

Český úřad zeměměřický a katastrální



ANNUAL REPORT

2015



**Annual Report  
Of the Czech Office for Surveying, Mapping and Cadastre  
For 2015**

**Prague, 2016**

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## INTRODUCTION

State administrative bodies of the cadastre of real estate managed by the Czech Office for Surveying, Mapping and Cadastre (ČÚZK) provide state administration of the cadastre of real estate in the Czech Republic and ensure performance of surveying activities in the public interest given by the law.

In 2015 cadastral offices performed the records of ownership and other rights to real estate the second year according to new legal regulations of the cadastre of real estate that occurred as a result of new Civil Code. Despite the fact that the definition of the subject of the registration has changed recently in coincidence with renewal of the principle that a building is a part of a parcel, with introduction of the right of building, with increase of the number of registered types of material rights to 20 as well as increase of the number of notice types, it seems that the users of cadastral services have adopted well to the new legal regulations. Although some application problems occur in the daily practice, they do not concern those most often solved cases. It is therefore possible to summarize that registrations of rights to real estate were performed without significant problems in 2015. Cadastral offices received 6 % more proposals for entry of owners' and other rights to real estates in 2015 than in 2014, in total 1 088 264 proposals. Registrations of rights were performed in 24 days from the submission of the application on average, in comparison with 2014 the average time for performing the registration was shortened by 4 days. The time between proposal submission and its realization cannot be shorten more because of the new legal rule, containing a 20-day period during which the entry cannot be permitted as a measure for improving the security of real estate business.

The number of completed registrations or deletions based on record and notation decreased yearly and reached 537 750. The number of requests regarding the verification of the survey sketches increased about 7 % for 123 741 in comparison to 2014. Data provision was realized mainly by the electronic way using the remote access to the cadastre of real estate. At counters of cadastral offices the number of requests decreased by 4 % in comparison to 2014. In total 9 798 thousands requests for information were performed, representing yearly increase 12. 5 %. Digitization of cadastral maps went on continuously in 2015. The number of cadastral units with digitized cadastral maps increased yearly by 877 and so the digital form of the cadastral map was available in 92 % of all cadastral units by 31. 12. 2015.

State administration of land surveying and cadastre of real estate is responsible beside the cadastre for important land surveying products and services which co-create the national geoinformation infrastructure necessary for task fulfilment of the state and local administration. In 2015 operation and modernization of the Czech network of GNSS permanent stations (CZEPOS) was ensured providing services for fast and precise positioning at the whole territory of the state with cm accuracy thanks to permanent reception of signals from satellites of global navigation system. The care for classic ground and gravimetric control points was realized as well together with all planned land surveying works on the state borders. Both continuous and periodical update of the Fundamental base of geographical data (ZABAGED<sup>®</sup>) went on being provided both to the public administration and commercial use and serving also as a data source for state map series. In 2015 the Orthophoto ČR was updated on the 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 2015 brings this detailed annual report.

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

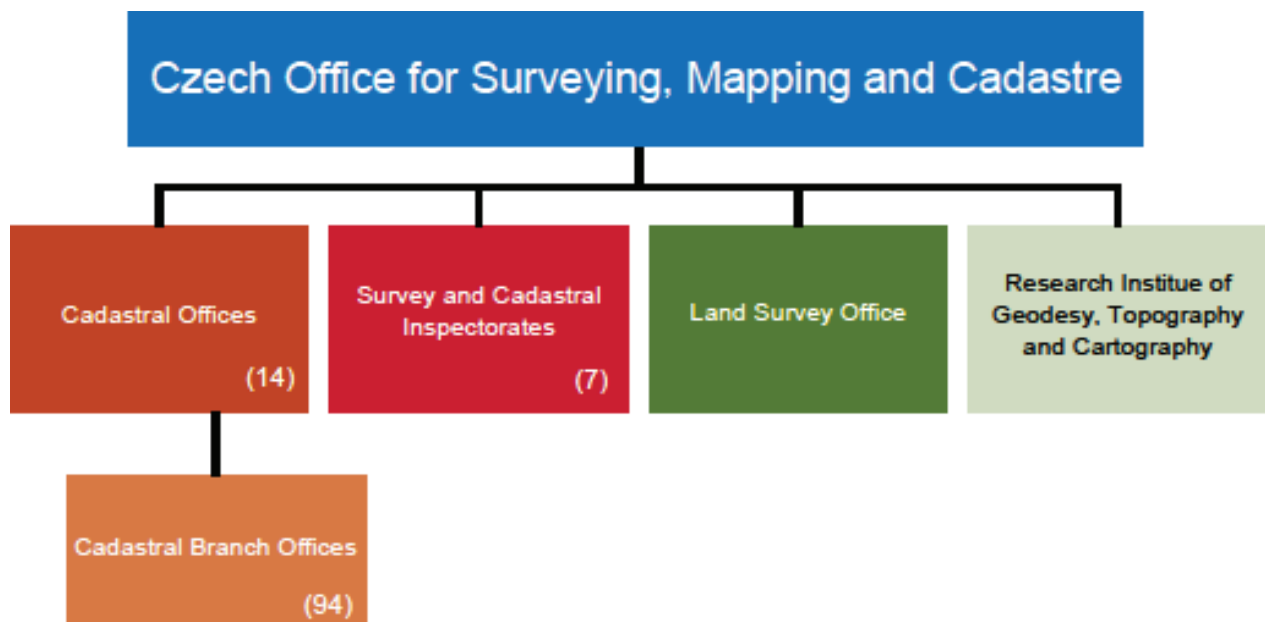
The cadastre of real estate of the Czech Republic is a set of data about real estate in the Czech Republic, including their inventory and description and their geometric specification and position. Parts of it are records of property and other material rights and other legally stipulated rights to real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

ČÚZK governs 14 regional cadastral offices, which have 94 cadastral branch offices in larger towns and execute state administration of the cadastre of real estate, it further manages 7 survey and cadastral inspectorates that control cadastral offices and supervise some commercial activities, whose results are applied to the cadastre of real estate and state documentation funds, and finally the Land Survey Office (ZÚ), which focuses on other land survey activities that are provided in the public interest. ČÚZK is also the founder of the Research Institute of Geodesy, Topography and Cartography, p.r.i (VÚGTK, v.v.i.).

Administration authorities in the branch of land surveying and cadastre have been set up by the Act No. 359/1992 Coll., on land surveying and cadastral bodies, which also specifies their subject-matter and territorial competence. The amendment Nr. 175/2003 Coll., performed the reorganization of the branch with force from 1.1.2004, during which 77 cadastral offices were cancelled and 14 cadastral offices were set out with territorial scope of the regions. Cadastral offices set out their cadastral branch offices. The number of them has been step by step reduced to 94 (by 31.12.2015 the cadastral branch offices in Telč, Bystřice nad Pernštejnem and Dačice were abolished).

## Organizational Structure of the Branch of Land Surveying and Cadastre



## 2. Administration of the Cadastre of Real Estate

Current Czech cadastre of real estate was established in 1993 and integrates the function of Land Registry Book (registration of rights) and former Cadastre of Lands (records of real estate) into one tool. On 1.1.2014 the Act Nr. 256/2013 Coll., on the Cadastre of Real Estate (Cadastral Act) came into force, having replaced not only the Cadastral Act Nr. 344/1992 Coll., but also the Act Nr. 265/1992 Coll., on Registration of Rights into the Cadastre of Real Estate. Both issues - cadastre of real estate and registration of rights to the cadastre of real estate - are now regulated in one Act.

Cadastre of real estate in the Czech Republic is administered with help of the information system. The Information system of the cadastre of real estate - ISKN - is an integrated information support system for state administration of the cadastre of real estate 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 Registry of territorial identification, addresses and real estate – RÚIAN, which is one of the four basic registries of state administration. Launch of the system of basic registries has brought tangible results into the administration of cadastre of real estate 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.). Since 2015 ISKN has been interconnected to the insolvency registry via web services thus enabling verification of the participants of the proceeding.

ISKN has used interconnection with Document management system (DMS) since 2015; both electronic and scanned paper documents used for registration to the cadastre of real estate are stored in the DMS. These documents are interconnected with the proceeding in the ISKN with help of barcode. During 2015 the bulk migration of all older electronic documents and all documents to administration proceedings from 2014 and 2015 were scanned and are at present for disposal to the users of remote access service.

With force from 1.1. 2014 the private law was recodified and Cadastral Act came into force taking into account many new provisions regarding real estates. 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. The new Civil Code also introduced many other material rights not existing yet, which have to be registered into the cadastre of real estate from 1.1.2014. As from the same day the implementing rules of the Cadastral Act came into force, i.e. Decree Nr. 357/2014 Coll., on the Cadastre of Real Estate (Cadastral Decree), the Decree Nr.358/2013 Coll., on Information Provision from the Cadastre of Real estate and the Decree Nr.359/2013 Coll., on Specimen Form Specification for Submission of the Proposal for Institution of Proceeding on Entry Permission. In the end of 2015 the Decree Nr. 358/2013 Coll., was amended by the Decree Nr. 354/2015 Coll., which specifies the conditions for information provision from the Set of documents of the cadastre of real estate and the information about real estate prices achieved in electronic form. In the end of 2015 the List of cadastral branch offices of cadastral offices, their names, seats and territorial districts, in which they exercise their power, was published in the Collection of Laws under the number Nr. 384/2015 Coll. in the form of communication.

## **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 by means of entry or registration and record of notations and further recording of other data. Contractual transactions or setting up of material rights to real estate have been completed by the constitutional entry of right into the cadastre of real estate till the end of 2013, whilst the records or deletions of material rights arising or extinct by the decision of the public authority organ, by law a. o. were performed in a simpler procedural way, by means of so called registration. Similar procedure was used for record of some other data, in particular for record of notations, which should inform the users of cadastral data on important facts regarding the real estate. Recodification of the civil law and connecting cadastral legislation has brought significant changes to this part of cadastral offices' agenda since 2014.

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

Two years after force of new legislation – Cadastral Act and Civil Code - regarding the real estates it can be said that the public has accepted new legal rules and there are no crucial problems in the daily practice. 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 – either based on the contract or other way. Czech office for surveying, mapping and cadastre did not register any objections against registration of before mentioned rights in the way of entry, despite the fact that the number of registered rights into the cadastre of real estate increased as well as did the number of rights, the application for their record is charged by the administration fee of 1000 CZK. It includes at present ownership right, right of building, easement, right of lien, future right of lien, right of sub-mortgage, pre-emptive right, future possibility of using the property after its transfer (type of easement), supplementary co-ownership, administration of trust fund, reservation of ownership right, reservation of the right to purchase back, reservation of the right of back sale, prohibition of alienation or encumbrance, reservation of the right of better purchaser, trial purchase arrangement, lease (based on the request of the owner or leaseholder with the approval of the owner), tenure (based on the request of the owner or the tenant with the approval of the owner) and surrender the right for damage compensation on the estate. Further the distribution of right to real estate into single ownership rights to units is registered by entry.

Cadastral offices coped well even with the fact, that in the process of inspection of the application document they have to differ whether it is a private document, public document, public document regarding legal proceedings or the document sent for registration by the court or court distrainor without proposal submission. Significant change in registration of rights of lien occurred in the amendment of the Execution order Nr. 139/2015 Coll., which newly regulates establishment of distrainor's right of lien. This amendment stated with effect from 1<sup>st</sup> July 2015 that the distrainor's right of lien on immovable property to ensure legitimate claims are initiated at the request of the legitimate claimer. In practice, it has brought a significant reduction in the number of distrainor's rights of liens, because the legitimate claimers do not claim the low debts by this distrainor's right of lien. Submitting a proposal on the establishment of a distrainor's right is newly recorded by means of notation.

Implementation of informational obligation about labelling the affected property in the cadastre of real estate - that the right is affected by the change – was expected with some fear because direct consequence is prolongation of the waiting time for registration of right. This measure causes problems only in such cases where more related transactions occurred (purchase, right

of lien etc.). Negative consequences persist caused by the demanding administration of the whole process connected with high expenses especially for postal services.

In 2015 the number of accepted proposals for entries of rights by cadastral offices was 1 088 264 which means increase of 6 % in comparison to 2014. Number of completed proposals for entry of proprietary right was 1 098 361, which means increase of 8 % in comparison to 2014 and so yearly average time for completing of application for entry decreased mildly.

The 30 day-time was exceeded only in cases containing some defects.

### Registration of Rights to the Cadastre

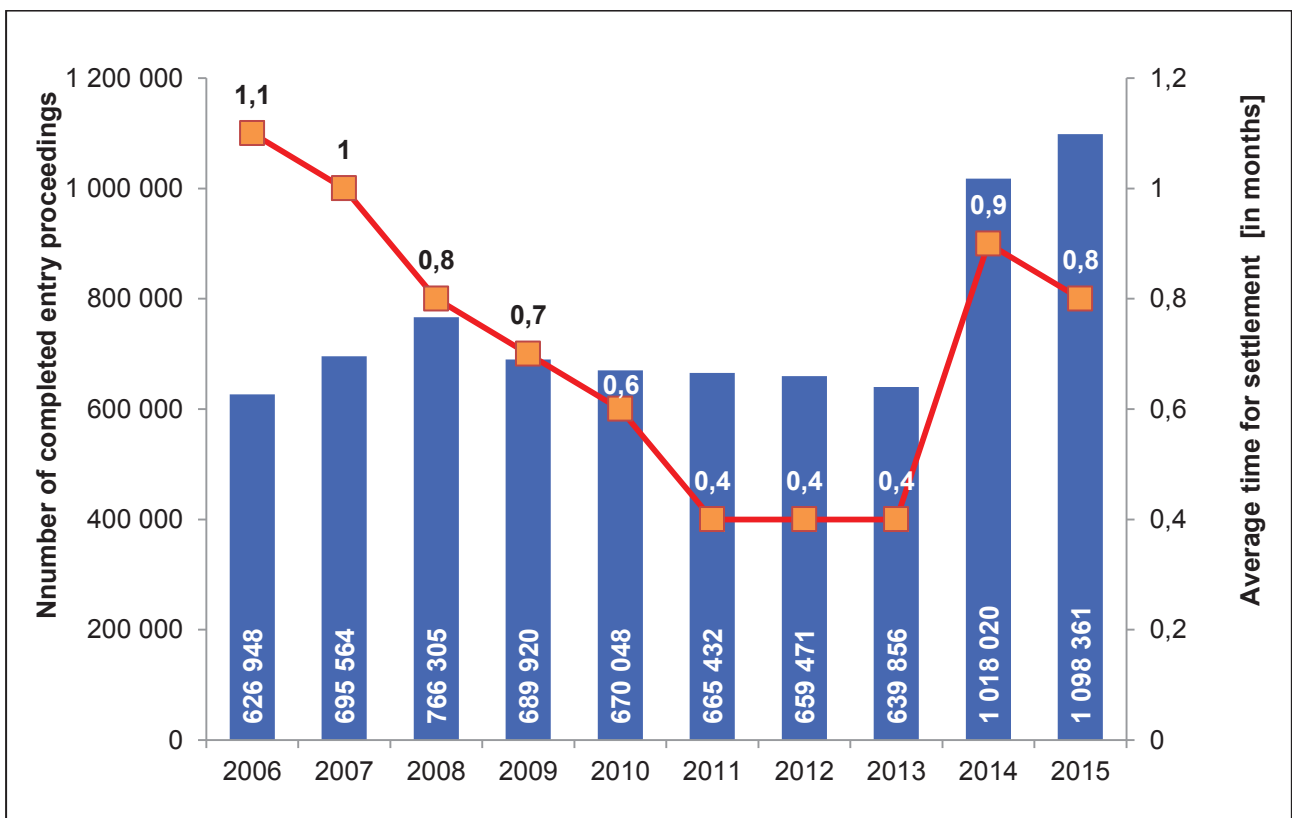


Fig 1: Development of the Total Number of Completed Entry Proceedings



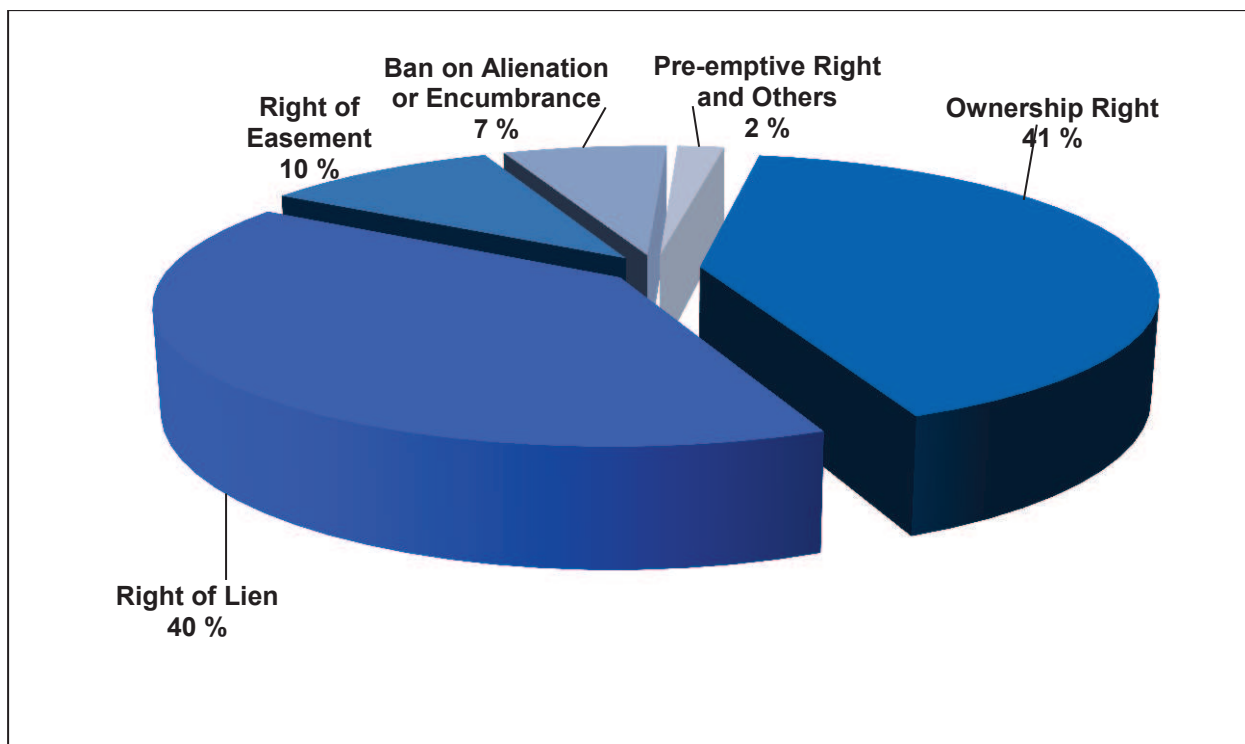


Fig 2: Share of Different Types of Rights Recorded by Entry into the Cadastre of Real Estate

From the total number of yearly requests for entry in 2015, 95 % entries of rights were approved, the rest of administrative proceedings are refused or interrupted. In 2015 both absolute and relative number of refused entries decreased by 6.2 %, as you can see in Fig 3.

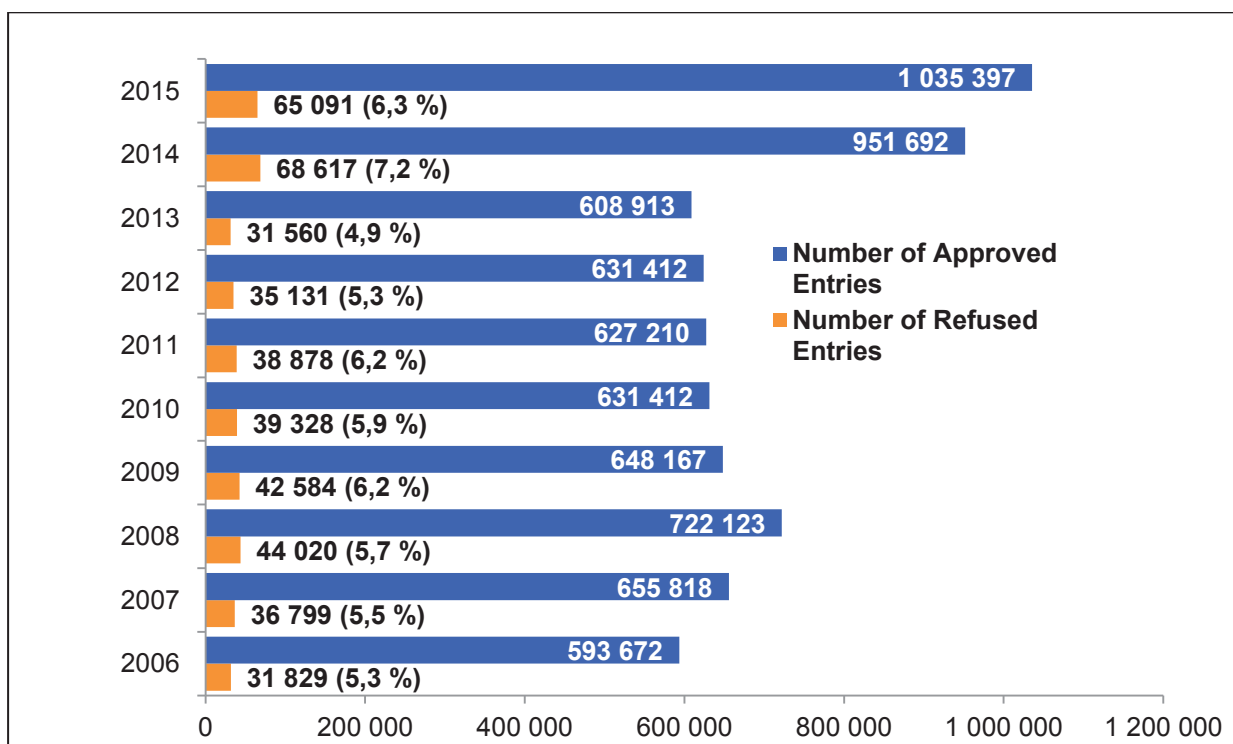


Fig 3: Development in the Number of Approved and Refused Entries

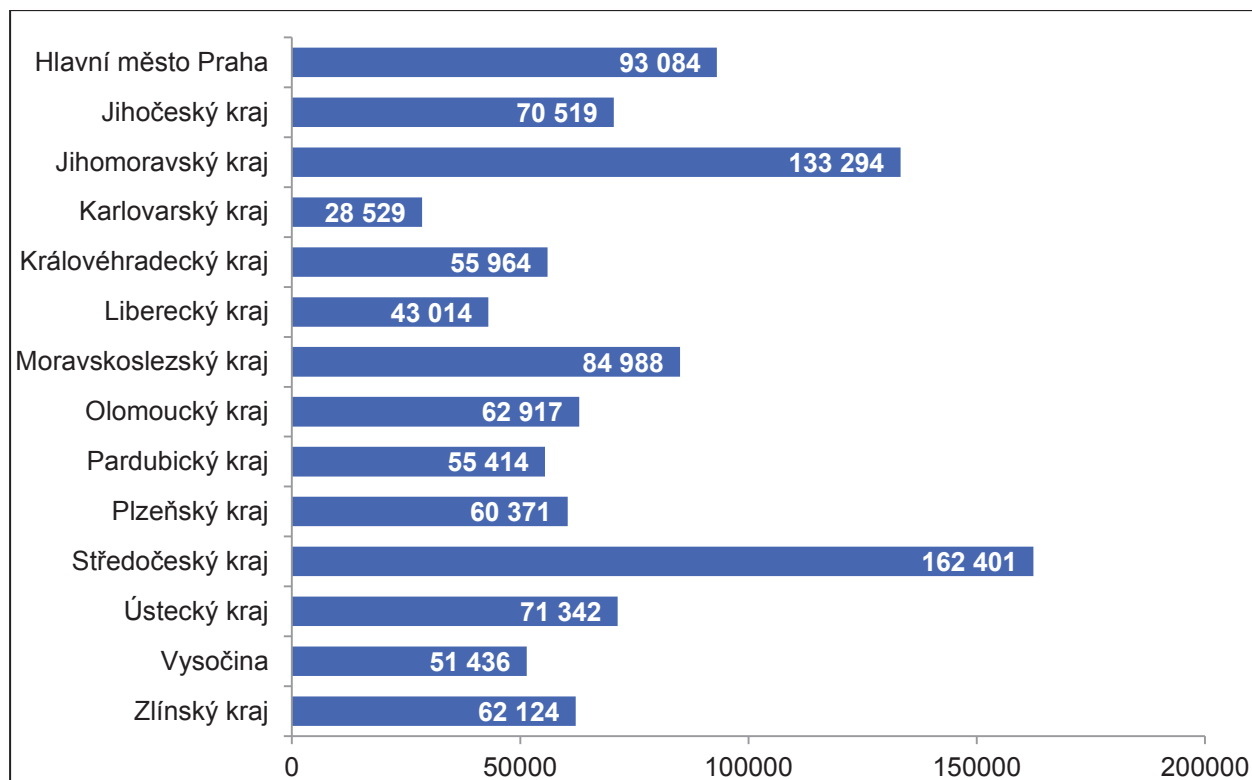


Fig 4: Number of Entries in Single Regions of the Czech Republic in 2015

### Registration by Record and Note and Others

Cadastral offices performed also other registrations into the cadastre of real estate. Since 2014 registering by record has not been used for registration of any material rights, it has been used solely for registration of rights derived from the proprietary right. Further types of registrations are the registrations by notes serving to denotation of legally stipulated facts or relations relating to the real estate or a person. Following data are recorded into the cadastre of real estate regarding e.g. change of land type, real estate protection etc.

Whilst 605 356 submissions for registration by record and by notation were delivered to cadastral offices in 2014 those submissions were proceeded delivered in a big amount before the change of legislation on 1.1.2014, and so in total 642 156 submissions were completed. In 2015 only 537 750 submissions were delivered and 543 972 completed. It means that average time for completion of this type of submission yearly decreased.

### Other Records to the Cadastre

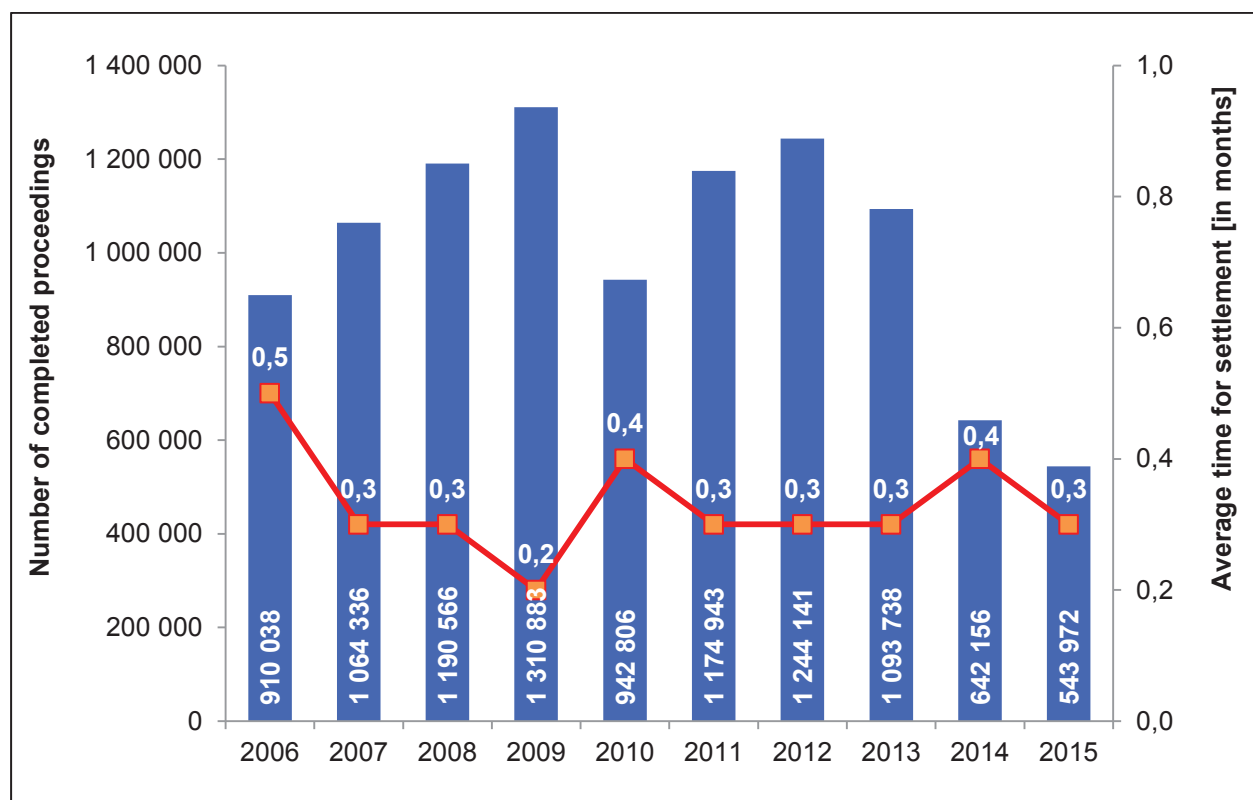


Fig 5: Number of Completed Submissions for Registration by Record and Notes.

### Certification of Survey Sketches

Survey sketches represent land parcel division, position of a building or change of its external outline in the cadastre of real estate and some other changes depicted in cadastral maps. They are made solely by private geodetic companies. They create important part of documentation for maintaining of cadastral maps, thus every survey sketch must 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. The average time for checking and certification of survey sketches by the cadastral offices was 8 days in 2015 as it was in 2014. In 2015 new web services were tested in a pilot project of ISKN for automatic acquisition of documentation for survey sketch creation, which has to be delivered into ISKN in electronic form. Operational run is expected to start in 2016.



## Certified Survey Sketches

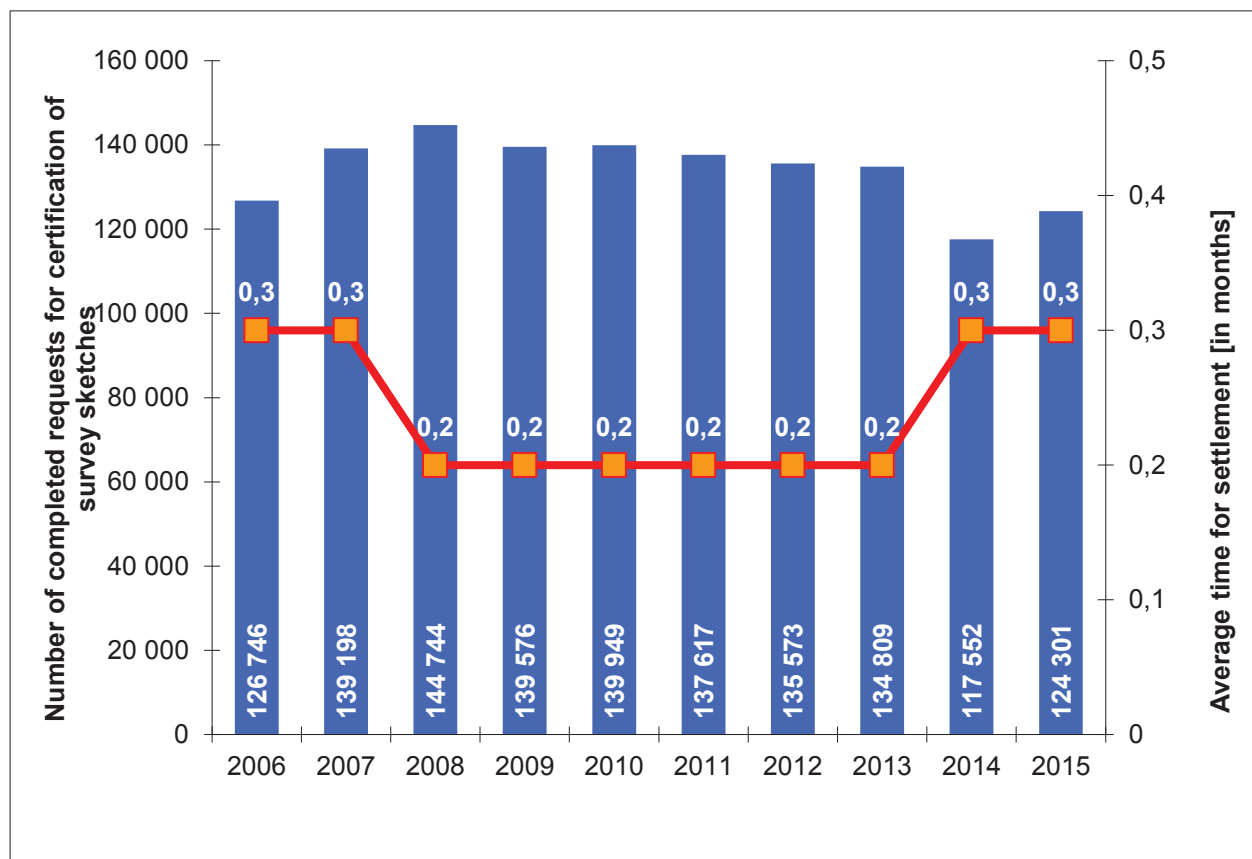


Fig 6: Development in the Number of Requests for Certification of Survey Sketches

## Provision of Information from the Cadastre of Real Estate

Individual workplaces of cadastral offices provide clients with information from the cadastre over the counter during office hours. Outputs from the cadastre contain both technical data on real estate and data on legal relations. In addition, copies of cadastral maps, copies of documents stored in document funds, copies from historical registries (Land Registry Book, Cadastre of Lands) and some other outputs are provided. Since 2001 internet services have been made available allowing outputs from the cadastre by remote access, without visiting the cadastral office. These services satisfy today most of continually growing demands for information from the cadastre of real estate.

The number of completed requests for information provision at the counters of cadastral offices decreased yearly on nearly 4 % in 2015, while the total increase of completed requests for information from the cadastre of real estate including remote access was about 12.5 %. Therefore in 2015 93.8 % of applicants for information from the cadastre of real estate were satisfied by electronic services. Big share on this high number of electronically provided services have permanently municipalities, regions and governmental bodies, because of free of charge remote access to the data from the cadastre of real estate. On contact points of public administration (Czech POINT) 349 thousand outputs from the cadastre of real estate were issued in 2015. 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 cadastre of real estate are since 2006 marked with an electronic mark and are considered as public documents. More in the chapter Electronic services of the cadastre of real estate – Remote access.

### Information Provision from the Cadastre

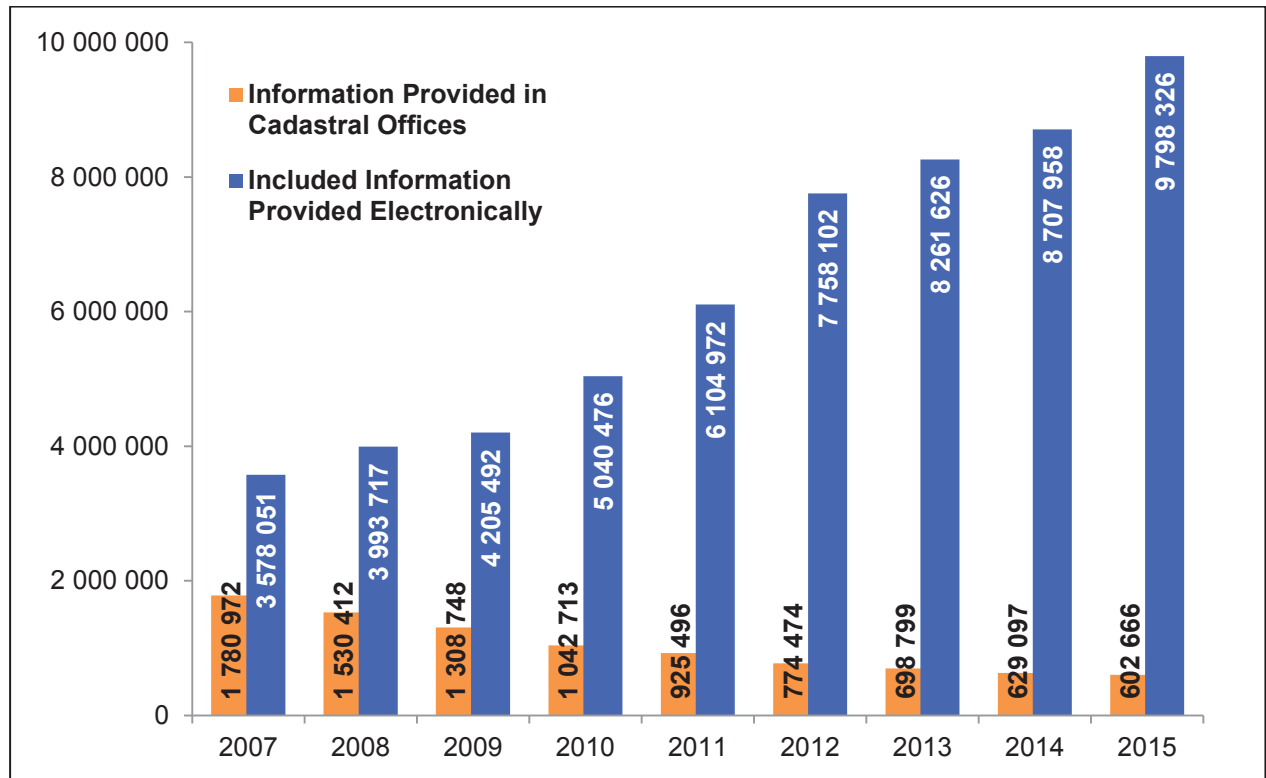


Fig 7: Development in the Number of Provided Information: over the Counter (number of requests), electronically (number of external outputs-reports)

## 2.2. Digitization of the Cadastre of Real Estate

Digitization of the real estate registry is a vital step for effective operation and administration of the cadastre of real estate 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 reference basis for creation of further maps, information systems and applications relating to the territory as f.i. digital technical maps, spatial plans, price maps etc.

Digitization of the file of descriptive information of the cadastre of real estate was realized in years 1993 – 1998, having created basic conditions for the transition to a higher version of the information system equipped with remote access to data in the central database of the cadastre.

Digitization of cadastral maps started in connection with the completion of digitization of descriptive information of the cadastre. The capacities that cadastral offices could give to map digitization were very limited in view of the growth of volume of other activities. Therefore only 2

to 3 % of the total cadastral territories in the Czech Republic were transformed into digital form yearly by the end of 2008.

### Development of Digitization of Cadastral Maps between 2003-2015

Year	till 2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Digitization Completed	3807	314	279	263	313	763	1 106	1 094	1 127	1 074	910	877
Total in Digital Form	3807	4 121	4 400	4 663	4 976	5 739	6 845	7 939	9 064	10166	11121	11990
Yearly Growth from the Total of 13 027 c.u.(%)	2,9	2,4	2,1	2,0	2,4	5,9	8,5	8,5	8,7	8,4	7,0	6,7
% from the Total Number	29	32	34	36	38	44	52,5	61	69,6	77,9	84,9	91,6

In 2009 the reversal occurred thanks to the provisions for acceleration of the digitization, accepted by the government in 2007. That is why the number of cadastre units covered by the digital form of map exceeded 8 % of the territory yearly in previous years. Because of forthcoming end of digitization of cadastral maps the increase of the number of cadastre units covered by the digitized cadastral map has been step by step decreasing and in 2015 it reached 6.7 %.

### Results of Digitization in 2015

Cadastral office have started the year 2015 with the goal of increasing the number of cadastral units with cadastral map in digital form by 842. The given task was mildly exceeded and the number of cadastral units increased by 877. Digitization of cadastral maps did use 208 results of land consolidation. The contribution of public tenders to chosen activities during digitization can be evaluated positively as well due to their covering part of the capacities needed for the field surveying.

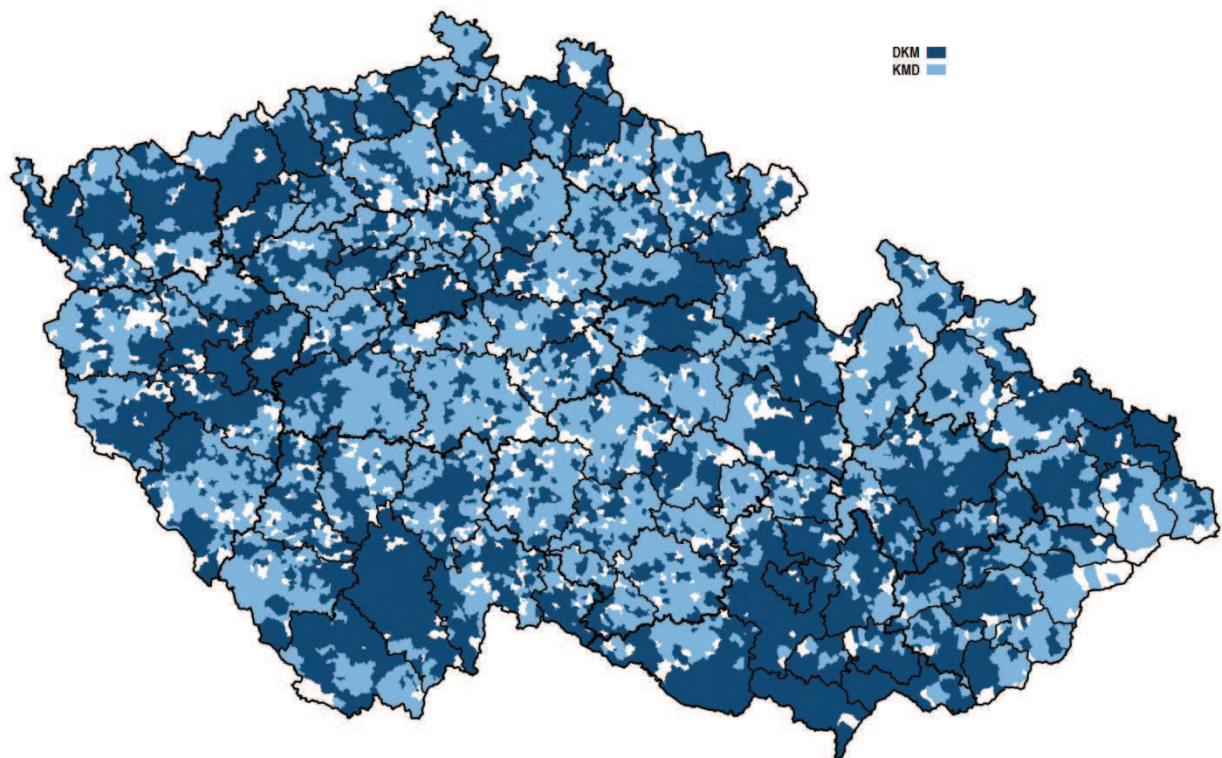
In 2015 revision of cadastral documentation was completed based on the results of land consolidation and based on new mapping (particularly in the territories out of the realized land consolidation) in 241 cadastral units. Renewal of the cadastral documentation by adaptation of the set of geodetic information in the S-JTSK (System of Unified Czech /Slovak Trigonometric Cadastral Net) coordinate system to DCM was realized in another 98 cadastre units. Renewal by adaptation of maps originating from the system of Stable cadastre to the digital form (CMD) was completed in 783 cadastral units. By the end of 2015 the cadastral map was in digital form in 11 990 cadastral units, which means 91.6 % from the total number in the CR by the end of 2015 (13 091 cadastral units). The total increase in the number of cadastral units with digital map was therefore 877 in 2015 in comparison to the end of 2014. The fulfilment of the tasks of digitization of cadastral maps was running in 2015 in accordance with the long-term frame schedule and was successful.

### Plan of Digitization of Cadastral Maps in Further Years

Year	1997-2015	2016	2017	after 2017
Proposal of the number of cadastre units for map digitization		616	379	106
Total number of cadastre units with cadastral map in digital form	11 990	12 606	12 977	13 091
Yearly growth in % out of total number		4,6	2,7	0,9
% out of total number	91,6	96,2	99,1	100



In 2015 the digitization plan for 2016 and 2017 was completed with the goal of move from digitization towards new mapping in selected cadastral units with the worst quality of cadastral maps or with unfinished land consolidation. It is undesirable to carry out the digitization of those cadastral units where the map should be replaced in a short time by a new map, whether it was the result of land consolidation or new mapping due to the very low quality of the original map. Such a procedure could not be considered economical and could provoke negative reactions by property owners.



State of Digitization of Cadastral Maps on 31. 12. 2015

### **2.3. New Cadastral Mapping and Cadastre Revision**

State administration of the cadastre of real estate of the Czech Republic has been fulfilling long-term development concept since its establishment in 1993. Its goal is to fulfil the basic mission of the modern land registration based on ensuring reliable information on real estates and legal relations to them. High level of cadastral data reliability is necessary for rights protection, development of real estate market and mortgages, territorial development and support of decision-making processes in the public administration. In connection with the upcoming completion of digitization of cadastral maps it is necessary to specify the main objectives for the future.

Whilst in the registration of rights to real estate and data connected with these rights the conceptual changes have been realized on 1.1.2014 in accordance with acceptance of the new Civil Code and Cadastral Law, regarding the technical data of the cadastre it is necessary to build 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 cadastre of

real estate at present. The first one is lack of accuracy of the parcel boundaries in those areas where cadastral maps based on geometry from the 1<sup>st</sup> half of the 19<sup>th</sup> century are still used and the second one is insufficient updating of registered technical data as f.i. nature and mode of land use or real estate protection. Lack of boundaries accuracy complicates construction preparations to investors so as the activity of construction offices in the territorial or construction proceeding. It also brings problems in real estate transactions 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. Obsolescence of technical data complicates the use of cadastral data, especially in some decision-making processes of public administration, in property valuation and administration of property taxes.

Mentioned insufficiencies can be solved by the tools embedded in the existing Cadastral Law, 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. In the frame of the cadastre revision the content of the cadastral map will be updated based on the investigated discrepancies after negotiation with the owners and based on their documentation; moreover renewal of the cadastral documentation based on the new mapping includes investigation of updated parcel boundaries in the field and their precise surveying.

### **New Mapping and Use of Land Consolidation Results till 2020**

In 2017 the digitization of cadastral maps should be completed at 96 % of cadastral units. Uncompleted parts will remain in those cadastral units where the renewal of cadastral documentation will be in progress based on the results of land consolidation or by the new mapping and where the quality of original maps will not enable their transition into digital form in a simple way. In these areas new mapping will be necessary. Only 106 cadastral units from the total number of 13 091 will not be covered by digital cadastral map at all at the end of 2017. Nearly all cases refer to cadastral units with land consolidation in rural areas in process. Cadastral offices will follow the progress in land consolidation and the excluded part will be renewed by new mapping. It will prevent ineffective repeated renewal of the cadastral documentation in built-up area and real estate owners in these areas will not be burdened by similar administration acts (connected usually with submission of new real estate tax return) in a short time interval.

In further 400 cadastral units the digital maps have to be completed only in parts of them. It relates to areas touched by the 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 2020.

<b>Cadastral Office for</b>	<b>Total number of c. u.</b>	<b>Without digital map</b>		<b>Digital map only at a part of c.u.</b>		<b>In process by 31. 12. 2017</b>	
hl. m. Prahu	112	0	0,0 %	0	0,0 %	0	0,0 %
Jihočeský kraj	1 623	16	1,0 %	60	3,7 %	76	4,7 %
Jihomoravský kraj	897	5	0,6 %	48	5,4 %	53	5,9 %
Karlovarský kraj	575	8	1,4 %	4	0,7 %	12	2,1 %
Královéhradecký kraj	961	5	0,5 %	22	2,3 %	27	2,8 %
Liberecký kraj	508	7	1,4 %	16	3,1 %	23	4,5 %

Moravskoslezský kraj	614	1	0,2 %	4	0,7 %	5	0,8 %
Olomoucký kraj	778	4	0,5 %	16	2,1 %	20	2,6 %
Pardubický kraj	790	1	0,1 %	35	4,4 %	36	4,6 %
Plzeňský kraj	1 386	26	1,9 %	48	3,5 %	74	5,3 %
Středočeský kraj	2 084	11	0,5 %	98	4,7 %	109	5,2 %
Ústecký kraj	1 057	8	0,8 %	19	1,8 %	27	2,6 %
Vysočinu	1 263	13	1,0 %	45	3,6 %	58	4,6 %
Zlínský kraj	443	1	0,2 %	8	1,8 %	9	2,0 %
<b>Total</b>	<b>13 091</b>	<b>106</b>	<b>0,8 %</b>	<b>423</b>	<b>3,2 %</b>	<b>529</b>	<b>4,0 %</b>

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

Digitization of cadastral maps enabled wide accessibility of maps, ensured full conformity with descriptive data on real estates and high comfort in work with map was achieved included combination with other maps via web services. Nevertheless approximately 60 % of the territory of the Czech Republic will still be covered by cadastral map originated from the Stable cadastre surveying in the 1<sup>st</sup> half of the 19<sup>th</sup> century. Nor continuous complementing of changes and realized digitization could 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 in the perspective of more than 20 years to perform 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 will be renewed based on their results. This method enables to reach needed accuracy of all cadastral maps in comparison to national coordination system which is defined with the coordinate positional accuracy  $m_{xy}=14$  cm.

Above mentioned long-term plan will be realized supposing that land consolidation will proceed in the present range of approximately 200 to 250 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. Approximately two thirds of capacities of cadastral offices currently performing digitization of cadastral maps will be transferred to these activities.

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, water courses regulation, water constructions or small constructions registered in the cadastre). In the frame of new mapping updating of nature and mode of land use will be realized and so the cadastral map can better serve for many decision-making processes of the public administration regarding the territorial administration.

## Removing Discrepancies between the Cadastral Data and the Existing State of Real Estates

Cadastre of real estate is based on the principle of data registration according to the submitted documents. For registration of legal rights moreover the constitutional principle applies (the right arises only after registration) and 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.

With regard to existing capacities of cadastral offices it is possible at the beginning of 2018 to transfer up to 300 employees performing digitization at present to the area of cadastre revision according to the § 43 of the Cadastral Act. In this way it would be possible to complete revisions in all cadastral units not included in renewal of the cadastral documentation by new mapping or based on land consolidation results by the end of 2030. Time schedule will be designed focusing on territories with greatest development.

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

Cadastre of real estate 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 organs 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 cadastre of real estate data and database of the Nature Conservation Agency of the Czech Republic showed that only at 75 % 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 realized with help of the basic Registry for territorial identification, addresses and real estate. Its launch in 2013 created the technical conditions for crucial innovation of these registration procedures. The public power organs 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 Cadastre of Real Estate**

Some eServices have been launched in the area of the cadastre of real estate, which enable to get a wide range of information from the cadastre to our customers. There are both free of charge services enabling to get some chosen data without any restrictions, as well as paid services providing verified documents serving as public documents, that is from the whole territory of the Czech Republic. Except for this, some other applications are for disposal facilitating the access to cadastral data and communication of inhabitants with cadastral offices.

### **3.1. Entry Proposals**

From 2013 there is a legal obligation to submit the entry proposal on the given form. The objective of this measure is to reduce errors that still occurred in the proposals for entry of right and get clearly formulated requirements for what should be registered into the cadastre of real estate according to the attached documents. In order to facilitate completing the form to the applicants a web application was launched enabling creation of the entry proposal in an

interactive way. This application is interconnected to the cadastral database and draws some data from it. It leads the user through the entire process, and contains also some pre-prepared simplified scenarios for the most common situations. The application is very popular; in 2015 more than 750 thousands entry proposals were created via it. Application includes web services for proposal creation as well. In 2015 there was a significant increase of using these web services mostly by the banking institutions.

### **3.2. Service for Monitoring of Changes**

The Service for monitoring of changes in data about real estates is provided by the Czech office for surveying, mapping and cadastre according to § 55, art.6 of the Act Nr. 256/2013 Coll., about the Cadastre of real estate (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 cadastre of real estate regarding the monitored real estate.

### **3.3. Remote Access to the Cadastre of Real Estate**

<http://katastr.cuzk.cz/>

Remote access (DP) enables to get the data from the cadastre of real estate from the whole territory of the Czech Republic via internet. Outputs from the cadastre of real estate, such as extract from the cadastre of real estate 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 map or on raster picture of cadastral map in areas, which have not been digitized yet, so as with help of orthophotomaps and topographic maps as navigation tools.

DP outputs are charged, but numerous groups of users from public and local administrations receive the information from the cadastre of real estate in this way free of charge. DP has been in operation since 2001 and since that the number of customers actively using it has been constantly growing. The yearly increase of users was 27 %. The number of accounts for users was 29 171 by 31.12.2015, 10 612 out of which were free of charge and 6 406 accounts were for verifiers, particularly in the frame of CzechPOINT project.

In the second half of 2015 basic accommodation of the DP application was realized for document provision from the set of documents and for making accessible the information about the prices of real estate together with general redesigning of the application.

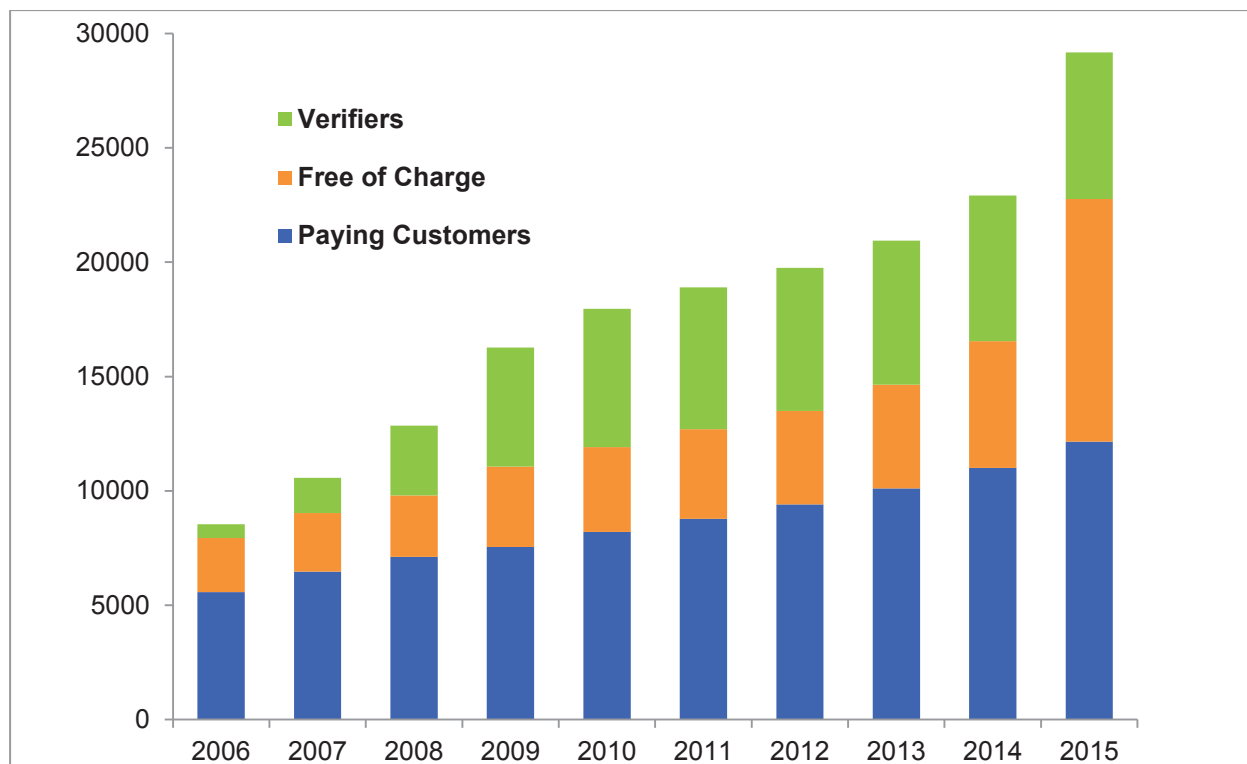


Fig 8: Development of the number of users as for the type of account

In the frame of CzechPOINT project it is possible to acquire the verified extract from the cadastre of real estate, from the trade and commercial registries, from criminal record and others. The verified extracts from the cadastre of real estate create in the long term approximately one quarter of all CzechPOINT outputs. In 2015 it was more than 349 thousand outputs. At present it is possible to issue the extract from the cadastre of real estate, registration of rights per a person and the cadastral map copy at CzechPOINTS.



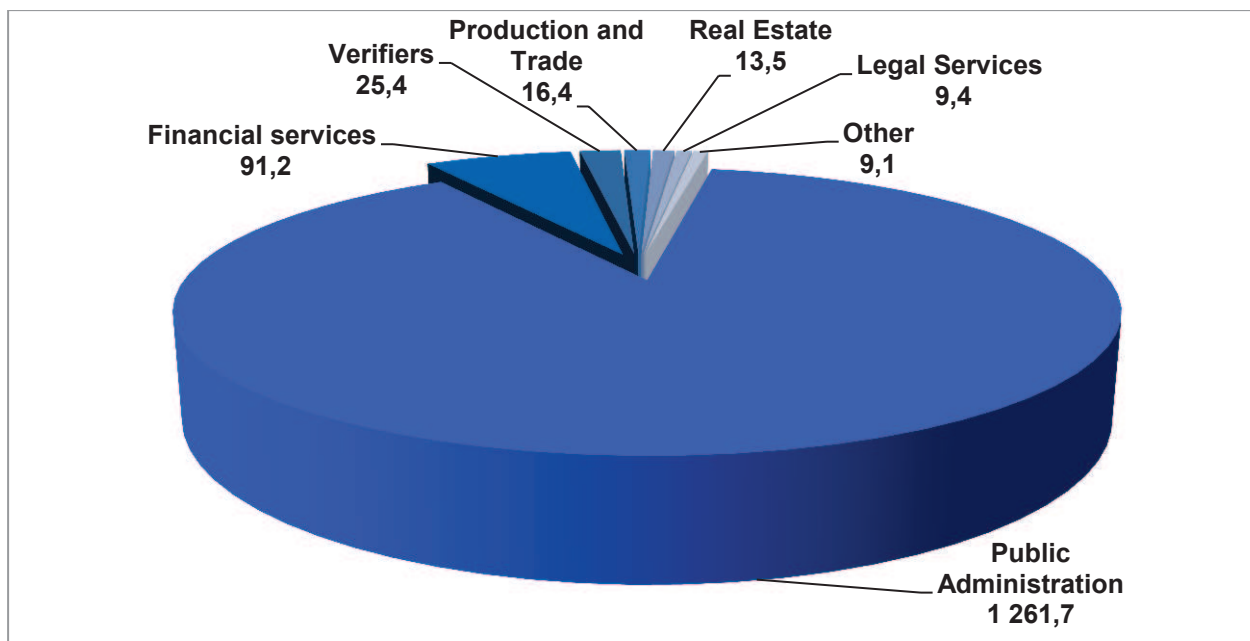


Fig 9: The biggest DP users – as for the data value in million CZ

The number of DP users has been growing constantly, so as the income for data provision via DP service even if 88 % of data are provided free of charge to the public administration. DP is provided free of charge not only to municipalities and regions for performing their competency but also to governmental bodies, notaries and distrainers so as to insolvency administrators. Despite it the income from charged customers reached 161.4 million CZK in total. The biggest charged user of DP service is the bank sector, which uses it for acquiring of necessary documentation for mortgage provision.

### 3.4. Viewing the Cadastre of Real Estate

<http://nahlizenedokn.cuzk.cz/>

Probably the best-known eGovernment service, operated in the ČÚZK branch, is Viewing the cadastre. This internet service allows provision of selected technical data and data concerning ownership of parcels, buildings and flats. By means of viewing it is possible to find information on the state of proceedings from the moment of submission to the cadastral office for the purposes of registering property and other rights to real estate or other data recorded in the cadastre of real estate of the Czech Republic. The viewing application is very intensively used by a wide range of users and has contributed in a significant way to increasing the transparency of the course of individual administrative proceedings.

The major changes made in 2015 include the possibility of buying a copy of cadastral map provided with an electronic mark based on a qualified system certificate via paying portal, graphical overview of real estate, adding the information about proceedings with registered values of real estates and last but not least publishing the prepared renewed documentation for public view and comments of owners and other authorized persons before announcement of its validity in the cadastre of real estate. Based on the number of ownership folio or possibly the birth number or identity number of organization it is possible to get the comparative composition of parcels before and after renewal of cadastral documentation. Moreover the depicting of the map enables viewing these parcels in the map.



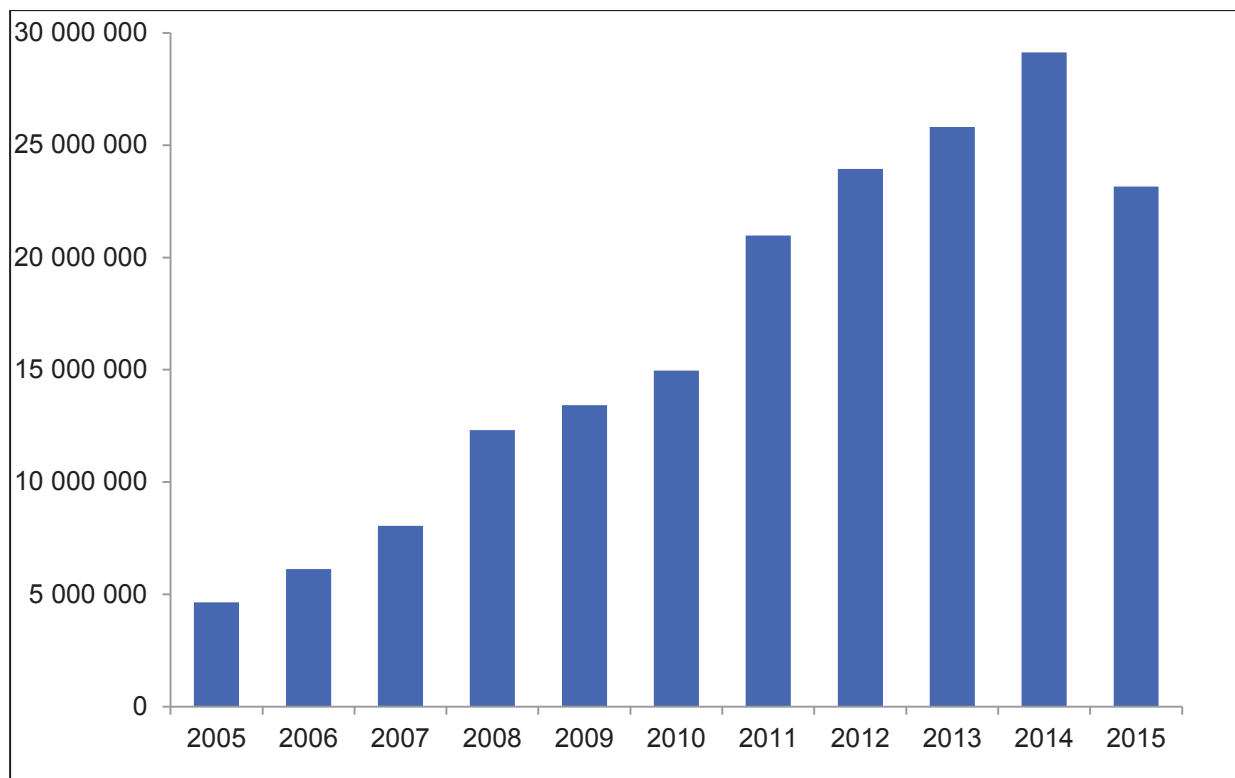


Fig 10: Development of the number of accesses via Viewing the cadastre

Viewing the cadastre is one of the most visited websites of Czech state administration. In the ten years of its existence the application has been achieving a constant growth in the number of users; in 2015 it was more than 23 million visits, which means a mild decrease after many years growth.

#### Web Map Services for Cadastral Maps

<http://wms.cuzk.cz>

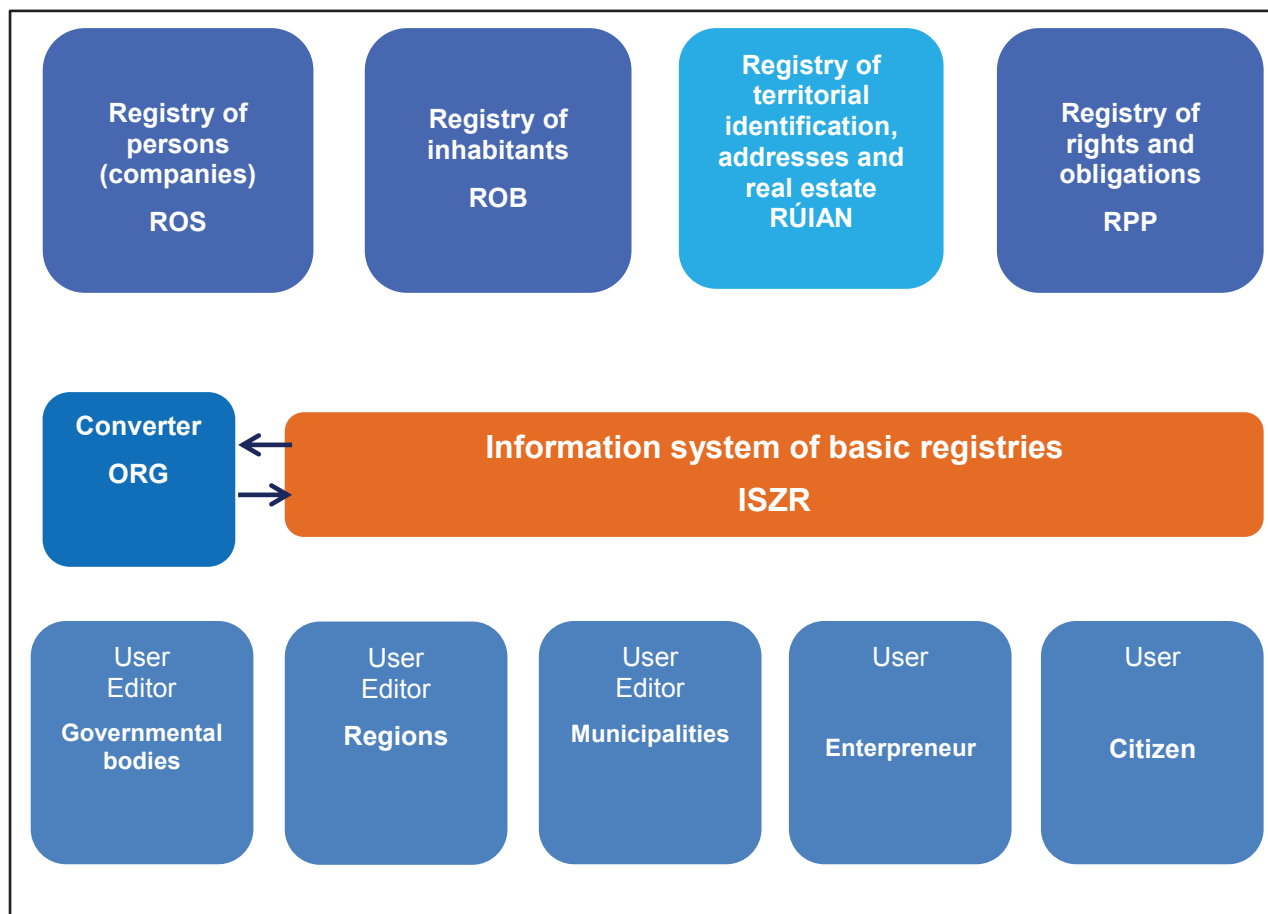
Web map services for cadastral maps enable further possibility of work with cadastral maps; the user can combine the cadastral maps layer in his computer with other datasets. In that way he gets access to brand updated data via internet and has to take care neither about the storage of map copies in his data storage nor about their updating. This service is also free of charge. Yearly growth in the volume of provided data is 20 %.

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

<http://www.ruian.cz>

ČÚZK is the administrator of the registry of territorial identification, addresses and real estate (RÚIAN), which is one of the four basic registries of the state administration. The content of further basic registries as well as of RÚIAN and information system of territorial identification (ISÚI) is defined in the Act Nr.111/2009 Coll., on Basic Registries, stating also rights and

obligations connected with creation, use and operation of basic registries. RÚIAN is edited in cooperation with municipalities, building offices and Czech statistical office.



Information System of Basic Registries – main scheme (more on <http://www.szrcr.cz/>)

In 2015 ČÚZK focused beside mild development of RÚIAN on training and support for editors from municipalities and building offices, integration between ISÚI and ISKN systems, checking, corrections and improvement of RÚIAN data. Methodical support either via training or via web site is important and necessary activity resulting in unification of procedures and eliminating so the errors in the RÚIAN database. Detailed information about RÚIAN project included detailed methodical instructions for editors regarding the work in ISÚI are regularly updated at the web site [www.ruian.cz](http://www.ruian.cz). In 2015 workshops for different target groups were organized (f.i. for editors from municipalities and building offices, RÚIAN coordinators, representatives from regional offices), in 2nd half of the year two modules of practical training lectures for editors were introduced, for beginners and advanced. The lectures have been held in the ČÚZK computer training room and the participant solves the test cases in the ISÚI application at the separate computer. In total 12 practical free lectures were organized and further applicants will be satisfied in 2016.

Further important area was checking of the quality of RÚIAN data with the goal of minimizing the errors. Some errors remained there after data migration from stated legal sources, some have still occurred due to the incorrect practices of editors despite the effort to minimize them by gradual introducing of control mechanisms into the application.

ČÚZK realizes running data checking and comparison of data with other systems, f.i. ISEO, ISKN and RSO. Chosen inspections are published at the web site [www.ruian.cz](http://www.ruian.cz). By 31.12.2015 in total 7 inspections were published there. The number most often errors – address points without definition points - decreased by 16 % in 2015. Further the number of buildings without identification parcel decreased by 13.5 %.

With regard to the fact that the corrections must be realized solely by the authorized editors of the given data, the only way how to improve the data quality is continuous methodical training. Possible way for data quality improvement in RÚIAN is to inspect the regional offices which inspect the municipalities and building offices based on the exercise of delegated power. The number of such controls was 7 in 2015.

The content of RÚIAN at 31.12.2015 for chosen items was following:

Subject	Number 2014	Number 2015
Municipality	6 253	6 253
Part of municipality	15 071	15 091
Cadastral unit	13 099	13 091
Building object	4 075 632	4 074 593
Building object with the orientation/registry number	2 827 655	2 830 498
Address point	2 898 412	2 901 459
Parcel	21 609 219	22 123 328
Street	81 115	80 571

With regard to the fact that RÚIAN data are for disposal to users even out of public administration, new application was created based on requests of private subjects and open source projects, in which they can announce errors in RÚIAN elements (address point, building and street) and sent it to the authorized editor via ISÚI. Application is available on the web site <http://reklamace.cuzk.cz/formular>.

#### **Public Remote Access to RÚIAN Data**

<http://vdp.cuzk.cz>

The new service Public remote access to RÚIAN data (VDP) and data provision in the exchange format (VFR) enables to acquire and view RÚIAN data and some data from editing agenda information systems (ISÚI, ISKN). The application is open and free of charge.

At the beginning of 2015 the use of VDP service significantly increased. The reason was both intensive data checking for the needs of implementation of electoral districts and running migration of technic-economic attributes at the edge of 2013 and 2014. In 2015 the numbers of accesses returned back to similar level as in the second half of 2013.

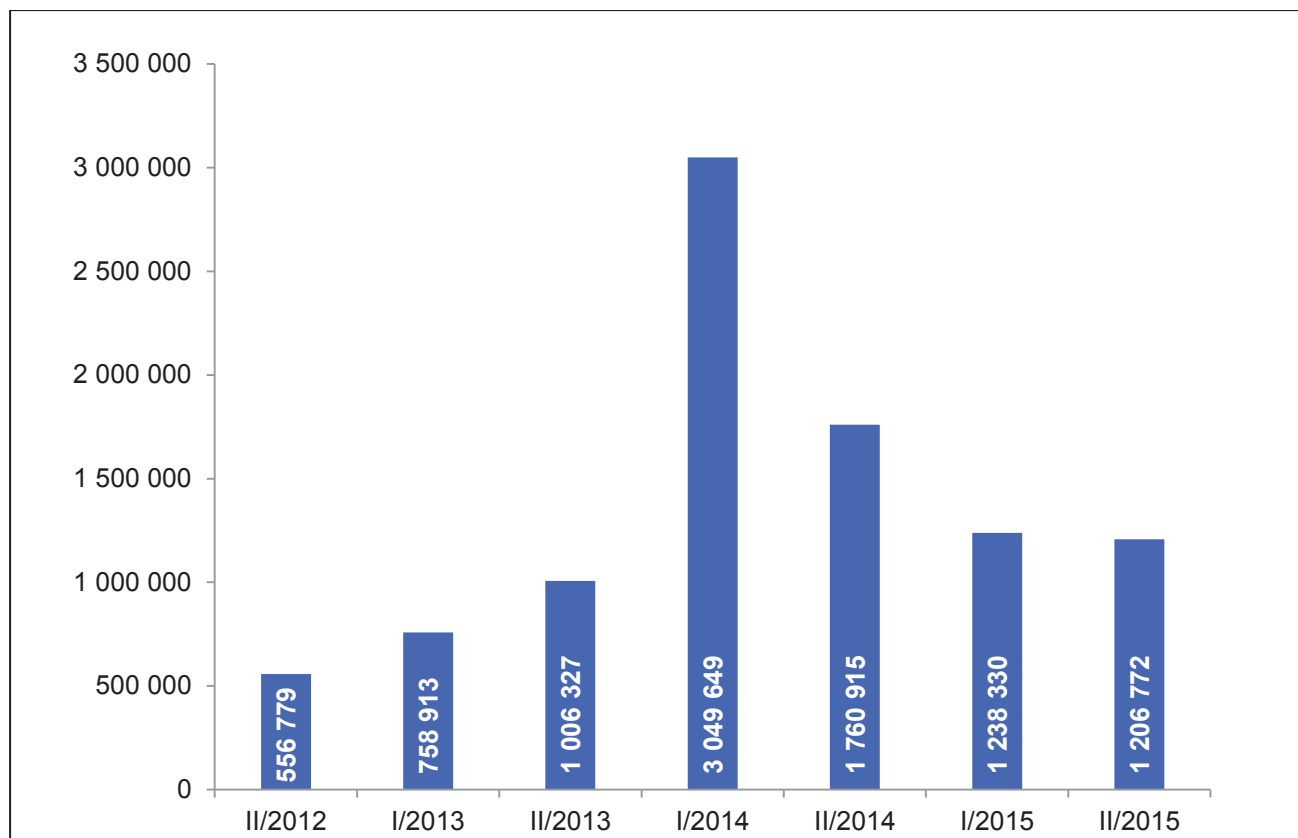


Fig 11: Number of accesses from launch in the 2<sup>nd</sup> half of 2012

## 5. 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. To fulfil this task in the ČÚZK branch is in responsibility of the Land Survey Office (ZÚ).

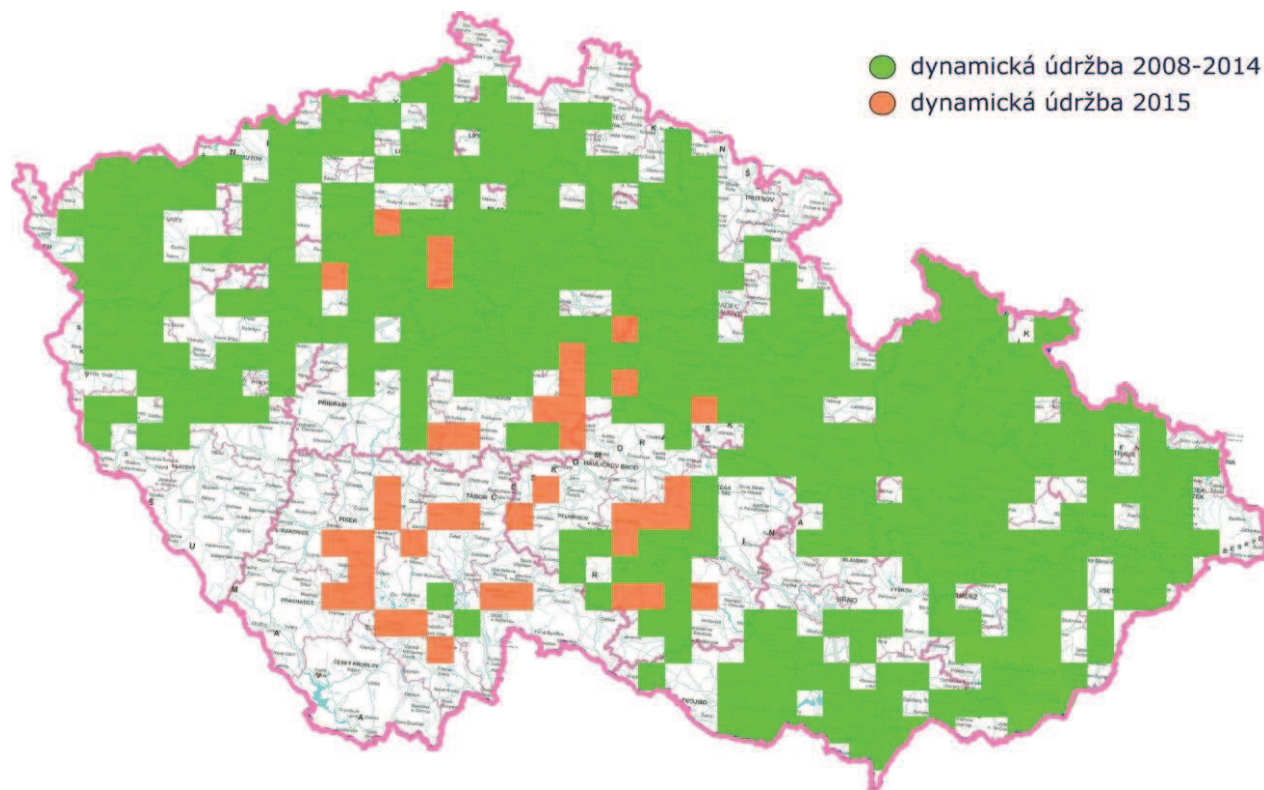
### 5.1. Geodetic Control

Geodetic control is a set of theories, equipment, technologies and services enabling 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 2015 the database of geodetic control points included 74 904 centres of trigonometric and densification points and 35 460 associated points, further 1 313 levelling lines of the Czech state levelling network being in total 24 711 km long, 119 441 levelling points (82 856 out of them are fundamental vertical control points and 462 gravimetric points).

In the area of ZBP administration ZÚ focuses at present particularly on so called dynamic maintenance based on defects reporting on single ZBP points sent to ZÚ by private surveyors. In 2015 in total 151 ZBP points were renewed.



#### Dynamical maintenance of ZBP points in past years

In the frame of fundamental vertical control, resp. levelling networks, the reconnaissance of the fundamental levelling network (ZNS) Ostrava was realized in length of 220 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 from 2014; further the maintenance of 58 gravimetric points was realized.

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 both at 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, publishes information about realized reference systems and provides the development of transformation services that enable precise transformation of points coordinates between geodetic reference systems mandatory in the state territory and reference frames in European union.

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.

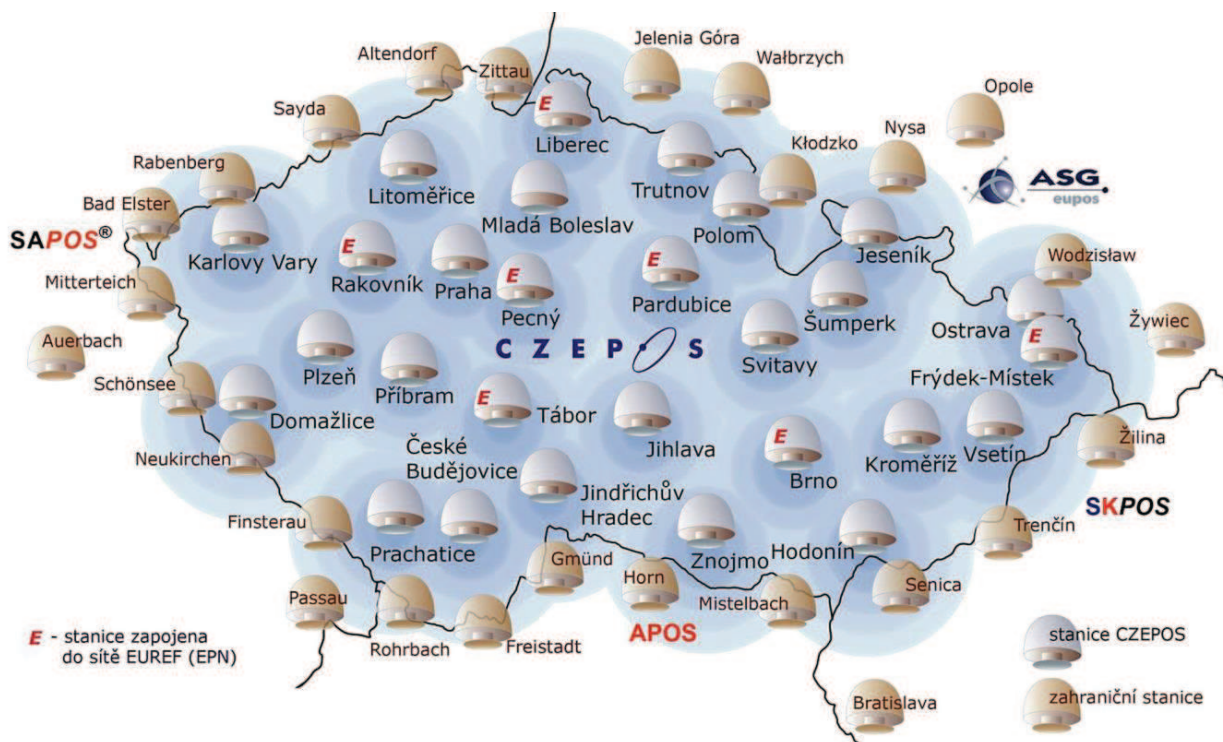
## Czech Positioning Network GNSS - CZEPOS

<http://czeupos.cuzk.cz/>

The CZEPOS is the network of GNSS permanent stations spread on the whole territory of the Czech Republic. CZEPOS stations are installed on roofs of cadastral offices' buildings and record the data from GNSS signals in the interval of 1s for 24 hours a day. Users are provided with them in the form of corrections enabling to specify GNSS measurements. CZEPOS services are provided in continuous operation since 2005. The network solution uses data from together 55 stations, 28 of them located on the territory of the Czech Republic and 27 in the cross-border areas of neighbouring countries.

CZEPOS services are compatible with all accessible satellite systems, i.e. American navigation satellite system (NAVSTAR GPS), Russian global navigation satellite system (GLONASS) so as with European navigation satellite system (GALILEO) being under preparation.

Availability and quality of the provided CZEPOS services and products can be verified on the internet website in on-line regime by the users. At 31.12.2015 there were 1 390 registered CZEPOS network users, it means grow of 112 users in comparison to the end of 2014.



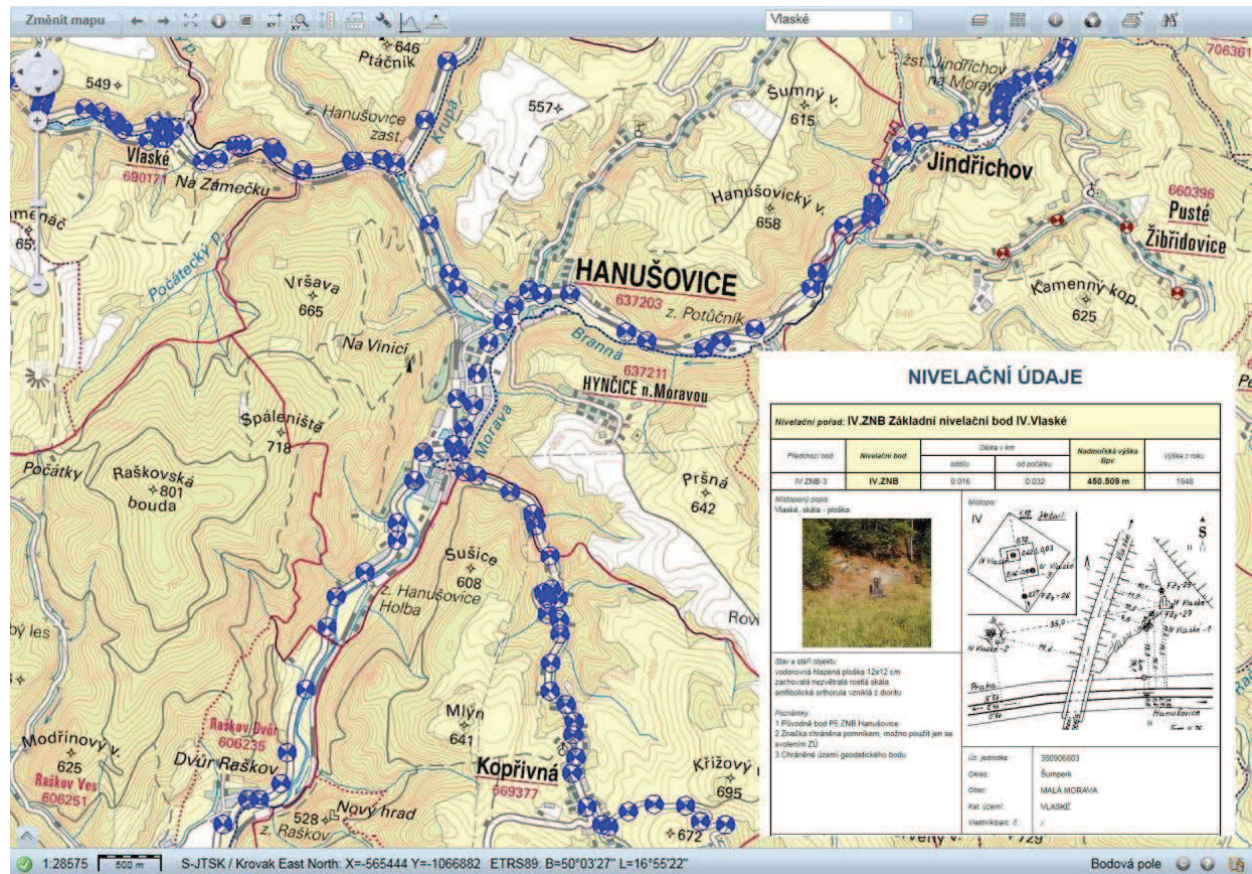
Overview CZEPOS map



## 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 either as the basic tool 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.

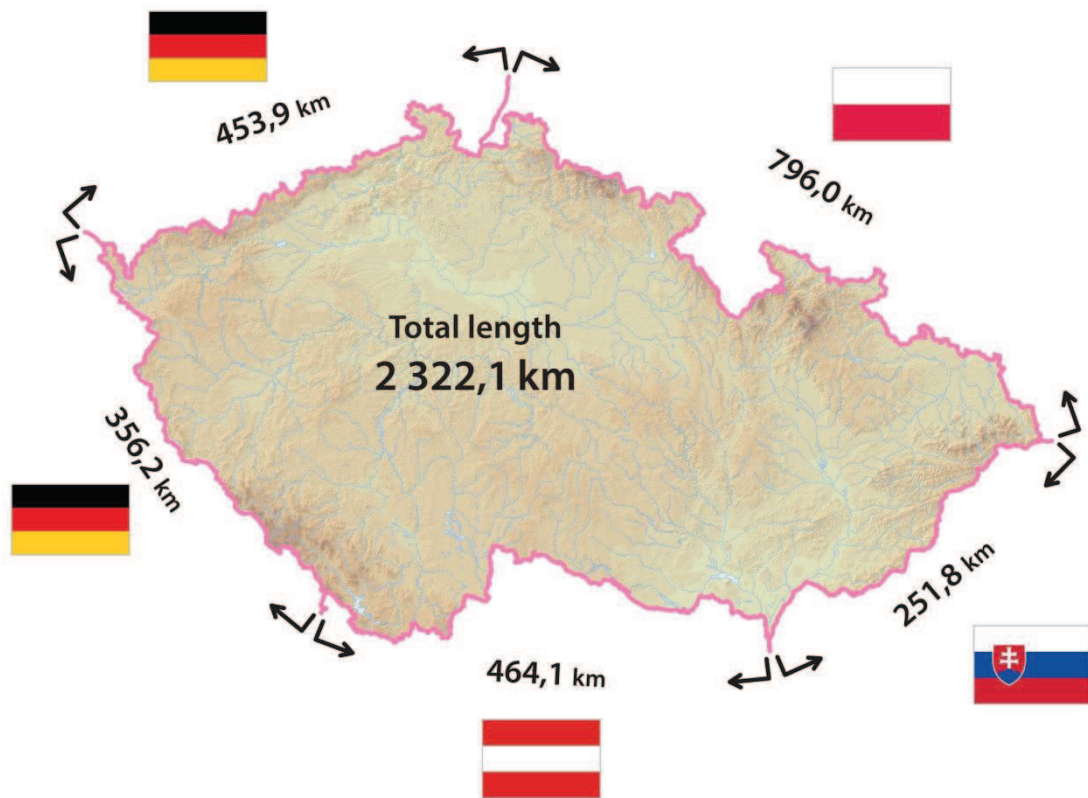


The database is published on the internet; access to data is public and free. Users can also inform about the defected points of horizontal and vertical control via implemented application so as view the Statistic of provided geodetic data according to the categories of respective points in another application.

## 5.2. Maintenance and Documentation of the State Border

Land survey activities for maintenance and verification of state borders are carried out 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, signalling and verifying state borders and updating border documentation. All state borders have just been under regular examination. Besides regular examination of the stability of state borders according to international agreements precise geodetic surveying with the goal of interconnection of geodetic data on state borders into a uniform geodetic reference system ETRS89 is in the process.



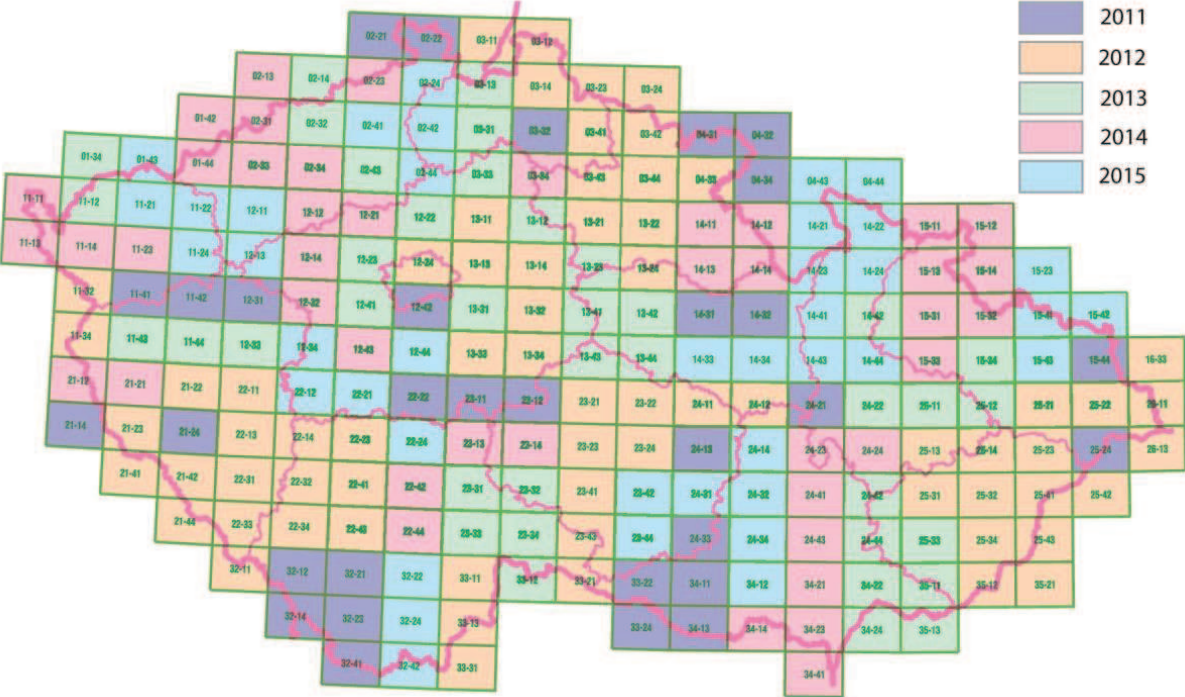
### 5.3. Fundamental Base of Geographic Data (ZABAGED®)

ZABAGED® is a digital geographic model of the territory of the Czech Republic. ZABAGED® content represents at present 116 types of features represented by vector graphic and descriptive part with more than 350 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 2015 the regular updating of ZABAGED® at the whole territory of the state went on with use of orthophotos, aerial photos and field investigation on 878 map sheets of the Base map CR in the scale of 1 : 10 000 (ZM 10). The updating cycle of ZABAGED® is less than six years. The ZABAGED® content was being simultaneously improved by continuous updating of more significant types of features; roads, administration boundaries, buildings etc. are updated based on the changes gained from their cooperating administrators. In 2015 systematic accuracy improvement of the position of roads, highways, railroads, watercourses and further ZABAGED® elements based on the data of a new altimetry model of the Czech Republic went on. Roads



were improved on 489 map sheets of ZM 10 and watercourses and chosen points and lines of the terrain on 561 map sheets of ZM 10.



State of aerial updating of ZABAGED® by the end of 2015

### 5.4. Altimetry

Digital terrain model of the 4<sup>th</sup> generation (DMR 4G) based on the data collected via airborne laser scanning has been for disposal since 2013. In 2014 processing of scanned data for creation of the digital terrain model in the irregular triangular network (DMR 5G) and digital surface model (DMP 1G) went on.

In 2015 new web application Altimetry analysis was published that 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 and dynamic function of altimetry profile of chosen route is also for disposal.

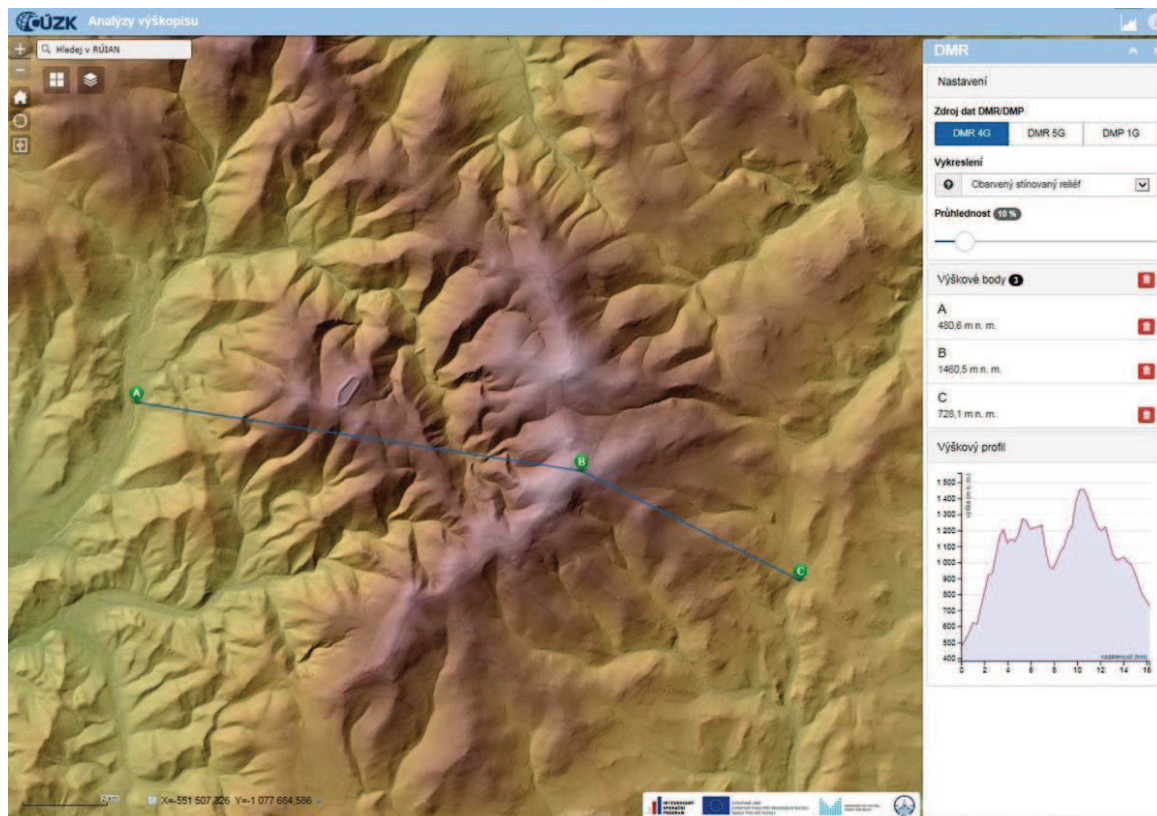
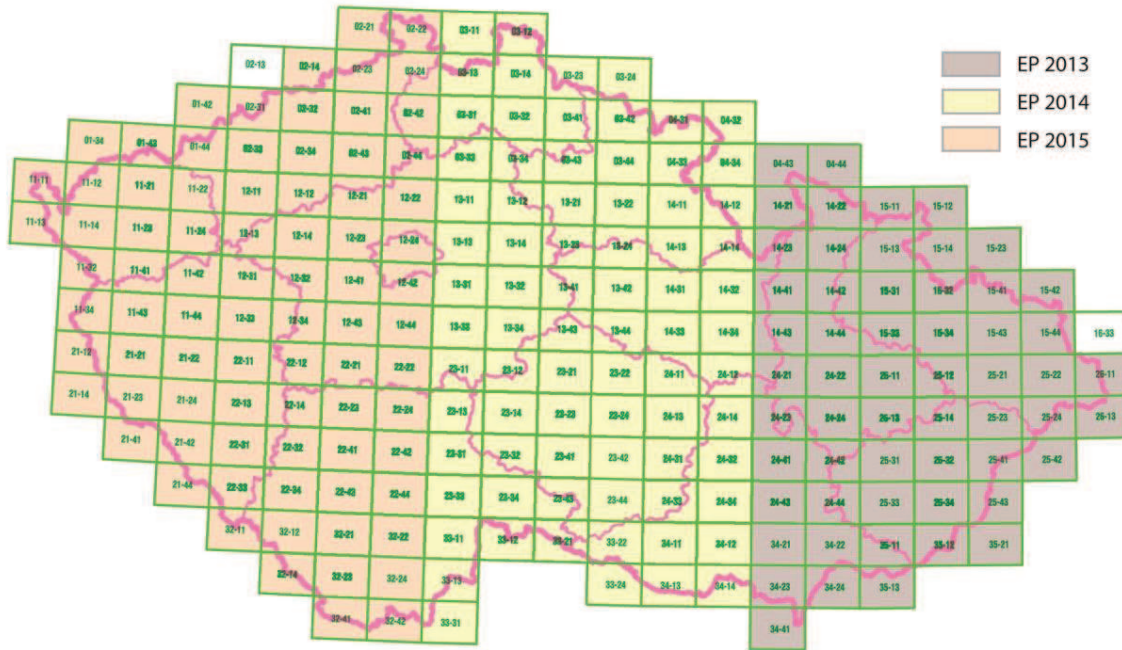


Illustration from the application Altimetry analysis

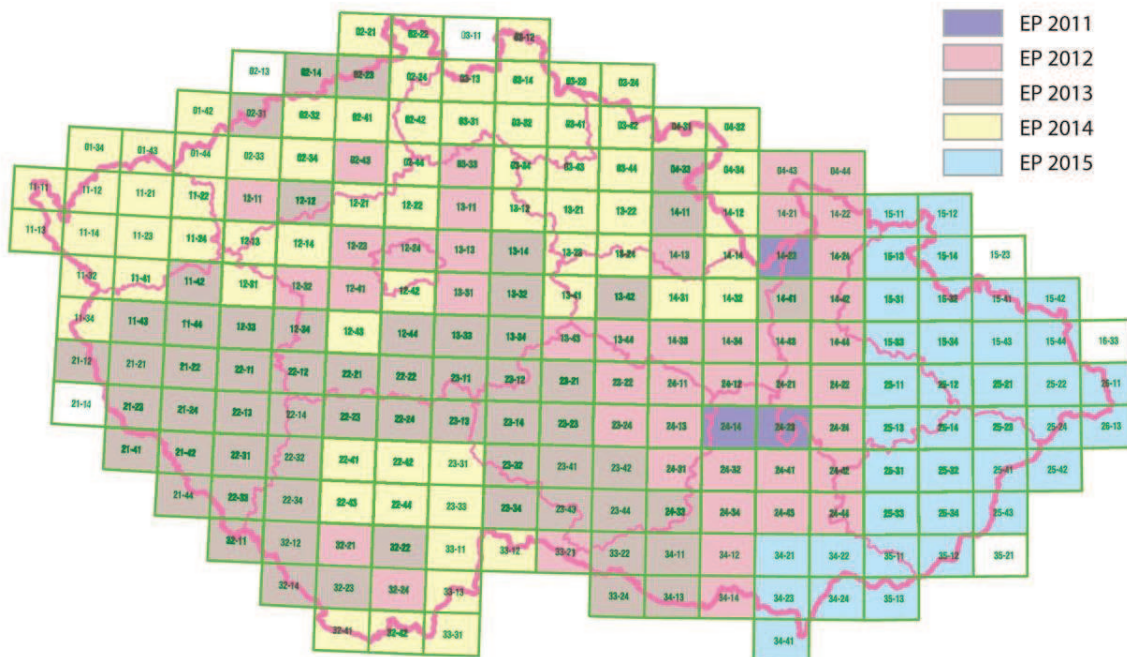
## 5.5. State Map Series

Apart from cadastral maps state map series represent sets of basic and thematic map series. The base state map series 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 base state map series are ZABAGED® and Geonames, in particular. 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, Data 10 and Data 50, which are part of the modern information system of state map series. In 2015 following map sheets were created: 1 553 map sheets of ZM 10, 221 map sheets of ZM 25, 37 map sheets of ZM 50 and 13 map sheets of ZM 100. In accordance with the publishing plan following map sheets were updated: 26 m. s. of Overview of trigonometric and densification points, 26 m. s. of Overview of the levelling points and 10 m. s. of the Road map of the CR all in the scale of 1 : 50 000 and finally 35 m. s. of the Map of municipalities with enlarged administrative competencies in scale of 1 : 50 000. In accordance with regular updating of data bases of small scales the Map of Regions of the CR 1 : 200 000 and the Map of the Czech Republic 1 : 1 000 000 were issued in renewed edition.



Overview of RZM 10 and RZM 25 publishing



Overview of RZM 50

In 2015 production of the new edition of the 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 cadastre of



real estate, ZABAGED® and Geonames. In 2015 in total 15 342 update map sheets were published with the validity of 1.1.2015.

## 5.6. Orthophotographic Representation of the Czech Republic

Orthophotos created by the orthogonalization of aerial photographs find more and more uses in various fields of activities. Colour aerial photography is being taken throughout the territory of the Czech Republic in cooperation with the Ministry of Agriculture and Ministry of Defence of the Czech Republic. At present the aerial photographs have been taken solely by means of digital scanning, 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 2015 the west half of the CR was completed.

Orthophoto CR is provided in datasets on map sheets of the State map 1 : 5 000 (5 sq. km) via viewing services and in print form. Data are in raster format JPEG or TIFF with the resolution of 0.25 m on the ground and are georeferenced in the coordinate system S-JTSK. The data sets for coordinate system WGS 84 are also provided. Beside the up-to-date orthophoto also file data of the archival black-and-white orthophotos from years 1998 – 2001 and colour orthophotos from years 2003 – 2009 are provided. Archival orthophotos are published via WMS viewing service as well.

Besides providing of updated aerial photos and Orthophoto CR ZÚ cooperates with the Military geographical and hydro-meteorological office (VGHMÚř) in the area of scanning of old aerial photographs. In 2015 in total 27 485 photos were completed. The application Archives of aerial photographs for their detailed viewing has been launched.



Orthophoto part



## 5.7. 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 increasingly used in map portals, web applications and search services. Alongside with the ZABAGED<sup>®</sup> 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 2015 updating of the Geonames database was going on in cooperation with municipalities harmonized with updating of ZABAGED<sup>®</sup> (at 881 map sheets of ZM 10) 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 and not in the number of their occurrence in the map.

## 5.8. 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.

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 2015 in total 73 831 maps were scanned. Scanning of Technical maps 1 : 2 000 was completed and scanning of State map 1 : 5 000 single sheets was launched. The archival documents can be viewed via application Archival maps ÚAZK. The archival documents are available in the data file as well. The most used archival documents are among others 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, prints of topographical sections of the third military mapping between 1872 and 1853 in scale of 1 : 25 000, collection of maps and plans from the second half of the 16<sup>th</sup> century until 1850. Even so called indication sketches are available there, which are physically stored in other archives. Via Geoportál of the ČÚZK it is possible to order copies of archival documents or digital sets in printing quality.

Part of the ÚAZK creates also a public research room enabling to study the archival documents directly from the originals. In 2015 there were 208 visitors in the research room visiting the archive for 442 times. In the frame of their visits 1 317 archival copies in total were created for them at place and further 49 copies were sent to the customers based on their written request.

The ÚAZK depository was moved from Libočany castle to refurbished premises in Pardubice in 2015 because of termination of the lease with the new owner of the castle.

## 5.9. INSPIRE

ČÚZK branch is a key provider of basic datasets for gradually building infrastructure for spatial information in the EU, called 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 published in the INSPIRE data specification in GML format. Above these datasets network services are created enabling searching, viewing, downloading or transformation and provided via Geoportal ČÚZK. Datasets and services are described in metadata containing quality description as well.

From the ISKN database the theme parcels is published, from RÚIAN database buildings, addresses and administration units, from the ZABAGED® transport network and hydrology datasets, from Geonames the geographic names, from DMR 4G the theme altimetry and orthophotos from orthophoto database. The themes reference systems and coordinate networks are being prepared from the data of geodetic control. All datasets are continuously updated. Based on the approved INSPIRE strategy ČÚZK will become gestor of some National INSPIRE datasets.

Network services are provided in accordance with the requirements for performance, availability and capacity. INSPIRE data and services are the first step in building the European Location Framework (ELF) described in more detail in Chapter 9.

## 5.10. ČÚZK Geoportal

<http://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, enables viewing and ordering of 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 our obligation resulting from the INSPIRE Directive are provided to the National INSPIRE Geoportal and from it information is being harvested to the European INSPIRE Geoportal. By means of the internet shop 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 demanded data sets are ZABAGED®, Orthophoto CR and raster form of the Base map of the Czech Republic 1 : 10 000. The biggest data amount is provided to users from the public administration.

To simplify the processing of orders or their payment the payment portal is for disposal to users. Data can be provided based on a license agreement agreed simply by clicking on the published use conditions. Order of the provided data can be solved very quickly; however, the main significance lies in the possibility of distribution raster cadastral map and newly also the vectorial cadastral map.

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).

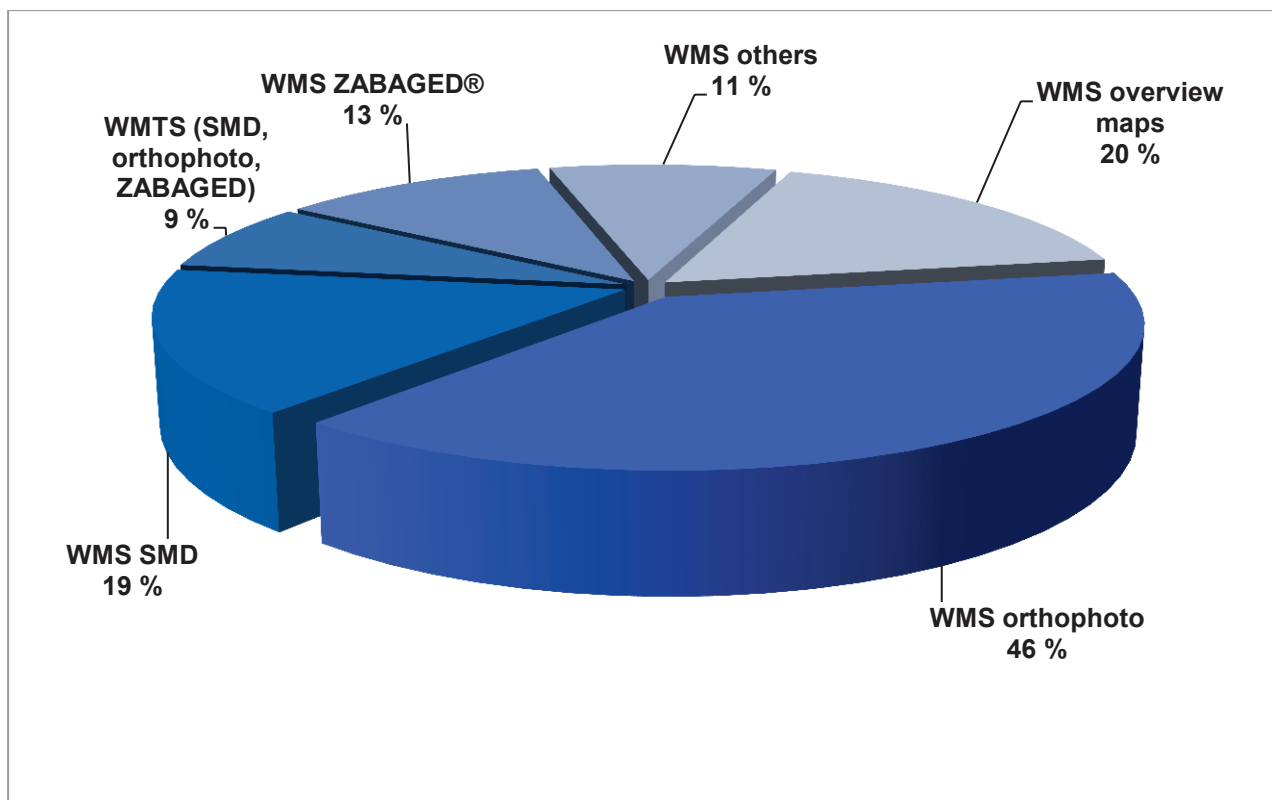


Fig 12: Use of viewing services in 2015 – shares of single groups from the total number of requests

During the year, considerable attention was paid to further strengthening of the Geoportal infrastructure; we managed not only improve the speed and particularly reliability of viewing and download services, but also facilitate the development of other applications, especially for surveyors.

## 6. Economics and Human Resources

### 6.1. Employees and Education

The year 2015 was significantly influenced by the implementation of the Act Nr. 234/2014 Coll., on Civil service (further only Act), resulting in the change of legal relation to the employer for approximately 90 % of employees of the branch and significantly increasing the range and demands of the work in human relations departments as well as of heads of staff offices.

From the beginning of the year the Act applied solely on heads of staff offices in the branch (president, vice-president and directors of cadastral offices and inspectorates), who have been considered civil servants since 6<sup>th</sup> November 2014 according to the Act. Based on the first systemization approved by the government of the CR heads and directors of departments and section directors (in total 571 employees) were legally recruited in the civil service with effect from 1<sup>st</sup> July 2015. During the 2<sup>nd</sup> half of 2015 all employees on systemized positions became

civil servants based on the decision of staff offices, providing they submitted the request within the deadline and fulfilled the conditions for recruitment to the civil service. From them 435 (approx. 9 % of civil servants) were recruited for the fixed period because they did not meet the condition for 4-year practice in last 10 years and so they will have to pass the general part of civil service exam by the end of June 2017 to have their civil service changed for the indefinite period.

In the 2<sup>nd</sup> half of 2015 in total 22 tenders were announced in accordance with the Act and in cooperation with the section for civil service at the Ministry of interior for positions of the heads of staff offices in the branch (directors of cadastral offices, inspectorates and Land survey office). 18 tenders were completed in 2015 with all current directors defended their positions in them.

By 31.12 2015 together 5 128 persons were employed in the ČÚZK branch, 4 602 out of them were civil servants and 526 remained employees. The only statistical change in the human sources was division into civil servants and common employees. Nor educational and age structure nor the share of women in the branch has significantly changed in the long-term perspective. Prevailing share in educational structure have employees, who reached the secondary school education (52.5 %), second place belongs to the employees with University degree (35.7 %). The most numerous age group is created by the employees aged 41-50 (35 % from the total number).

ČÚZK Branch	Age Structure						Women	Graduated
	do 30	31-40	41-50	51-60	61 and more	In total		
Civil Servants	397	989	1 674	1 334	208	4 602	74,2 %	37,5 %
Employees	40	80	119	190	97	526	73,6 %	20,0 %
<b>Total</b>	<b>437</b>	<b>1 069</b>	<b>1 793</b>	<b>1 524</b>	<b>305</b>	<b>5 128</b>	<b>74,2 %</b>	<b>35,7 %</b>

Physical state of employees by 31.12.2015

By 31.12 2015 the number of women in managerial positions was 333 (54.6 %) in the ČÚZK branch, the total number of managerial positions being 610. There are still reserves in gender equality in head positions of staff offices; any change has occurred during realized tenders in accordance with the Act on civil service.

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	3	13,0 %	0	0	0 %
Section Director	14	7	50,0 %	0	0	0 %
Department Director	133	61	45,9 %	1	1	100,0 %
Division Director	424	252	59,4 %	15	9	60,0 %
<b>Total</b>	<b>594</b>	<b>323</b>	<b>54,4 %</b>	<b>16</b>	<b>10</b>	<b>62,5 %</b>

Share of women in leading positions by 31.12.2015

During 2015 44 civil servants and 453 common employees terminated their employment. The rate of fluctuation was 9.7 % in 2015 which is more about 2.9 % than in 2014. Higher rate of fluctuation was supported by the implementation of the Act on civil service into practice because some of our employees preferred change of employer to recruitment to the civil service. Another important reason for higher rate of fluctuation was significant recovery of the labour market, especially higher demand of developers and real estate sector for workers with knowledge of the cadastre of real estate and legal relations to them.

Year	Terminated Employment	Rate of Fluctuation
2015	497	9,7 %
2014	359	6,8 %
2013	370	7,0 %

Fluctuation rate in previous years

Employees' education was beside implementation of the Act on civil service in 2015 one of main priorities of the human resources management in the branch. It was realized in 2015 based on the approved plan of education in the Czech Office for Surveying, Mapping and Cadastre. Personal departments of individual administrative offices realized a lot of educational activities for employees focused on legal, economic, personnel and cadastre of real estate subject matters in 2015. Moreover the ČÚZK personal department realized some specialized team workshops for chosen workers from all branch offices. The crucial part of educational activities in 2015 was realized with use of internal lecturers from the ČÚZK staff who are familiar with the trained branch issues.

## 6.2. 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 2015 in accordance with section 14 of the Act No 200/1994 Coll., on surveying and mapping.

In the year 2015 the total number of completed applications was 75 (14 of them from 2014). Based on the professional competence exams new official authorization was newly granted to 47 applicants and 3 applicants enhanced their existing authorization. The other cases were solved as follows: 7 applicants did not meet the legal requirements for granting official authorization or request to end the proceeding, 5 applicants did not pass the exam repeatedly, 7 participants did not succeed but are going to repeat the exam in 2016 and 4 applicants apologized from the exam. Two applicants who submitted the application in the end of 2015 will be invited to the exam in the beginning of 2016. In 2015 no official authorization was deleted from the registry.

2 505 persons have been registered on the updated list of officially authorized land surveying engineers administered by the ČÚZK by the end of 2015.



### 6.3. Economics

Approved state budget of the Czech Republic for 2015 specified revenue of CZK 580 million and expenditure of CZK 2 827.6 million for the chapter 346 ČÚZK.

Revenue budget increased in 2015 by the revenues from the EU budget in the amount of CZK 45.2 million. Revenue collection, coming to the budget from the administrative fees, was prescribed in the amount of CZK 470 million, its fulfilment reached CZK 632.6 million, and it is 134.6 %. EU revenues reached CZK 82.3 million; it was the revenue from previous years projects DMS - realized within Integrated operational programme (IOP) - and European Location Framework (ELF) – realized within the Communitarian programme CIP. Other revenues were prescribed in the amount of CZK 110 million and were filled in by the amount of CZK 235.1 million; it is 213.8 %, in 2015. It was mostly the revenues for data provided via remote access to the cadastre of real estate.

The budget for expenditure was changed in 2015 by the budgetary measures of the Ministry of finance. The budget was increased by CZK 60.2 million in total. The increase dealt in particular with the salaries and connected expenditures in the amount of CZK 10.2 million, further it was CZK 45.2 million for the project of “Acquisition of airborne sensors”, which is co-financed from the IOP and CZK 5.6 million moved from the Ministry of agriculture and Ministry of defence for ensuring aerial survey photographing. On the other hand CZK 0.8 million were moved from the ČÚZK budget to the budget of Ministry of interior to cover the services connected with administration of basic registries.

Total expenditure in 2015 was CZK 2 882.3 million. The biggest part was used for the salaries of civil servants and employees in the total amount of CZK 2 068.3 million, which created 71.8 % of the total expenditure of the branch. The average monthly income achieved in 2015 reached CZK 25 176 per employee.

The second biggest expenditure group of the chapter 346 ČÚZK were other material ones in the amount of CZK 555.9 million. Significant item were postal services in the amount of CZK 142.2 million, which increased by 7.7 million in comparison to 2014. Except for postal services mainly further services were purchased in the amount of CZK 242.4 million included particularly data processing services and services related to information and communication technologies in the amount of CZK 112.8 million, data and voice telecommunication services in the amount of CZK 24.1 million, offices and PCs renting in the amount of CZK 22.8 million, further on public tenders regarding land surveying services for digitization of cadastral maps in the amount of CZK 13.5 million and for catering allowance in the amount of CZK 20.6 million. Further expenditure were given to energy purchases, heating, gas, fuel and water in the amount of CZK 66.3 million, to property repair and maintenance in the amount of CZK 29.9 million and for purchase of material and travel costs.

Significant part of the expenditure 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 sector tangible and non-tangible property. In 2015 there was mild decrease in share of these expenditures of the total chapter expenditure on 8.1 % particularly due to the priorities given to the operational expenditure of the branch. Further important part of the programme expenditure were those used for ICT; in total it was CZK 217.7 million, from it especially ISKN software updating (CZK 55.2 mill), acquisition of aerial sensors (CZK 44.4 million) co-sponsored from the EU budget, further ISKN activities (CZK 22.8 million), RÚIAN II o operation (CZK 37.3 million) and HW and SW for subordinated offices. Other items were the programme investments for building reconstructions (CZK 31.1 million) and renewal of the transport (CZK 3.6 million) and surveying means (CZK 5.5 million).

<b>Index/ Year</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Income of the chapter	276 942	439 481	599 126	721 424	1 160 637	950 029
Out of it: revenues for administration fees	62 770	67 239	348 866	503 369	542 068	632 582
Income from EU budget	3 423	135 802	18 703	723	420 624	82 287
<b>Total expenditure of chapter</b>	<b>3 336 483</b>	<b>2 785 290</b>	<b>2 753 079</b>	<b>2 787 362</b>	<b>2 826 373</b>	<b>2 882 336</b>
Out of it: projects co-financed from EU budget	400 226	59 518	130 494	97 518	87 717	55 621
Current expenses without non-investment	2 351 702	2 145 791	2 082 017	2 477 766	2 558 418	2 624 142
Including: wage resources <sup>1)</sup>	1 536 985	1 427 387	1 412 214	1 426 590	1 462 339	1 532 404
Insurance and FKSP	549 632	498 865	493 133	498 743	511 031	535 852
Other material expenditure	252 145	219 539	176 670	552 434	587 207	555 886
Program expenditure	984 781	617 428	682 196	314 192	267 955	258 233
Including: non-investment	396 053	444 627	433 124	56 455	49 280	57 167
Investment	588 728	172 801	249 072	257 737	218 675	201 066
Research and development expenditure	22 159	34 391	0	0	0	0
Including: operational	22 159	34 391	0	0	0	0
Investment	0	0	0	0	0	0
<b>Number of employees in Sector<sup>2)</sup></b>	<b>5 532</b>	<b>5 258</b>	<b>5 130</b>	<b>5 070</b>	<b>5 096</b>	<b>5 062</b>
ČÚZK	159	155	150	147	146	138
Cadastral Offices	4 864	4 618	4 498	4 450	4 486	4 459
Land Survey Office	416	394	392	384	378	380
Survey and Cadastral Inspectorates	93	91	90	89	86	85

## 7. Inspection and Supervision Activity

### 7.1. Professional Inspection and Supervision

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

Only some data from the complete SCIs activities statistics for the year 2015 are published here. SCIs received 52 complaints in total and 426 other submissions. It means yearly growth of more than 20 %. The extent of decision-making agenda on appeals against decisions of CO increased on 6.3 % (623 appeals delivered in 2015 as opposed to 586 appeals delivered in 2014). The quality of decision making activities of cadastral offices as first step organs remained practically the same in comparison to 2014. The number of appeals in matters regarding correction in

cadastral documentation increased on 5.2 % in comparison to 2014 (341 appeals delivered in 2015 as opposed to 324 delivered in 2014), the number of appeals in matters regarding objections against the content of renewed cadastral documentation increased on 7.2 % (164 in 2015 as opposed to 153 in 2014) and the number of delivered appeals against procedural decisions of CO increased by 7.5 % in 2015 in comparison to 2014 (114 in 2015 as opposed to 106 in 2014).

SCI performed in total 1 364 documented inspection actions (the increase of 4.8 % occurred in comparison to 2014, when 1 301 inspections were performed). In the framework of supervisory activity regarding certification of the results of land survey activities SCI performed in total 284 documented supervisory actions in 2015 (increase by 8.4 % in comparison to 2014, when 262 actions were performed). In 32 cases (22 in 2014) in the subsequently conducted administrative proceedings SCI 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 571 thousand (CZK 321 thousand in 2014). Particular cases of discovered insufficiencies were specified and commented in half year SCI 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 SCI's was in 2015 focused mainly on monitoring conditions at the cadastral branch offices under which the documentation for setting-out parcel boundaries has been provided to private surveyors, on following prescribed technological proceedings during the renewal of the cadastral documentation and on acquiring information about possible problems connected with their follow-up utilization and with maintenance of digitized cadastral maps. In case of supervision of results verification of land survey activities the supervision focused on cases not fulfilling the requirements, technological procedures or reached accuracy given by generally binding legal regulations.

Information about the SCIs inspections in 2015 is published on their websites in accordance with § 26 of the Act Nr. 255/2012 Coll., on Inspection (Inspection Rules).

ČÚZK (as relevant central administrative office) performed in 2015 inspection of delegated powers entrusted to the regional authorities and the capital city of Prague in the area of the Registry of territorial identification, addresses and real estate (RUIAN). These inspections were in 2015 realized in 6 regional offices (Vysočina, South-Bohemian, Liberec, Olomouc, Pardubice and South-Moravian regions) and in the Prague City Hall. General information on their results are published on the ČÚZK website in accordance with the § 26 of the Inspection Rules.

## Complaints

Inspectorates	Not resolved at 1.1.	Received after 1.1.	In total	Forwarded	Legitimate	Not legitimate	Still being resolved
in Brno	1	9	10	5	-	5	-
in Č. Budějovice	-	2	2	2	-	-	-
in Liberec	-	2	2	1	-	1	-
in Opava	-	8	8	5	2	1	-
in Pardubice	-	2	2	-	-	2	-
in Plzeň	-	3	3	1	-	1	1
in Praha	-	26	26	13	1	12	-
<b>In total</b>	<b>1</b>	<b>52</b>	<b>53</b>	<b>27</b>	<b>3</b>	<b>22</b>	<b>1</b>

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

SCI	Not resolved at 1. 1.	Received after 1. 1.	In total	Referral for no jurisdiction	Resolved	Still being resolved
v Brně	3	111	114	12	99	3
v Č. Budějovicích	-	88	88	4	80	4
v Liberci	-	17	17	-	17	-
v Opavě	5	51	56	6	50	-
v Pardubicích	3	51	54	2	49	3
v Plzni	4	27	31	6	25	-
v Praze	1	81	82	18	64	-
<b>Celkem</b>	<b>16</b>	<b>426</b>	<b>442</b>	<b>48</b>	<b>384</b>	<b>10</b>

## SCI Decisions on Appeals against CO Decisions

Matters	Not resolved at 1.1.	Received after 1.1.	In total	Appeal rejected	CO decision changed	CO decision repealed and proceeding terminated	CO decision repealed and returned to CO	Decision annulled	Still being resolved	Faulty and Forwarded proceedings
Correction of errors in the cadastre	40	341	381	199	21	4	108	2	40	7
Objections to revised cadastral documentation	11	164	175	85	13	1	56	-	18	2
Infringements of order in the sphere of the cadastre	-	-	-	-	-	-	-	-	-	-
Procedural	22	114	136	55	4	2	59	-	9	7
Changes in the boundaries of cadastral districts	-	-	-	-	-	-	-	-	-	-
Administrative fees	-	1	1	-	-	1	-	-	-	-
Rejection of applications for submission of information	-	2	2	1	-	-	1	-	-	-
Other	-	1	1	-	-	-	-	-	-	1
<b>In total</b>	<b>73</b>	<b>623</b>	<b>696</b>	<b>340</b>	<b>38</b>	<b>8</b>	<b>224</b>	<b>2</b>	<b>67</b>	<b>17</b>

## 7.2. Financial Inspection

ČÚZK performed financial inspections according to the Act No 320/2001 Coll. on financial inspection, in subordinated bodies in 2015.

According to the approved plan of public administration inspections for the year 2015 the inspection group of ČÚZK carried out public administration inspections at following 12 inspected bodies:

CO for the Region Central Bohemia, CO for the Region Pardubice, CO for the Region South Moravia, CO for the Region Moravia-Silesia, CO for the Prague-City, and all seven SCI's, in which performing of internal audit is substituted by performing of public administration inspection in compliance with the section 29, art.5 of the Act No 320/1990 Coll., on financial inspection. Inspection authorization and order was issued by the president of the ČÚZK in accordance with section 13 art. 1 of the Act on Financial Control with reference to section 4 of the Act no. 255/2012 Coll., on the Control (Control Rules), as amended.

The main goal of realized inspections was to verify the financial management of inspected persons, following the binding legislation, economic and internal rules, functioning of internal managing systems and creation of the conditions for economical and efficient performance of the public administration.

Inspection of accounting documents verified not only their requirements as of material and formal point of view, but in particular realisation of the previous, continuous and ex-post check. All inspected organizations were proved as of observance of the efficiency, economy and usefulness of public resources utilization for fulfilment of given goals in accordance with the section 2 art. m) to o) of the Act on Financial Inspection. The inspection included checking of the call for public tenders and their realization, the height of administration fees, payments and prices for provision of data from the cadastre of real estate and results of land surveying activities.

Among others the inspections focused in 2015 on fulfilment of provisions, being adopted to eliminate insufficiencies from previous inspections and inspections performed in the ČÚZK branch by external audit organizations particularly financial offices and financial directorates. Special attention was given to measures being imposed to eliminate insufficiencies discovered by the inspection Nr. 12/24 of the Supreme Inspection Body in inspected cadastral office for the region Moravia-Silesia. A regular part of public administration inspections was dealing with damage caused within exercising of the public power and the fulfilment of the tasks of the ČÚZK Anticorruption programme. Public administration inspections of some inspected persons in 2015 found less serious formal and objective shortcomings emerging from the inconsistent compliance with some provisions of ČÚZK economic rules, some partial shortcomings in records of assets and in provision of information from the cadastre of real estate. No serious shortcomings were discovered that would unfavourably affect the activities of inspected persons. All documents from carried out inspections were delivered to the president of the ČÚZK together with proposed measures and he then imposed measures to inspected persons to eliminate existing insufficiencies and prevent them from repetition, in accordance with the section 18, art. 2 of the Act No. 320/2001 Coll., on Financial Inspection. Measures taken to the identified shortcomings of the conducted public administrative inspections related mainly to legislative changes of the accounting reform of public finances and their reflection into internal regulations of the supervised offices, the data provision from the cadastre of real estate, requirements of applications, verifying the identity of applicants, accounting documents, the implementation of management control, accounting for individual accounts, records of easements, property management and inventory, budgetary adjustments and their relation to the data in the state treasury, compliance with the terms of the tender dossier procurement and reimbursement of travel expenses for business trips of employees.

After information about taken measures by the inspected persons for elimination of insufficiencies, the inspections were terminated properly. Final report about results of financial inspections in the ČÚZK branch for the year 2015 was submitted to the Ministry of finance.

### **7.3. Internal Audit**

Internal audit is a part of the system of financial inspection in the branch ČÚZK. Internal audit is being carried out by authorized employees - internal auditors. Systemized job positions are established in ČÚZK, Land Survey Office and in all 14 cadastral offices. Organizational rules ensure full independence of the auditors and their separation from managerial and executive structures. The function of internal audit has not been set up in cadastral inspectorates, because it was substituted there by yearly public administration inspection. The internal auditors are



directly subordinated to heads of particular offices. The main task of performed internal audits is independent inspection and evaluation of appropriateness and efficiency of the managerial inspection, including verification of accuracy of chosen operations.

The activity of internal auditors results from the medium-term and yearly plans. Planning of audits is based on the risk evaluation and is focused on priority processes in conditions of particular offices. The part of the plans of internal audits is also performing further tasks in compliance with Standards for the professional practice of internal auditors. Internal auditors carry out methodical and consultation activities and take part in the creation and amending of internal regulations. Integral part of auditors' activities is their professional development. Out of the 15 internal auditors in the branch 10 hold the certificate on passing the basic training class of the unified system of professional training of public administration employees in the area of financial inspection and internal audit.

In accordance with approved plans for 2015 internal auditors performed together 97 internal audits. From this total number of internal audits 29 were financial ones focused on the proof of the economy of particular offices, 33 were audits of systems proving the administration of public resources, 13 were audits of operation dealing with the functioning of the internal inspection system and 22 were other audits.

Performed audits were addressed in particular to prove the functionality and efficiency of the internal inspection system, verification of existing state of the fulfilment of suggested recommendations stemming from completed audits and inspections in previous year. Internal audits evaluated whether the standards and internal regulations have been issued and whether the anticorruption measures have been implemented and monitored. Internal auditors evaluated also corruption risks ČÚZK and job positions with higher corruption risk based on the task of Departmental internal anti-corruption program (RIPP). The activities of the branch were realized fluently in 2015 despite incorporating the budget cuts and the budget was balanced without bigger deviations and problems.

There is continuous monitoring process of public tenders assignment in place in the CUZK, which are registered via electronic tool eGORDION – Tenderarena. Measures preventing the property in economical administration of CUZK have been implemented as well. Audits inspected created risk analysis and maps of risks, verification of procedures connected with submission of public tenders, managing of state property, accounting administration and dealing with budgetary resources, check of administration fees and others.

Performed audits were completed in the written reports with recommendations, most of which were accepted. In 2015 performed audits proved that internal inspection system is effective, identifies possible risks and diminished probability of their occurrence in auditing activities of ČÚZK. Internal system of inspection is able to inform about possible insufficiencies at all managerial levels thus meaning limitation of necessity to realize measures for their improvement.

## **8. International Cooperation**

ČÚZK actively participates in the work of some international organizations being active in the field of cadastre, land registration and land surveying administration. Beside that it also actively cooperates with all neighbouring countries in the area of mutual data and information exchange based on bilateral agreements.

ČÚZK is an active member of the pan-European organization EuroGeographics (EG), which associates map agencies and cadastral offices of European countries. EG enables experience exchange and mutual cooperation; it systematically develops the cooperation with the European Union bodies at 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, EuroSpec. EG negotiates experts involvement from member organizations into preparations of harmonization provisions included implementing rules of the Directive of the European Parliament and the Council for establishing of the Infrastructure of Spatial Information (INSPIRE) and helps to implement them on the particular member states level.

Since March 2013 the project European Location framework (ELF) has been in operation. Its goal is to prepare the unified frame for provision of European reference geoinformation data and services. ČÚZK actively participates on the activities of some working groups as a project partner and provides sample data for pilot testing planned for 2016 after completion of the ELF project phase.

2015 was the second year of work in the newly established European section of the United Nation commission for Global geospatial information management. Its 2<sup>nd</sup> plenary meeting took part under the auspices of the EG association in Bělehrad just following its General Assembly.

In 2015 implementation of the INSPIRE Directive went on and ČÚZK participated in connection to it in some conferences. One of them was INSPIRE international conference that was held in Portugal Lisbon in the frame of Geospatial Word Forum with active participation of the ČÚZK representatives who dealt not only with the topic of INSPIRE implementation but also with experience regarding the work in the ELF project.

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 2015 the representatives from the ČÚZK took part in two WPLA workshops. The first one was held in Switzerland in Geneva and focused on the topic of the challenges of informal settlements. The second one focused on real estate rights and cadastre registration as an element for development of land management systems which was held in Russian capital Moscow.

ČÚZK participated also in two meetings of the Permanent Committee for Cadastre in EU (PCC) in 2015, main goal of which is to represent a privileged link between cadastral institutions and the institutions of the European Union and other entities requiring cadastral information to carry out their activities. Both meetings were held in presiding states of the European Commission in given half-year. The first one took place in Latvian Riga and the next one in Luxembourg.

In the area of bilateral cooperation we went on in cooperation with the Bavarian Office for Digitization, and Land Surveying (LDVB) and with the Slovak Geodetic and Cartographic Office focused particularly on geographic elements harmonization in the borderline areas. Beside these activities also regular working meeting of representatives from the ČÚZK and Geodesy, Cartography and Cadastre Authority of the Slovak Republic on the highest level took part to exchange news and experiences between both offices.

32<sup>nd</sup> meeting of cadastral service providers of succession state of the former Austro-Hungarian Empire, namely Croatia, the South Tyrol, Austria, Slovakia, Trentino, Hungary and the Czech Republic was held in Italian Trentino in May 2015. The main theme of this meeting was the historical and current determination of the cadastral income: equity research tax and new cadastral mapping: information and metric and informative content accuracy.

In December 2015 the eleven-member delegation of Moldovan representatives from the state and local administration visited the ČÚZK. In two-day programme they focused on information about the address registry, particularly on its creation, functionality and our experience and good practices with the creation of RÚIAN.

Further international activities dealt with participation on professional seminars, scientific-technical conferences, information technologies conferences and preparation of the scientific professional magazine Geodetic and Cartographic Review (GaKO).



## 9. Structural Funds of European Union

ČÚZK utilizes the Integrated operational programme of EU to finance some of its projects important for further development of the branch and for realization of the part of its responsibility for creation of basic registries of the state administration. In previous years following projects were completed: “Building of the Registry of the Territorial Identification, Addresses and Real Estate” (RÚIAN), “Complex Electronic Document Service follow-up the system of data boxes” and “Document Management System ČÚZK” following the implementation of the electronic conversion of documents and data boxes (DMS). All three projects are being maintained and developed to enable full utilization of provided applications. The only still open project is further European location framework (ELF).

## European Location Framework (ELF)

ELF is a strategical project of the consortium of 30 European mapping and cadastral offices associated in EuroGeographics being supported by European Union in the frame of the CIP PSP programme. The main goal of the project is to provide step-by-step the seamless, updated data sets and services based on updated reference spatial data of European national mapping and cadastral offices and provide them to users in a sustainable way. Practical use of such European range data is then demonstrated with help of various thematic applications of further providers with participation of private sector. Unified shape of data and services will be ensured using the technical rules of the INSPIRE Directive. Results of European projects ERM, EGM, EGN, ESDIN a. o., which were being solved by EuroGeographics in previous years, are to be used. The three-year project was launched on 1.3.2013 and in the first period together 15 European countries included the Czech Republic has been participating.

In 2015 ČÚZK team of specialists actively participated in comments and testing of ELF technical specifications for data and services, in cooperation with Polish GUGiK realized a pilot regarding data analyses and preparations for cross-border data provision and provided harmonized data and interoperable network services according to the INSPIRE rules and /or ELF specifications for the needs of the project. In the frame of the project some international expert meetings were held in Prague. The cooperation experience was successfully presented not only to the Czech professional public but also at international conferences.

## 10. Research and Development

ČÚZK performs the function of the founder of the Research Institute of Geodesy, Topography and Cartography (VÚGTK), v.v.i. The activity of the VÚGTK is focused on applied and basic research in the 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. The Institute is also the accredited educational body.

VÚGTK has solved some projects for ČÚZK included into the “BETA” programme of the Czech technological agency (TA ČR). Beside these projects VÚGTK ensured the development of the specialized software for the work with digital cadastral maps and also activities of the professional commissions.

Basic and applied research in geodesy and geodynamics has been on the long-time basis ensured in the - Geodetic observatory Pecný. In 2015 the gravimetric laboratory participated with its superconductive and absolute gravimeter in some international projects in the area of gravimetry, geodynamics and metrology. The activity of operational, data and analytical centres included into the system of scientific services of the International association of geodesy and world meteorological services went on. The basic research focused on the area of Earth gravity field modelling, further on GNSS “real time” methods and on problems of determinability of



gravity field parameters from satellite missions and interpretation of the Earth gravity field in other branches (f.i. in geophysics or tectonics).

In the sphere of GIS and cadastre of real estate VÚGTK concentrated mainly on the project solution “Integration of new technique and technology into the process of the renewal of the cadastral documentation by new mapping”. This project shall result in the modernized technology and software for the needs of boundaries investigation and planimetry surveying within new cadastral mapping. In the frame of the project the possible use of contactless technologies has been examined during 2015. In July 2015 the task “Research and development of methods for cartographic generalization of state map series of medium scales” started, its goal is to help to automatize the cartographic creation of medium scale maps. In the frame of cooperation with further public research institutions VÚGTK has been solving following BETA program tasks: for the Ministry of transport it is “Safety increasing of the railway traffic on secondary lines using the GNSS satellite systems” and for the Ministry of agriculture it is the project EPSILON “Use of digital technologies for archival aerial photos processing for real surveying of drainage structures in S-JTSK system”. Based on the contracted research following smaller range tasks were solved: “Methodology of railway infrastructure administrator for guaranteed spatial data for railway component of the European train protection system ETCS” for the Intergraph CZ company and “Technical conditions for Service provision of the aerial photographs tender and orthophoto and digital terrain model creation” for the Planning and development institute of the Prague capital.

Service provision of the Land survey library<sup>®</sup> was influenced in 2015 by the reconstruction and modernization of the study room and adjacent depositories. The goal of reconstruction was to ensure suitable storage of the whole fund of the library containing more than 45 thousands professional items and nearly 120 thousands bibliographies so as to improve the equipment of the study room. During 2015 digitization of the library fund went on in the frame of the VISK-7 programme and digitized documents are available via internet.

Completion of the reconstruction of calibration laboratory was of significant importance for the accredited calibration laboratory and authorized metrological centre. In 2015 in total 1 470 calibrations were carried out there and beside it continuously etalons administration and maintenance has been carried out.



## **Annual Report 2015**

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Prepared by collective of authors from Český úřad zeměměřický a katastrální  
Issued by Český úřad zeměměřický a katastrální 2016

ISBN 978-80-86918-92-1