and West bands takes into account the administrative boundaries of the region, which will better fit for purpose of the project of Digital technical maps of regions, resp. Digital map of public administration.

Photography was launched in April 27, 2021. The work went on very quickly form the beginning, and in the half of June in total 80 % of the territory was photographed, but then work nearly stopped for couple of weeks because of the adverse weather conditions. Last flights were carried out in September 9, 2021. In total 44 300 photos were taken, which means nearly twice more than in the past (in 2020 it was only 24 259 photos) due to the changed pixel size in 2021 from 20 cm to 12.5 cm. The resulting Orthophoto ČR product from the western part of the republic is located on the area of 42 452 sq. km, which means 8 589 map sheets of State map 1 : 5000 (SM 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.

Aerial Survey Photography of the Czech Republic in 2021



Orthophoto of the Czech Republic is used as a geographical orientation basis for processing various projects, in map portals, for the revision of the real estate cadastre, for updating ZABAGED®, etc. The accuracy of the orthophoto is sufficiently suitable for these purposes – a number of control measurements (at well-identifiable points at ground level it is safely less than 0.30 m) verified it. In the last two years, it is heading even towards 0.20 m.

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. The users can identify very dynamical changes of the territory from relatively long time photo series.

Time Series of Archive Orthophotos, Combination with Cadastral Map, from 2000, 2008 and 2019

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.cuzk.cz/archiv/ and can be distributed as the raster datasets. By the end of 2021

aerial photographs from years 1936-1938, 1940, 1942, 1946-1968 and 1997-2000 were available to users.

6.7. Geonames Database

The Geonames database provides a complete set of information on standardized geographical names and names of territorial units (in total 165 types of designated objects) and names of settlement units. The Geonames database facilitates the access to terminological data, allows their analysis for the needs of onomastic and historical research. It is more often used in map portals, web applications and search services. Alongside with the ZABAGED® data it provides users with an integrated view of the territory of the Czech Republic. It is a source for publishing state map series in different scales.

In 2021, 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 1 435 of map sheets ZM 10 and on 66 map sheets ZM 50 in 2020. In cooperation with cadastral branch offices, the updating of geographical names was carried out in the range of 434 cadastral units.

6.8. Archival maps

http://archivnimapy.cuzk.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. ÚAZK is under responsibility of Land Survey Office; its seat is in the building of cadastral and land surveying offices in Kobylisy. Archival materials are stored in specially equipped rooms; a public research room, enabling to study directly the originals, is also located there. For storage of large archival funds serves also a depository located in Pardubice.

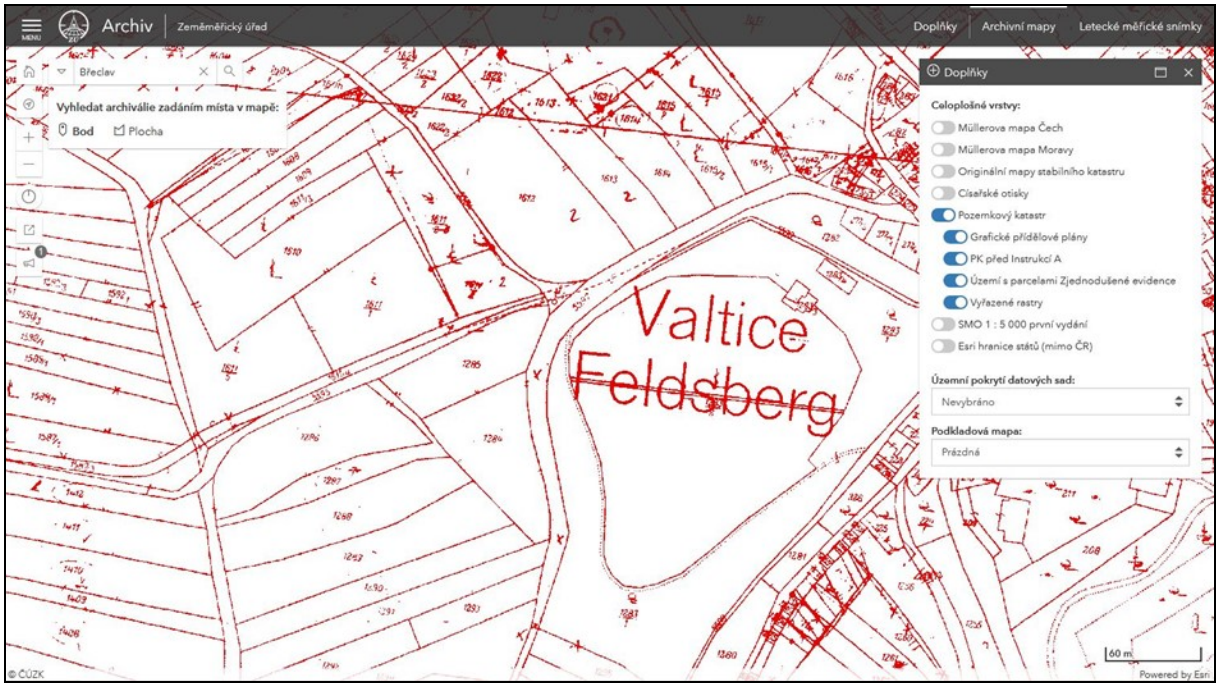
Funds and collections of the ÚAZK were enriched by many valuable pieces not only from the current ZÚ production (mandatory copies) but also from the discarding procedures or as gifts from institutions and private persons in 2020. Further 23 818 maps were scanned. Data about registered archival materials are concentrated in the database, chosen parts of which are published in the application Vademecum https://uazk.cuzk.cz/vademecum/.

The archival documents can be viewed via application Archive https://ags.cuzk.cz/archiv/; maps ÚAZK and archival documents are available in the data file as well. The most used archival documents are still Imperial mandatory prints of the Stable cadastre from 1824 to 1843 in scale of 1: 2880, included the comparison records of areas between 1845 and 1948 as well as documentation of follow-up cadastral works. Available are also maps created based on the military mapping from the end of 19th century, post-war topographic maps in the system S-1952 as well as collection of maps and plans from the second half of the 16th century until 1850. Even so called indication sketches are published there, which are physically stored in other archives. New nationwide layers appeared in the application - the combined Land Cadastre, the combined imperial obligatory prints in the South Bohemian Region, to the nationwide coverage of the supplemented first edition of the State Map derived 1: 5 000, to the S-JTSK georeferenced Müller maps of Bohemia and Moravia from the beginning of the 18th century. It is possible to order copies of archival documents or digital sets in printing quality in the eShop of the ČÚZK Geoportal.

Due to the government´s measures because of the COVID-19 epidemic, only 183 visits by researchers took place in ÚAZK in 2021, which was only one third of the usual number compared to previous years. However, thanks to the possibility of constantly expanding remote

access to the majority of the most requested archivals, the research requirements were satisfied without outages and other requirements were satisfied remotely.

Map of Land Cadastre published in the Application Archive



7. Provision of Data, Services and OpenData

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

Datasets

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 according to the standardized license CC-BY 4.0. The license associated with a given data file is always part of the metadata.

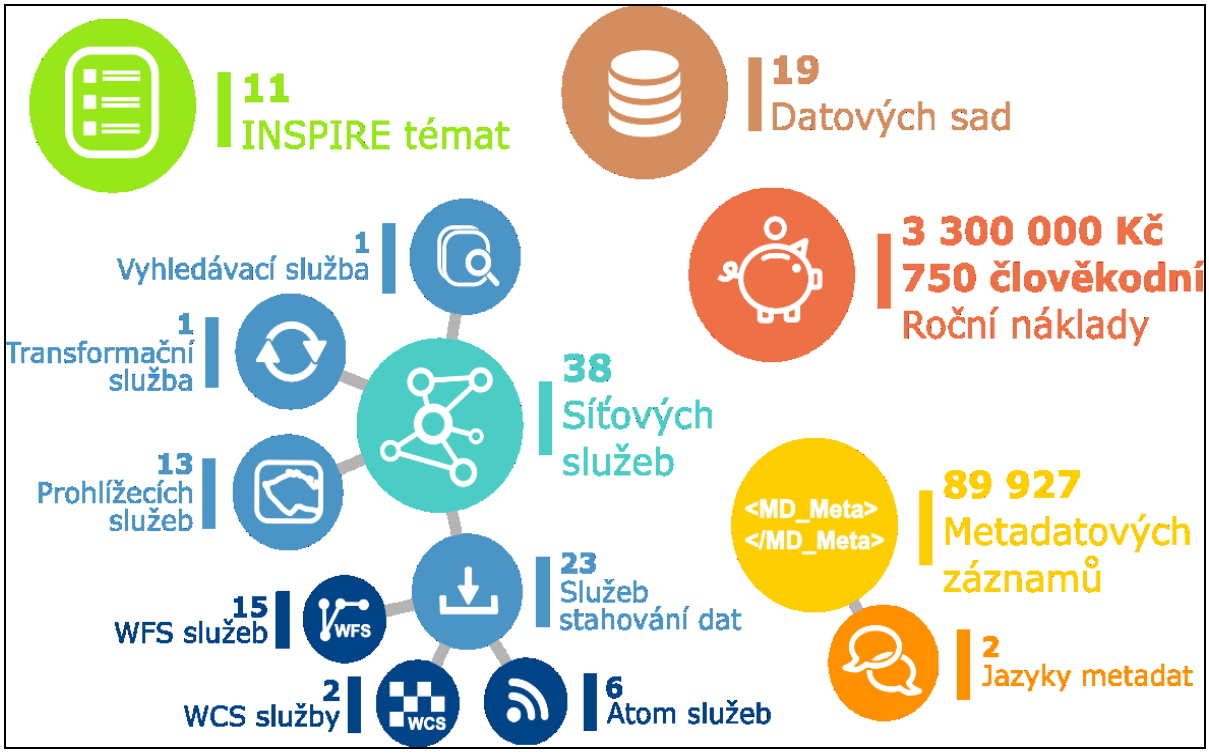
Data sets are provided through standardized services. Data viewing via viewing services - WMS and optimized pre-prepared tiles for faster responses in WMST format. Downloading vector data is possible online via WFS (Web Feature Services) services, for raster data via WCS (Web Coverage Services). For online access to data, it allows machine downloading of data in the form of pre-prepared files - ATOM. Services are available at https://services.cuzk.cz/ , https://geoportal.cuzk.cz/ and https://atom.cuzk.cz/ .

In 2021, ATOM services were updated and the user environment changed. The infrastructure to ensure greater availability of services has been strengthened.

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.

Overview if the INSPIRE Infrastructure Components



The theme Parcels (CP) is published from ISKN, the themes Buildings (BU), Addresses (AD) and Administrative units (AU) are published from RÚIAN. From ZABAGED® it is the Transport network (TN), Hydrology (HY) and Land use (LU) themes, from Geonames it is the Geographical names (GN), from DMR 4G and DMR 5G the theme Elevation (EL) for GRID and TIN data model and Orthoimagery (OI) is 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.

In the extended data model corresponding to the scope of data provision at the national level, the CPX data set is provided for the theme Parcels.

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 Atom services, which are used to download pre-prepared data available as open data. In 2021, the compatibility of INSPIRE download services was addressed 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. Thus, 36 series of data sets and 135 thousand data files are provided. Metadata is provided 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 Catalog (NKOD). The data provided for the INSPIRE infrastructure are harmonized according to the requirements of the European Commission and are provided to the same extent as in the entire European Union. Land and building datasets are added beyond the requirements of INSPIRE in the extended data model. The data is provided in two coordinate systems in open XML format through WMS browsing services. Data download is possible via WFS services or via ATOM services for pre-prepared data sets.

In 2021, a new local catalog of open data was implemented, which meets the requirements of the new open formal standard for the provision of open data and increased the quality of provided metadata records according to the quality controls monitored at the NKOD.

7.3. ČÚZK Geoportal

https://geoportal.cuzk.cz/

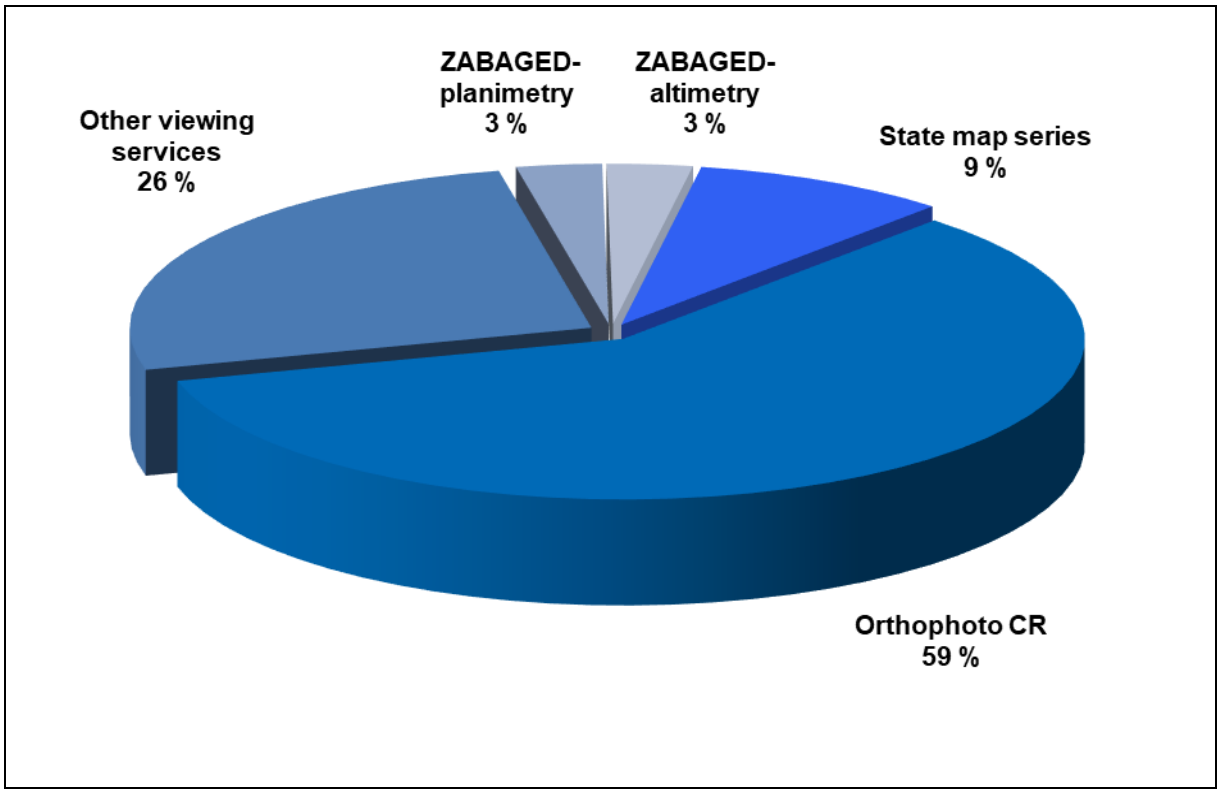
The ČÚZK Geoportal enables centralized access to map products and services of the branch. It is possible to find information (metadata) on spatial data, services and applications in responsibility of the branch in one place, it enables viewing and ordering electronic or printed data and services. Network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

By means of the internet shop (eShop application) it is possible to order data not only in existing vector and raster formats, but also, for example, in GML format (ZABAGED®, Geonames and INSPIRE themes data). The client has the possibility to select required data according to the sheet line system or according to square units for direct files. The most often provided datasets are ZABAGED®, Orthophoto CR and raster form of the Base map of the Czech Republic 1 : 10 000.

Viewing services are most popular with Orthophoto CR. To simplify the processing of orders or their payment there is a payment portal for users. The biggest data amount is provided to users from the public administration.

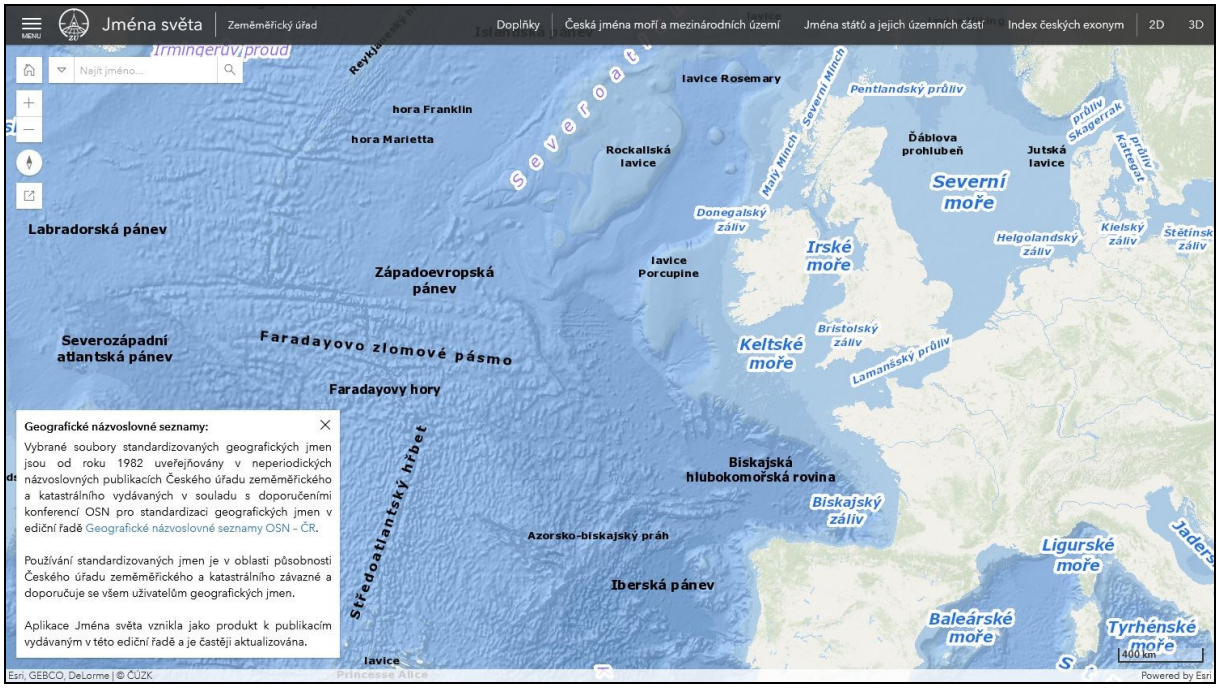
Use of data via network services and applications has been growing during last years. Available data are provided with maximum up-to-date content and defined service quality (SLA).

Access to Viewing Services of ČÚZK Geoportal (Fig 12)



For viewing and data analyzing, users of the ČÚZK Geoportal have at their disposal web applications created on the unified programming platform ArcGIS API for JavaScript 4.x. The applications have a uniform appearance and control, full functionality is ensured even on mobile devices (tablets, smartphones, etc.), and thus the use of map applications in the field is supported. Individual applications can be launched separately from the ČÚZK Geoportal environment or from the central map application Geoviewer.

Innovated Application Names of the World



The most recently innovated Names of the World application has been added to the Archive applications (together with access to the Archive Maps and the Aerial Survey Archive) and the Altitude Analysis application. Through the modern way of using gadgets (widgets), the functions Error reporting, Comment on the existence of point field points and Coordinate transformation are available.

In 2021, preparations were also underway for the technical provision of a wider provision of open data. It is now possible to export seamless data of a small extent, defined by the section of the current map window, by downloading from already opened data sets (Data50, Data200), directly in the Geoviewer environment. Another option is to use the Geoviewer as an Atom client of the ČÚZK service, which is a service for obtaining a list of links to download pre-prepared data files in the area of interest.

8. Economics and Human Resources

8.1. Employees and Education

By December 31, 2021 together 4 972 persons were employed in the ČÚZK branch, 4 617 out of them were civil servants and 355 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 (56.1 %), second place belongs to the employees with University degree (39.9 %).The most numerous age group was created by the employees aged 41-50 (35.8 % from all) and further by employees aged 51-60 (34.1 % from all).

Physical State of Employees by 31.12.2021

ČÚZK Branch	Age Structure						Women	Graduated
	to 30	31-40	41-50	51-60	61 and more	In total		
Civil Servants	269	726	1675	1544	403	4617	76,2 %	41,9 %
Employees	7	32	103	151	62	355	73,5 %	14,7 %
Total	**276**	**758**	**1 778**	**1 695**	**465**	**4 972**	**76,0 %**	**39,9 %**

One of key tasks in the management of human resources was carrying out tenders for civil service vacancies. In 2021, in total 619 tenders were prepared in the ČÚZK for vacant service positions (at some positions repeatedly); based on their results 321 successful candidates for civil service were chosen either for civil service position or appointed to the civil service position head; 44 tenders were due to be completed in the beginning of 2022. Together 51.9 % of all tenders for service position carried out in 2021 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 53.5 %. The number of carried out tenders was significantly higher than in 2020 (by 203), but the success rate decreased by 8.1 %. Civil service positions can be temporarily occupied by the ordinary employees according to the § 178 of the Act on Civil service. Together 96 such tenders were carried out in 2021, 70.8 % of which were successful. Regarding occupation of 41 positions of ordinary employees, the total success was 80.5 %. It was yearly decrease as well as with civil service positions in 2021.

During 2021 in total 311 civil servants and 87 ordinary employees terminated their employment. The rate of fluctuation was 8.0 % in 2021 that is 2.0 % higher than in 2020 and in opposite to 2020 the tendency rate was increasing.

Fluctuation Rate in Previous Years

Year	Terminated Employment	Rate of Fluctuation
2021	398	8.0 %
2020	299	6.0 %
2019	417	8.3 %
2018	374	7.4 %

By December 31, 2021 the number of women in managerial positions was 354 (57.9 %) in the ČÚZK branch from the total number of 611.

Share of Women in Leading Positions by 31.12.2021

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	14	8	57.1 %	0	0	
Department Director	137	63	46.0 %	2	2	100 %
Division Director	419	265	63.3 %	16	11	68.8 %
Total	**593**	**341**	**57.5 %**	**18**	**13**	**72.2 %**

Another main priority in the area of the human resources was education of employees. It was carried out in 2021 based on the approved Plan of education in the Czech Office for Surveying, Mapping and Cadastre 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. In 2021, there was also a repeated mass training of employees in cyber security (eLearning course Give cyber! from NÚKIB) in most offices and another mass training of employees in the field of GDPR (eLearning course prepared by the commissioner for personal data protection) in all offices. Moreover, the ČÚZK personnel department prepared or participated in preparation of 21 specialized team workshops for chosen workers from all branch offices as well as for the internal lecturers, many of them repeatedly, mostly with help of external lecturers. The year 2021 was influenced by the negative pandemic situation caused by COVID-19 in similar way as 2020 and so most workshops were carried out in an on-line environment instead of full-time teaching.

In the period from January 1 to December 31, 2021 in total 139 tests from general part of civil service tests were carried out in the ČÚZK, 17 of them were non civil service employees. In the same period, namely in 2021, 146 tests were carried out from the professional part of civil service tests namely branch No 55, land surveying and real estate cadastre which 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. Three applicants have repeated the test in 2021, two of them successfully. In comparison to 2020, the number of carried out general tests was 52 more both in general and professional part. Higher number of carried out tests is

probably in coincidence with the higher number of newly accepted employees. Further 18 branch employees passed the professional tests from other branches of civil service in other offices, namely service branches No 22, 28, 37 and 63.

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 five terms in 2021 in accordance with section 14 of the Act on Surveying and mapping (January, April, June, September and November).

The total number of completed applications was 45 and the official authorization was newly granted to 28 applicants and 5 applicants enhanced their existing authorization. The other cases were solved as follows: 3 applicants did not pass the exam repeatedly and their applications was refused and 2 applicants took the application back. 5 participants did not succeed but are going to repeat the exam in 2022. 2 applicants submitted the application in the end of 2021 and will be invited to the exam in the beginning of 2022. In 2021, no official authorization was deleted from the registry.

8.3. Economics

Approved state budget of the Czech Republic for 2021 specified revenue of CZK 1 320.0 million and expenditure of CZK 3 589.7 million for the chapter 346 ČÚZK. Revenue collection, coming to the budget from the administrative fees, was prescribed for CZK 1 120 million; its fulfilment reached CZK 1 491.3 million, which is 133.2 %. This increase of revenues is due to the increase of number of proposals for registration of rights of lien because of high number of mortgages. Non-tax revenues were in 2021 approved for CZK 200 million, and were fulfilled by the amount of CZK 340.3 million, meaning 170.1 % fulfilment – the reason was increase of electronically provided information from the real estate cadastre. The EU revenues were given by the budgetary measure to CZK 47.1 million for two projects: Thermal insulation of the building of cadastral office in South-Bohemian region (CZK 2.7 million) in the frame of the Operational programme environment and Information system of the Digital map of public administration, co-financed in the IROP frame (CZK 44.4 million). During the year 2021 the real revenues from EU reached CZK 22.8 million for the ZABAGED® project (CZK 11.0 million), for the South-Bohemian

cadastral office (CZK 3.8 million) and thermal insulation of the cadastral office for the Region Liberec (CZK 8.0 million).

The budget for expenditure was modified in 2021 by thirteen budgetary measures of the Ministry of Finance (MF) and increased the budget by CZK 80.5 million in total. It particularly dealt with the before mentioned projects and increase of the expenditures to the share of the state budget from the programme Green deal. CZK 30 million was transferred from the General Treasury Administration chapter for increased postal services and CZK 1 million for the adjustment of the IS RÚIAN in connection with the Census of people, houses and flats in 2021. In contrast, expenditures were transferred to the administration of basic registers for CZK 675 000 and to the budget of the Ministry of Defense and the Ministry of Agriculture expenditures originally intended for aerial surveying in the amount of CZK 38 000. The Ministry of Finance also approved three budgetary measures that made the required changes in the subordinated offices systemization by transferring funds between employees' salaries, staff salaries, other payments for work performed and other material expenditures, mainly due to increased wage compensation during illness. Beside the measures in competence of MF in total ten budgetary measures were carried out in the branch competence used mainly for shifting expenditures between programmed and other material expenditures. Within the justified exceeding of mandatory indicators, the savings from previous years of chapter 346 ČÚZK (claims from unused expenditures) drawn in the amount of CZK 132.9 million were used, of which CZK 110 million was drawn for program expenditures, including expenditures on EU projects.

Total expenditure in 2021 was CZK 3 668.2 million. The biggest part was used for the salaries of employees in the civil service regime, for other employees and employment agreements including the insurance and FKSP (Fund for cultural and social needs) in the total amount of CZK 2 774.2 million. These expenditures created 75.6 % of the total expenditure. The average monthly income achieved in 2021 reached CZK 35 077.

The second biggest expenditure group of the chapter 346 ČÚZK were other material expenditure in the amount of CZK 671.0 million; postal services were received in the amount of CZK 171.3 million. Except for postal services mainly further services were purchased in 2021 included particularly data processing services and services related to information and communication technologies (CZK 179.4 million), on building and computer equipment lease (CZK 33.9 million) and data and voice telecommunication services (CZK 14.9 million). Further expenditure were given to energy purchases, heating, gas, fuel and water in the amount of CZK 60.7 million, to property repair and maintenance in the amount of CZK 30.6 million, and for purchase of material (CZK 43.1 million). Compensation of salaries during illness was more than one-third higher than in 2020 and reached CZK 27.6 million. The rest of the expenditure was given to catering allowance of all employees, travel costs, compensations during illness, education and workshops, bank services, court proceedings, and EuroGeographics membership fee. These expenditures included extraordinary expenditures of departmental offices on anti-epidemiological measures related to the spread of COVID-19 for CZK 3 million. Expenditures were used to purchase particularly antigen tests, protective aids for selected employees (gloves, respirators and veils) and disinfectants (for cleaning and personal hygiene of employees and clients).

Significant part of the expenditure (CZK 222.9 million) were those used on financing of programmes administered in the information system of programmed financing, it means the expenditure allotted for procuring and modernisation of the sector of tangible and non-tangible property. The share of these expenditures was 5.7 % in 2020. A substantial part of the program investment expenses consisted of expenditure on acquisition and technical improvement of intangible fixed assets, in particular software (CZK 95.5 million) and for computer technologies (CZK 59.4 million). Other items were the programme investments for building reconstructions (CZK 53.2 million) and renewal of the transport (CZK 6.6 million) and computing and surveying means (CZK 8.2 million).

Revenues and Expenditures of the State Budget - Chapter 346 ČÚZK

Index/ Year	2017	2018	2019	2020	2021
Revenues of the chapter (in CZK thousands)	889 519	849 376	880 856	1 452 676	1 854 299
Out of it: revenues for administration fees	651 805	618 146	620 995	1 170 170	1 491 282
Income from EU budget	194	0	9 418	16 547	22 763
Total expenditure of chapter	3 108 288	3 327 114	3 540 266	3 606 067	3 668 161
Out of it: projects co-financed from EU budget	0	11 697	20 473	26 165	68 434
Current expenses without non-investment	2 905 947	3 079 634	3 302 312	3 399 240	3 392 578
Including: wage resources	1 705 674	1 832 443	1 992 878	2 058 158	2 044 192
Insurance and FKSP	613 732	659 433	715 280	735 934	730 050
Other material expenditure	586 541	587 758	594 154	571 055	618 336
Program expenditure	202 341	247 480	237 954	240 920	275 583
Including: non-investment	40 297	33 537	42 781	34 093	52 651
Investment	162 044	213 943	195 173	206 827	222 932
Number of employees in Sector	4 963	4 957	4 956	4 849	4 847
ČÚZK	136	136	135	137	141
Cadastral Offices	4 371	4 361	4 358	4 261	4 259
Land Survey Office	372	376	379	370	366
Survey and Cadastral Inspectorates	84	84	84	81	81

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.

Only some data from the complete ZKI activities statistics for the year 2021 are published here. ZKI received in total 26 complaints and 397 other submissions. The extent of decision-making agenda on appeals against decisions of KÚ is comparable to 2020 (320 appeals delivered in 2021 as opposed to 323 appeals delivered in 2020). The quality of decision making activities of cadastral offices as first step authorities worsened slightly in 2021 (41.2 % KÚ decision were

proved illegal as opposite to 40.0 % in 2020). The number of appeals in matters regarding correction in cadastral documentation increased by 5.0 % in comparison to 2020 (190 appeals delivered in 2021 as opposed to 181 delivered in 2020). The number of appeals in matters regarding objections against the content of renewed cadastral documentation increased by 26.8 % last year (52 in 2021 as opposed to 41 in 2020). Finally the number of delivered appeals against procedural decisions of KÚ decreased by 26.0 % in 2021 in comparison to 2020 (57 in 2021 as opposed to 77 in 2020).

ZKI performed in total 1 167 documented inspection actions (the increase of 6.5 % occurred in comparison to 2020, when 1 096 inspections were performed). In the framework of supervisory activity regarding certification of the results of land survey activities ZKI performed in total 233 documented supervisory actions in 2021 (increase by 21.4 % in comparison to 2020, when 192 actions were performed). In 13 from 14 cases (17 in 2020) 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 and imposed fines at a total of CZK 251.5 thousand (CZK 240 thousand in 2020). ZKI also received 17 applications for measures against inaction and following requests:

3 requests for renewal of proceedings,
2 requests for review proceedings,
15 requests for information pursuant to Act No. 106/1999 Coll., on Free access to information,
31 requests for extradition of the authorization to verify the results of surveying activities,
14 applications for the issue of an official entry permit, and
7 applications for the issue of a service card for entry to real estate.

Particular cases of discovered insufficiencies were specified and commented in ZKI half year analyses, which are systematically organized according to unified concept and regularly handed over to other ČÚZK departments for further utilization. Internal branch publicity has been ensured via branch intranet.

Systematic inspection activity of ZKI in 2021 focused mainly on:

• verification that duplicate property registrations have been made in accordance with the Real Estate Cadastre Administration Guidelines,

• 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	2	6	8	3	1	4	-
in Č. Budějovice	-	1	1	-	1	-	-
in Liberec	-	7	7	1	1	5	-
in Opava	-	4	4	1	1	2	-
in Pardubice	-	4	4	3	-	-	1
in Plzeň	1	-	1	1	-	-	-
in Praha	2	4	6	2	-	4	-
Total	**5**	**26**	**31**	**11**	**4**	**15**	**1**

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	2	91	93	9	79	5
in Č. Budějovice	7	85	92	3	81	8
in Liberec	-	17	17	-	16	1
in Opava	-	51	51	6	45	-
in Pardubice	1	47	48	8	40	-
in Plzeň	1	18	19	3	16	-
in Prague	2	88	90	11	78	1
Total	**13**	**397**	**410**	**40**	**355**	**15**

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	27	190	217	107	34	-	39	6	21	10
Objections to revised cadastral documentation	6	52	58	26	4	1	10	3	11	3
Infringements of order in the sphere of the cadastre	-	-	-	-	-	-	-	-	-	-
Procedural	4	57	61	20	2	5	19	3	4	8
Changes in the boundaries of cadastral districts	-	4	4	2	-	-	-	1	-	1
Administrative fees	1	6	7	6	1	-	-	-	-	-
Rejection of applications for submission of information	-	7	7	4	-	-	2	-	1	-
Other	-	4	4	3	-	-	1	-	-	-
Total	**38**	**320**	**358**	**168**	**41**	**6**	**71**	**13**	**37**	**22**

ČÚZK (as relevant central administrative office) performed in 2021 inspection of delegated powers conferred on the regional institutions and Prague-city in the area of RÚIAN. In 2021, together 4 inspections were carried out in regional offices (Olomouc, Pardubice, Hradec Králové and Prague-city). General information for the year 2021 about their results are published on the ČÚZK website in accordance with the § 26 of the Inspection Rules.

9.2. Financial Inspection

ČÚZK carried out public inspections in the subordinated bodies according to the Act No. 255/2012 Coll., on Inspection (Inspection order), Act No. 320/2001 Coll., on Financial inspection

in public administration (further only Act), and to its implementing Decree No. 416/2004 Coll. Public inspection is integral part of the financial inspection system.

According to the approved plan of public administration inspections for 2021, the inspection group of ČÚZK carried out public administration inspections at following 9 inspected bodies:

KÚ for the Region Liberec, KÚ for the Region Moravia-Silesia, KÚ for the Region Central Bohemia, KÚ for Prague-city, ZKI in Plzeň, Liberec, Opava, České Budějovice and Prague. According to the COVID-19 pandemics was the inspection in the Region Liberec carried out in the electronic form.

In the course of 2021, two public administration inspections were also carried out by the inspection group of the Ministry of finance of the Czech Republic at the KÚ for the Region Olomouc and at the ČÚZK, both in electronic form.

The subject of public administration inspections carried out by the ČÚZK inspection group was compliance with generally binding legislation, economic rules and internal regulations of the inspected entities and verification of the effectiveness of the internal inspection mechanisms of the economic management system. Given the significant level of risk, the procedures for awarding and implementing public contracts and the procedures for collecting administrative fees in connection with the provision of data from the real estate cadastre were also examined in detail. Special attention was paid to the performance of the file service and the procedures for resolving damages caused by incorrect decisions or incorrect official procedures.

Accounting and compliance with budgetary discipline was verified by the control of bookkeeping, financial transfers between bank accounts of budgetary and extra-budgetary management, compliance with balance sheet continuity and accounting records in terms of the requirements of accounting documents in fact and form.

During the public administration inspections, carried out in 2021, individual partial deficiencies were found in 6 inspected entities, the elimination of which, resp. to prevent their recurrence, the audited subordinated offices submitted proposals for term measures, to the ČÚZK president, specifying the specific employees responsible for resolving these shortcomings. These were, in particular, measures aimed at increasing the quality and timeliness of internal regulations, the method of conducting preliminary financial control in the award of public contracts and consistent verification of the identity of data applicants in cases regulated by Decree No. 358/2013 Coll., on Real estate cadastre. In the area of the file service, measures were taken to shred initial documents and documents for which the shredding deadline had expired in accordance with the relevant file rules and the shredding plan.

The implementation of public administration inspections at all inspected organizational units did not reveal any cases of incomplete or inconclusive accounting in 2021. Unauthorized use of state budget funds or violation of the conditions under which the relevant funds were provided was not found.

No serious shortcomings were discovered that would unfavourably affect the activities of inspected persons in 2021 and so there is no suspicion as for the possible corruption activities.

The internal control system creates adequate conditions for meeting the criteria of economy, efficiency and effectiveness in the performance of public administration and spending public means for carrying out specified tasks, while ensuring an important information function in terms of providing information to the appropriate levels of management.

9.3. Internal Audit

Internal audit is a part of the internal inspection system in the ČÚZK branch based on the Act No. 320/2001 Coll., on Financial inspection in public administration (Financial Act). It includes organizationally separate and functionally independent review and evaluation of the adequacy and effectiveness of management control, while the functional independence of the internal audit within the ČÚZK conditions as well as in the subordinated bodies is ensured through the relevant

organizational rules. The internal audit function in all ZKIs is, in accordance with the Financial Act, replaced by an annual public-administration inspection.

Authorized employees - internal auditors, carry out internal audit. Systemized internal audit points are established at the level of ČÚZK, Land Survey Office and all 14 cadastral offices. Organizational rules ensure full independence of the auditors and their separation from managerial and executive structures.

In their activities, internal auditors focus mainly on compliance with generally binding legislation and internal regulations, ensuring the principles of efficiency, economy and effectiveness in the performance of public administration and timely identification of risks and control of measures taken to mitigate or eliminate them. At the same time, they provide the management of the authorities with objective information on the effectiveness of the internal control system and make recommendations for improving management control, protecting assets and correcting identified deficiencies.

In the sense of the Financial Act, internal audit is performed in accordance with the medium-term plan and annual internal audit plans. Internal audit planning is based on an analysis of the risks arising from the stated intentions and goals of organizational units, legislative requirements and taking into account the findings of the internal control system, internal audit and the results of external controls. At the request of the head of the organizational unit, an extraordinary audit may be performed outside the approved annual plan.

The activities of internal auditors are performed based on three-year medium-term plans, specified every year in the annual internal audit plans. Audit planning deals with the assessment of the frequency and significance of risks and is focused on priority processes in the activities of individual offices. In particularly justified cases, where the occurrence of unforeseen risks that could adversely affect the activities of organizational units is suspected, the performance of an audit beyond the approved annual plan may be exceptionally included in the performance of the internal audit.

In 2021, there were performed together 74 audits. 74 audits were planned; 2 audits were included exceptionally outside the approved annual audit plan, and 2 audits were canceled due to the epidemiological situation. Out of the total number of 74 performed internal audits were

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

• 32 systems audits, which examined the management of public funds and the financing of activities of subordinated offices,

• 15 performance audits that dealt with the operation of the internal control system, and

• 9 other otherwise focused audits.

The internal audits carried out in 2021 examined the functionality and effectiveness of the internal control system, the actual status of compliance with the proposed recommendations from the audits and the controls carried out in the previous period. The subject of internal audits was primarily the compliance with applicable legislation in the management of public funds, inventory of assets and liabilities, management of state property, setting tender conditions and verifying the method of evaluating bids in public tenders. As every year, in 2021 special attention was paid to updating the catalogue of corruption risks and taking corrective measures to mitigate, resp. complete elimination of these risks, as well as other tasks arising from the Department's internal anti-corruption program in the fight against corruption.

None of the internal audits identified shortcomings with a significant risk to the management of public funds in 2021. The reports and recommendations from the performed audits were discussed with the responsible employees and measures were subsequently taken in the management of the authorities, which were implemented within the given deadlines. The

conclusions of the audits carried out in 2021 will be the subject of follow-up audits by internal auditors.

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 2021, most international activities moved to the virtual sphere, and due to measures related to the COVID-19 pandemic, no foreign visits, study tours or excursions took place.

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, ESDIN, and 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 virtually with more than 100 participants from 50 organizations in 40 European countries. 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), a representative of ČÚZK monitored its plenary session and other meetings.

In 2021, the implementation of the INSPIRE Directive continued and ČÚZK participated in several webinars as well as in the regular European monitoring. The main conference, which was to take place in Dubrovnik, was held virtually. ČÚZK participated in the European survey and INSPIRE evaluation.

Also the activities of the GeoSpatial Solutions (GSS) group, which was established by the European Commission in 2013 within the ISA - EULF Program, resp. in 2016 within ISA2 - ELISE, took place remotely. Members' meetings took the form of online conferences. In the last year of the programming period, a number of projects and activities covered by ELISE ended, so a number of webinars presenting the results, as well as workshops and surveys focused on their evaluation. The Czech representation was again active, including several requested presentations. In the period 2020-2021, the Czech Republic achieved excellent results in the European Monitoring of Interoperability Framework Observatory (LIFO) in 23 countries

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 2021, the representatives from the ČÚZK monitored the WPLA activities only virtually.

The meetings of the Permanent Committee for Cadastre in EU (PCC) were in 2021 held virtually from Lisbon (Portugal) and Ljubljana (Slovenia)) in accordance with the rules of the EU Council presidency.

37th 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, which was due to be held in Trieste in Italy 2020, was postponed again to the year 2022.

In the area of geographical names, where ČÚZK also has a representative, the 27th Congress of Onomastic Sciences (ICOS) was held virtually from Krakow in 2021. Czech representative actively presented 100th anniversary of the standardization of geographic names in the Czech Republic. The aim of these meetings is to raise awareness of the standardization of geographical names, to promote the collection, preservation and authorization of geographical names and to contribute to international and regional cooperation in this field.

Other international activities were carried out mostly virtually or by correspondence, including the preparation of the professional magazine Geodetic and Cartographic Review (GaKO).

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 branch 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®.

During 2021, VÚGTK participated on solution of 18 projects from 5 domestic providers and on 4 international projects (two GSA, one H2020 and one ESA/EUSPA) within the main scope of its activities. One of the most important projects is the project GSA “Galileo Reference Centre - Member State“ and H2020 „Galileo Improved Services for Cadastral Augmentation Development On-Field Validation“. BETA 2 TA CR projects are also of big importance, because in their frame the research needs of the CUZK are ensured. Projects carried out in cooperation with the Ministry of Industry and Trade (MPO) focused on BIM are also of professional importance.

In 2021, the GIS and real estate cadastre research department participated in the implementation of MapOO application results into the practice of the ČÚZK branch. In 2021, a version of MicroGEOS Nautil was issued supporting the semi-centralization of MGEO databases to the level of the cadastral office, where all branch offices access the regional database. A migration procedure was prepared for the MicroGEOS Nautil system data, which ensured the transfer of live data to the central database and the archiving of completed projects. Furthermore, a version of DIKAT was handed over; where the tools for working with branch offices within the central database are optimized. At the beginning of November 2021, new versions of both systems were released, which reflect the change of the VFK to version 5.6.

In 2021, the solution of 6 projects with the support of TA CR continued. One was the solution of research project "Procedures of complementation of geodata and specific data by contactless measuring methods in favour of consistent application of conceptual tools of complex landscaping". Further projects were "NaSaPo - National Set of Spatial Objects" and "Development of precise tropospheric model for more accurate GNSS measurements and software for generating virtual GNSS data in the CZEPOS network ", which were successfully completed that year.

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. Unfortunately, its activity was significantly limited only to the on-line information provision, because of pandemic situation.

The ODIS research unit and the Land survey library® dealt in 2021 with the NAKI II project of the Ministry of Culture of the Czech Republic “Landscape architecture in the period of totalitarian regimes in 1939-1989 in the Czech Republic”, which was going on. Further, it launched the project “BIM – Development of modular blocks for digital twin building” in cooperation with EuroGV in the frame of the MPO announcement – Application IX.

Study Room of the Land Survey Library®

Basic and applied research in the branches of geodesy and geodynamics is provided for a long time by the research department of the same name at the Pecný Geodetic Observatory in Ondřejov. Research needs were carried out in the frame of the department competence, particularly via projects of applied research and innovations for the needs of the public administration of the BETA programme of the Technological Agency CR. In 2021, the department completed the project, focused on "Development of an accurate tropospheric model for GNSS refinement and software for generating virtual GNSS data in the CZEPOS network" and went in with the project "Increasing the accuracy and reliability of gravity acceleration at absolute gravity points in the Czech Republic".

As part of the department's international scientific cooperation, the "EGNOS Service Performance Monitoring" and "Galileo Reference Center - Member States" projects supported by the European Global Navigation Satellite Systems Agency (GSA) were addressed in 2021.

Within the scientific services of the International Geodetic Association (IAG), the department operated data and analytical centres in 2021 (data archiving of satellite navigation systems and gravimetry, creation and dissemination of products obtained by data analysis). This activity significantly contributes to the implementation and maintenance of the Global Geodetic Reference Framework and represents a national contribution to the implementation of the UN resolution "Global Geodetic Reference Framework for Sustainable Development". The applied research of the department further focused on the development of software tools for GNSS data processing in the mode of accurate positioning, on development of metrological bases for gravity and GNSS measurements and on monitoring the stability of the network of reference GNSS stations in the Czech Republic. The gravimetric laboratory in Pecný, with its superconducting and two absolute gravimeters, was, as in the previous period, involved in international projects in the fields of gravimetry, geodynamics and metrology in 2021 as well.

The Metrology and Engineering Geodesy Research Department successfully completed the NAKI II project "Surveying and Astronomical Instruments Used in the Czech Republic from the 16th to the End of the 20th Century" , and also solved a number of projects within the EPSILON TA CR program. In the form of contractual research, the Institute for Nuclear Safety deals with the “Preservation of State Standard (SE) of lengths from 24m to 1 450m”, the so-called metrological continuity of SE.

In addition to the research activities, the department was involved in determining the lengths of road sections with a controlled speed of vehicle movement within the Czech Republic and in the calibration of geodetic devices and tools. In 2021, in total 568 orders for 1 342 calibration of measuring devices and tools were carried out. An important activity was the participation of the calibration laboratory in the international inter-laboratory comparative measurements regarding the length parameter organized by the EURAMET (European Association of National Metrology Institutes).

State Standard of Length 24m to 1450m – Length Base Koštice

In connection with the activity of the calibration laboratory VÚGTK, v.v.i., the laboratory was subject to an audit of the Czech Accreditation Institute and the Czech Metrology Institute in 2021 according to the new international standard ČSN EN ISO / IEC 17025. Based on the positive assessment, the laboratory has been certified according to a new international standard and its results are acknowledged even within the EU.

Annual Report 2021
Český úřad zeměměřický a katastrální

Prepared by collective of authors from Český úřad zeměměřický a katastrální
Issued by Český úřad zeměměřický a katastrální 2022

ISBN 978-80-88197-29-4